

Please cite this paper as:

Miranda, G. *et al.* (2011), "Climate Change, Employment and Local Development in Poland", *OECD Local Economic and Employment Development (LEED) Working Papers*, 2011/22, OECD Publishing.
<http://dx.doi.org/10.1787/5kg0nfvwjd0-en>



OECD Local Economic and Employment
Development (LEED) Working Papers
2011/22

Climate Change, Employment and Local Development in Poland

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Climate Change, Employment and Local Development

POLAND



CLIMATE CHANGE, EMPLOYMENT AND LOCAL DEVELOPMENT IN POLAND

A report by the Local Economic and Employment Development (LEED)
Programme of the Organisation for Economic Co-operation and Development
(OECD)

SEPTEMBER 2011

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FOREWORD

Poland is an important country in Europe in terms of its strategic position neighbouring three key non-EU partners, a large coastal border and a vast share of land used for agriculture and mining. Poland imports a significant amount of energy, notably gas. The country also has a longstanding tradition in coal mining, putting a lot of international pressure on its energy consumption. Some of the key economic sectors remain very conventional, being unable to absorb the large number of skilled workers entering the labour market. This has led to a significant outflow of workers to other EU countries, and to the stagnation of some economic activities that could potentially move up the value chain and contribute to job creation and wealth.

Since its accession to the EU in May 2004, Poland has undergone a series of adjustments to bring it into line with European regulations. Among these, mitigating and adapting to climate change are becoming key to the government's agenda, both at national and local levels. In this sense, the EU and other international organisations, including the OECD, have launched a series of work to identify opportunities and barriers to green growth, while maintaining economic development and job creation. The OECD understands green growth as a way to pursue economic growth and development, while preventing environmental degradation, loss of biodiversity and unsustainable use of natural resources. Green growth implies decoupling economic and environmental performances and making investment in the environment a driver of economic growth. This is challenging for a country like Poland where the environment is traditionally perceived as an "ecological" matter rather than an "economic" opportunity.

As a contribution to this international debate, the OECD Local Economic and Employment Development (LEED) Programme proposed the project 'Climate Change, Employment and Local Development' to examine the impacts of climate change on labour markets and local development, as well as to assist participant countries and regions to manage the transition to a green economy. Poland decided to join this project with two regions, Podlaskie and Pomorskie. Besides Poland, participants in the project include Extremadura (Spain), London (UK), and Sydney (Australia). The project has received financial support from the European Commission.

I believe that Poland's commitment to the pursuit of green growth will bear fruit, allowing for job creation and economic development in a more sustainable and equitable way. The findings of this report will undoubtedly contribute to fine-tuning a strategy for Poland to pursue and actions for it to implement to move forward in the right direction. Poland's leadership in this direction, namely with the EU Presidency currently in its hands, will certainly result in a positive outcome on a larger scale.



Sergio Arzeni
Director, OECD Centre for Entrepreneurship
Head, OECD LEED Programme

ACKNOWLEDGEMENTS

This study would not have been possible without the continuous support of our partners in Poland, notably the Ministry of Regional Development. The OECD is particularly grateful to Mr. Pawel Chorazy, Delegate of Poland to the OECD LEED Committee for engaging in this project. Thanks are also due to Mr. Przemyslaw Herman and Mrs. Joanna Obarymska-Dzierzgwa for their assistance in revising the various drafts of this report and in preparing the study visit (March 28 – April 1, 2011). Additional thanks go to the various actors in Podlaskie and Pomorskie that took the time to meet with the OECD international expert team during the study visit and provided invaluable insights to this study.

The work was supervised by Ms. Gabriela Miranda of the OECD LEED Secretariat, who also took part in the international expert team and prepared this report. In addition, the international expert team consisted of the following experts: Prof. Randall Eberts, President, Upjohn Institute for Employment Research, USA; Mrs. Elvira González, Economist at the Tomillo Centre for Economic Studies in Spain; Ms. Vanessa Foo, Senior Analyst at The Economist Intelligence Unit in the UK; and Prof. Przemyslaw Kulawczuk, University of Gdansk in Poland.

Special thanks also to Dr. Cristina Martinez-Fernandez from the OECD LEED Secretariat for ensuring the participation of Poland in this project and providing comments for the finalisation of this report. Ms Kay Olbison edited this report.

This report was prepared with the financial support of the EC, DG Employment, Social Affairs and Equal Opportunity.

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EXECUTIVE SUMMARY

The report's analysis provides the basis for a set of policy recommendations aimed at supporting Poland, and more particularly Podlaskie and Pomorskie's regional government, in the transition towards a greener economy, while creating jobs and supplying the skills required. Some of the policy recommendations are illustrated with practical examples (learning models) from approaches adopted in various regions across the OECD. The learning models can be found in the annex. The main policy recommendations are described below. Further details and analysis of each of these recommendations can be found in the remainder of the report.

Key recommendations

Build a joined-up green strategy

There is a need to define a strong and long-term strategy focused on supporting the green economy. Vertical and horizontal coordination among the different actors is crucial to ensure the strategy supports the transition of all sectors equally. If the strategy is not endorsed by the majority (civil society, businesses, ministries, regions), the green economy will create tensions and frustrations. All actors should be involved in consultations and be empowered to effectively implement the actions towards a common objective. The strategy should take into consideration regional, national and European policies and regulations to avoid conflicts and ensure coherence. This could be achieved by:

- Involving “thematic authorities” in the development of the strategy
- Providing the regions with the autonomy to adjust the actions to their own specific contexts
- Integrating ESF priorities within the strategy
- Opening the strategy for consultation to all stakeholders
- Creating operational working groups on the green economy at regional levels

Reinforce labour market institutions and their coordination

To ensure the labour market's smooth and effective transition to the green economy, it will be essential to reinforce the capacities of labour market institutions in terms of the data and monitoring tools available to them and their institutional capacity to adjust rapidly to frequent changes. It will be important to take advantage of the national and European networks available to support this reinforcement. Labour market institutions should also strengthen their collaboration and exchange of information with other education and training institutions, as well as with businesses to ensure efforts are concentrated in the right direction. This could be achieved by:

- Supporting the acquisition of knowledge and capacities
- Supporting networks and exchanges

- Strengthening the capacities of ESF staff to deliver green growth
- Exploiting the opportunities of EU funding, particularly ESF, and regulation

Support the emergence of green economic sectors

There is enormous potential in Poland to develop green economic activities. Some sectors have been identified in Chapter 1 for Podlaskie and Pomorskie, but others may emerge if the human capital, businesses and economic framework coincide. However, ‘ecology’ is still perceived as a cost, so for the green economy to flourish this misconception must be changed. Raising awareness of the opportunities available and changing attitudes requires an important communication strategy, but also some solid figures. Showcasing some successful practices in Poland and elsewhere may contribute to this, while supporting the development of the market. This kind of support should be targeted to the individual capacities of each region. For instance, cultural tourism and renewable energies in the Pomorskie region, particularly (offshore) wind and biogas energy; and natural tourism, organic food processing and biomass production in Podlaskie. This could be achieved by:

- Increasing awareness
- Changing behaviours
- Stimulating the demand of green products and services
- Targeting support to sectors according to the capacities of each region

Contribute to job creation in the green economy

The best way to “sell” this new notion of the green economy is through the creation of jobs and the distribution of wealth across the country. It is therefore essential to support business creation, as well as business growth, in the green sectors. Currently SMEs lack the capacity to seize opportunities and adjust rapidly to new demands. In line with this, the education system should provide the labour market with ready-to-work professionals. Strengthening the collaboration between business and universities and technical institutes is essential to achieve this. The exchange of information and continuous monitoring of business needs is required to guarantee the absorption of human capital locally. This could be achieved by:

- Supporting SME development and growth
- Enhancing collaboration between businesses and universities to drive innovations

Ensure the provision of the right skills in the labour market

This is a very important gap identified in the labour market system. There is a mismatch between the skills supplied and the skills demanded. To ensure the provision of the right skills for the green economy, it will firstly be important to strengthen the capacities of labour market institutions (namely at local/regional levels) to collect data, analyse the information and monitor business and industry behaviour. It is also essential that the different actors currently supplying skills development programmes (NGOs, schools, training centres) have access to this kind of information and are acknowledged by the government. The skills required for the green economy are not only formal or technical skills, but also behavioural and attitudinal skills, which are often disregarded. Another key aspect is the need for effort to be made in coordinating information and actions by the different ministries involved in the provision of skills in the labour market at national and regional levels. This could be achieved by:

- Identifying specific skills required in the labour market
- Supporting and recognising training provided by NGOs
- Training the trainers
- Concentrating training in SMEs in areas that create strong opportunities for growth
- Recognising informally acquired qualifications
- Undertaking research on employers to establish the characteristics of certain jobs
- Ensuring better targeting of ESF funds through coordination of efforts

Make better use of the diaspora to anticipate skills

Polish diaspora abroad is an important source of information and skills, currently underutilised. The mobilisation of Polish diaspora abroad would encourage information and knowledge exchange, and would facilitate the identification of innovative approaches to skills anticipation and training for the green economy. It would also allow for Polish diaspora to return with the skills acquired during their stay abroad. In sectors such as construction, shipyards, and manufacturing of green components (e.g. wind turbines) consultation with diaspora could prove efficient in identifying market niches, skills requirement and business opportunities in the green economy that could be developed in Poland. The diaspora could be better utilised for skills and training anticipation, definition and provision. This could be achieved by:

- Consulting with diaspora to identify skills/training used in green sectors abroad
- Incentivising the return of skilled emigrants both internally and externally

Make training more relevant to industries and skills more adequate

Evidence gathered during the study visit showed that training is currently irrelevant to industries, and that the workforce does not seem to meet the needs of green sector businesses in terms of skills, formal qualification or attitudes. Closer consultation with businesses in the development of curricula and the involvement of business representatives in training could prove effective in meeting actual needs. However, flexibility is needed from both sides, i.e. supply (universities, HEI, training centres) and industry (businesses), regarding the best approach to training and the adaptation of curricula. Businesses may be required to provide apprenticeships or internships, while education institutions may be required to quickly incorporate some highly specific topics into their curricula. This flexibility needs to be understood and allowed. It will also be important to green the curricula across disciplines to encourage a wider range of profiles to make a significant contribution to the green economy. A change in attitudes towards “greenness” should be bred from an early stage. This could be achieved by:

- Involving businesses in curricula development
- Making courses more practical, involving industry representatives
- Concentrating on certain areas and creating training in a modular fashion
- Greening the curricula across disciplines

Set definitions and objectives to better support the green economy

It is essential to fully understand the concept of the green economy to ensure support for the initiatives and to encourage economic activity in the right way. The best definition would be that endorsed by the large majority of the social and economic actors in Poland, a definition that reflects the Polish reality, that is realistic in the Polish context, and that belongs to Poland. There is therefore an urgent need for a Polish definition of the green economy, together with a set of objectives. These objectives should be realistic (attainable), measurable and in line with Poland's overall vision for the green economy. The vision should examine realistic opportunities for the green economy in Poland in the middle to long term. The vision, definition and objectives should be well reflected and integrated into the regional economic development strategies and operating programmes. A leader should be identified to ensure coherence and to advance the green agenda. The most successful examples of transitions to the green economy have had a strong leader behind them (e.g. Korea and London). The leader could be nominated or naturally identified. Leadership at both national and local levels should take place. This could be achieved by:

- Developing a definition of the green economy in consultation with public and social actors in Poland
- Integrating the definition of the green economy into regional economic development strategies and operating programmes
- Clarifying visions and setting measurable objectives
- Identifying a leader

Build capacities on the green economy

Identified throughout the review was a lack of awareness on the green economy and the possibilities that exist to green the economy while creating wealth. It is essential for Poland to raise awareness of the benefits of a green economy, highlighting success stories and showcasing the economic profits. The population must also be better informed, and changes in households, and the workforce in general, should start with greening at an early stage. Facilitating the identification of green products, energy-efficient alternatives and new market opportunities will also be essential. Eco-labelling and green certification should be clearly defined and consumers should be educated. This will ease the identification of products and increase demand for green products. Institutional capacity is also essential. Public authorities and managers of labour market institutions should be well informed of the definitions, objectives and vision, as well as being formally trained (possibly through ESF Funds) to ensure the effectiveness of policy implementation and better support business development. This could be achieved by:

- Raising greater awareness of the full scope of the green economy
- Greening from an early stage
- Educating the public on eco-labelling and green certification
- Training regional government and ESF staff to better support green businesses

Improve the coordination of policies and programmes

To move forward a new policy for economic growth, it will be essential to coordinate efforts among the ministries responsible for the different aspects involved. This can only be made possible if education,

employment and economic growth policies are better linked, at national and regional levels. Regional partnerships are also an effective mechanism for bringing together social and economic actors around a specific project (in this case a new economic agenda) and in implementing the actions required to move the agenda forward. The WIRED model in the USA is a good example of this. This could be achieved by:

- Better linking education, employment and economic growth policies for the green strategy
- Helping nurture and sustain regional partnerships

Effectively support the development of green markets

It will be important to make industry data available (e.g. which industries are growing, which are shrinking) and to analyse this data to define the needs of emerging green industries and to determine whether policies and practices currently in place are unnecessarily impeding their development. It will be important to make processes more efficient and less bureaucratic to facilitate the expansion of new industries and the creation of businesses in these sectors. Businesses may also benefit from having easy access to information on support schemes, technical assistance, financing and market perspectives in one single place. The creation of “one-stop” help centres may prove effective. Expanding public procurement processes to support green businesses and lead by example is another way in which business development in the green economy could take place. The example of Toronto public schools is interesting in this context. This could be achieved by:

- Forming a taskforce to examine the needs of emerging green industries identified in this report
- Facilitating access to support schemes and information for businesses
- Expanding the procurement process to support green businesses

Support green entrepreneurship

Business creation and the culture of entrepreneurship need to be stimulated throughout Poland. Some good practices were identified, but there is not enough critical mass to transform the economy in a homogeneous way. There is therefore a need to provide entrepreneurs and small business owners with tools and support schemes tailored to the green economy. Access to finance is also an important aspect. Private capital, but also public funds (for instance through R&D lines or ESF), should be made available more easily to businesses. Subsidies and grants should also be considered. Targeting key sectors (such as those identified in this report) and their supply chains could prove effective in expanding businesses in the green economy, and thus, in creating jobs. This could be achieved by:

- Establishing local green incubators to support green entrepreneurship
- Increasing access to financing for green entrepreneurship and business growth
- Extending subsidies to support energy-efficient practices
- Supporting the development of supply chains in key sectors

Make efficient use of ESF Funds to support the green economy

The utilisation of ESF Funds to foster a green economy in Poland could be made possible if actions are targeted in the right way. As mentioned above, there is an urgent need to strengthen institutional

capacities on issues relating to the green economy, ensuring that ESF Fund managers and other labour market representatives are well aware of the definition, vision and objectives of the green economy, and that their actions are targeted in line with a clearly defined strategy. However, an opportunity could be missed if ESF Funds are not made available to businesses in terms of subsidies, grants or even indirectly (through training and investments in technology), as it is businesses that will essentially create wealth and jobs from their green activities. This could be achieved by using ESF Funds to:

- Create and build a data collection system
- Strengthen green public and corporate procurement
- Enhance green standards
- Conduct energy audits
- Facilitate access to capital
- Build institutional capacities
- Provide green entrepreneurship programmes
- Classify skills and provide tailored training
- Raise awareness on the green economy

CHAPTER 1: THE GREEN ECONOMY IN POLAND

General socio-economic facts and figures

The two focus regions of this study, Podlaskie and Pomorskie, are located in different areas of Poland, each perceived as having opposite development tendencies. Pomorskie, in the North, is perceived as having a more vigorous approach to the economy, while Podlaskie, in the so called Eastern Wall, is an economically challenging region. The analysis of GDP trends in Poland and in the two regions shows that both regions have a similar evolution (see Table 1). The problem exists, however, in the relatively low level of GDP per capita in Podlaskie, which represents about 70% of averages in Poland and in Pomorskie.

Table 1. Key GDP Indicators

	2000	2001	2002	2003	2004	2005	2006	2007
	Average GDP per capita (in PLN current prices)							
Poland	19 458	20 380	21 149	22 075	24 215	25 767	27 799	30 873
Podlaskie	14 642	15 796	16 348	16 756	18 054	19 075	20 396	22 896
Pomorskie	19 332	19 973	21 104	21 704	23 619	25 308	27 373	30 396
	Share of regional GDP in National GDP (in %)							
Podlaskie	2.38	2.45	2.44	2.40	2.35	2.33	2.30	2.32
Pomorskie	5.63	5.57	5.69	5.63	5.60	5.65	5.68	5.70

Source: Computations on base of Regional data bank of GUS

The main economic sectors in the two regions differ greatly. Podlaskie has a substantial rural population, with one-third of total employment in agriculture. Manufacturing and commerce together constitute a similar proportion of total employment, again around one-third. Podlaskie has a relatively low level of employment in information and communication, hotels and restaurants, financial services, real estate, and professional business services. In public services, such as administration, education, and health, the level of employment in Podlaskie is comparable to that in Pomorskie or in Poland as a whole.

On the other hand, Pomorskie represents a relatively modern structure of employment (by Poland's standards), with a significantly higher proportion of employees in services, manufacturing, construction, commerce, and education. Figures for Pomorskie seem to be more beneficial for economic development than average figures for the country as a whole.

When the creation of gross value added (GVA) is taken into account, the two regions are again different. In Podlaskie, 10% of the income generated comes from agriculture, although this sector does not play a substantial role in Poland or in the Pomorskie region. "Other services", which typically include public services (e.g. education, public administration, security and defence), create much more gross value added in Podlaskie than in Pomorskie or in the country as a whole. The data also shows that the average

GVA created per employee in Podlaskie is 22% lower than the national average. The reason for this is a high proportion of agricultural employment, which does not provide high values.

The results for Pomorskie build a picture of a much more modern structure of value creation than general in Poland. A key observation is the more significant role of market services in value creation. On the other hand, Pomorskie's figures are mainly high due to the low percentage of the population employed in less effective sectors, like agriculture. In both regions, commerce and services play a key role in the creation of value. Manufacturing generates more value in Pomorskie (22.2%) than in Podlaskie (18.2%).

The important role of agriculture means unemployment in Podlaskie has remained lower than in Pomorskie and in Poland as a whole. In hard times, the rural population who lost jobs in manufacturing, trade and services, declared themselves as being employed in agriculture to continue to be insured in terms of both healthcare and pensions. Since 2004, with Poland's accession to the EU, the unemployment rate has been decreasing continuously, due to strong immigration tendencies among young people and the gradual growth of the national economy.

In conclusion, the two regions in Poland differ largely because of their contrasting regional characteristics (see Table 2):

Table 2. Regional characteristics of Podlaskie and Pomorskie

	Podlaskie	Pomorskie
Geographic location	Far east of Poland	North of Poland, along the Baltic coast
Demographics	Declining population (-3% between 1998 and 2009). Substantially rural. Largest regional area is Bialystok (295 000 inhabitants). Dominated by small towns. High proportions of very young and elderly. Outmigration.	Increasing population (+2% between 1998 and 2009). Much of the population (1 million) located in tri-city metropolis (Gdansk, Sopot, Gdynia). Double the population of Podlaskie. Higher proportion of active people.
Sectors of economic significance	Agriculture is dominant – accounts for one-third of regional workforce and one-tenth of regional GVA.	Based more on the manufacturing and service sectors, notably: tourism, electronics, machinery, and food processing.
Employment	Unemployment rate was 10.8% in 2010 compared to national average of 9.6% - likely to be underestimated given large proportion of workers do not self-declare as unemployed, but are only seasonally employed and largely subsistence workers.	Unemployment rate was 9.2% in 2010, a little below the national average of 9.6%.
Enterprises	Growing number of enterprises, but entrepreneurship levels lower than national average.	Growing number of enterprises and entrepreneurship levels above national levels.
Investment	Economy heavily dependent on national and EU subsidies. Investment mainly in manufacturing. Lower levels than national average.	Investment mainly in manufacturing, with higher levels than national average. Important investment rates in construction and real estate.

According to an OECD report¹, the gender gap in median earnings of full-time employees in Poland was the third lowest in the 21 OECD countries analysed (after New Zealand and Belgium). In 2004 the unemployment rate of women in Poland was the highest of all OECD countries (around 20%), although the unemployment rate of men in Poland was also the highest among OECD members (around 18%). Women occupy less paid jobs in relation to men and hence have lower wages. There are no figures for women participating in particular sectors of the economy.

However, a number of issues are common to both regions:

- Both regions observe economic growth on a similar level to the Polish average and a growing number of registered enterprises.
- There is a perception of major trade-offs between environmental protection and economic development. Environmental regulation is seen as a barrier to economic development, with Natura 2000 designation being regarded as a hindrance rather than a help in creating ‘green jobs’.
- Coal has been a relatively popular source of energy for Poland in the last few decades, as well as a driver of economic growth, and the shift towards increasing the share of electricity produced by renewable energy sources has not been welcomed by all.
- The “green economy” is a very new term in Poland and some stakeholders still view this policy area with scepticism about the real motivations behind so-called “ecologist movements”. The environment is also considered to be a low priority in comparison to other policy areas.

Employment in the green economy in Poland

Problems with definitions

There is no official definition of the green economy, green jobs, or green economic sectors in Poland. An attempt to define green jobs was made by the non-governmental organisation Instytut dla Ekorozwoju (Institute for Ecological Development), which defined green jobs as follows:

“Jobs resulted of capital and non capital investment undertakings which ease the pressure from the economy and public utilities on environment. Green jobs can be created in each economic sector, the condition being that the workers should be directly or indirectly involved in the improvement of the environment in a given area and operating against the environmentally harmful activities both in the short and the long run.”²”

This broad definition definitely constitutes a first attempt at defining green jobs. However, in Poland there is a very formal system of defining economic activities based on statistical classification (PKD). Classifications can only be made by the statistical office (GUS), but such classifications are not adjusted to the new issue of the green economy and official definitions can only be created by a Parliamentary bill. Because the green economy, green jobs or green sectors of economy have no official classification, there are no broad opportunities to designate funds to support these areas.

Measurement of green employment in Poland

In 2007 the Foundation of Natural Resources and Environmental Economists (Fundacja Ekonomistów Środowiska i Zasobów Naturalnych) audited employment in the sphere of environmental protection and indicated areas where green jobs are present. The estimates for Poland are presented in Table 3 below.

Table 3. Employment in environmental protection in Poland (2007)

Area of work	Number of workers
Air and climate protection	46 874
Sewage treatment	27 484
Waste disposal	75 683
Soil, surface and underground water protection	9 003
Noise and vibration protection	1 940
Landscape and biodiversity protection	2 050
Protection from radiation	5 668
R& D	13 838
Other environmental products and services	118 411
Water management	36 692
Forestry	1 747
Wildlife management	6 497
Mining products management	9 681
Raw material management	11 173
Other	1 985
Total	373 832 persons (circa 2.5% of Poland's total workforce)

Source: Fundacja Ekonomistów Środowiska i Zasobów Naturalnych

The Foundation's estimates are based on existing statistical classifications, which exclude renewable energy, green marketing, green public procurement and other activities typically included in the green economy.

Education and training in the green economy

There is limited data available in Poland on skills and training provision. This is even more so in the context of the green economy. The following is a description of the main information available:

Good participation in higher education. Poland is one of the leaders in Europe with regard to the percentage of students continuing secondary education to university level. The total number of higher education students is maintained at around 1.8-1.9 million per year. This seems to be a very high proportion when compared to a total population of 38 million. The high participation rate has been achieved thanks to private higher education institutions, which have created competition for state schools. These private institutions are not too costly and are easily accessible, allowing students to enrol in evening or weekend courses, which enable them to better reconcile work and studying.

Double in postgraduate students within last 10 years. The number of postgraduate students is also increasing, mainly due to the support of the public authorities and a strong tendency of continuing education. In Poland, the number of postgraduate students doubled within the last 10 years. In Pomorskie, the increase was even higher than the Polish average and tripled. In Podlaskie annual changes were very substantial, but in 2009 the number of trained students was double in comparison to 1999.

Participation in life-long learning remains low. With regard to life-long learning, numbers are on a slight increase in Poland and stable in both regions. Around 3-4% of the population aged 24-65 participates in some form of learning. This means that within a five year period around 15-20% of the adult population will attend some kind of education or training course. These figures could be higher. There have been no updated surveys since a Eurostat survey in 2001. Podlaskie's figures for occupations, critical for economic development, are substantially lower than in Pomorskie and lower than average figures for Poland as a whole.

Education sector does not provide certain qualities valued by employers. As demonstrated by the research 'Skills for the future'³, in Poland, higher education institutions provided skills in communication, team work, problem solving, and enterprise to only 50-70% of the level required by enterprises, constituting a very broad spectrum of problems. Two key areas with the largest identified gaps were interpersonal skills and enterprise and initiative skills. Learning skills and technology skills were provided at a better rate. This shows that, in general, Polish universities cannot offer the practical skills that are highly valued by companies and that provision is only at a moderate level.

Little formal education in green skills. In Poland, and in the regions, there is no analysis of the skills required in the green economy. Public and private schools supply environmental protection graduates who have significant problems finding jobs. There are two graduate profiles: 1) environmental engineering and 2) environmental public administration. The profile of environmental business is not represented in educational curricula in either of the two regions.

Training in SMEs is still a problem. The Polish Agency of Enterprise Development (PAED) survey shows that more than one-third of Polish SMEs do not participate in any training. Two key training areas for SME employees include professional issues and accounting/finance. Management training attracts only 4% of enterprises. This data was also confirmed at the regional level. A recent OECD study⁴ shows that data for the Zagłębie Sosnowieckie Sub-Region does not differ significantly from the national average. The OECD report indicates that the most common type of training undertaken by enterprises was linked to compulsory courses on occupational health and safety. However, 41.7% of companies that did participate in training participated in specific vocational training. This is undoubtedly linked with the specific characteristics of the regional economy, which is dominated by the manufacturing sector (mechanic and electro-mechanic production). Companies involved in innovation tend to participate in vocational training more often. Participation rates in courses related to management, accounting, finance and IT are very low. The need for entrepreneurial skills and social skills is surprisingly high, but companies rarely participate in courses developing these skills. The perception of the outcomes of training is also rather negative. The most striking feature of the responses received was a lack of belief in the positive benefits of training in terms of economic benefits for a company (such as competitiveness, productivity, innovation, etc.).

National policies that impact the green economy

National Programme for Reducing Greenhouse Gas Emissions

The *National Programme for Reducing Greenhouse Gas Emissions* is under preparation by the Ministry of Economy, which launched a public consultation on the *Draft Guidelines of the National Programme for Reducing Greenhouse Gas Emissions* in June 2010. The proposed programme aims to identify actions to reduce greenhouse gas emissions across the country in the most cost-effective way. It aims to penetrate all areas where it may be possible to achieve a reduction in greenhouse gas emissions, including the modification of essential approaches to certain activities or by profound changes to society's thinking and behaviour. These additional two objectives provide that the reduction of emissions will be the economic leverage for stimulating economic development, and that the reduction of emissions will be made on the basis of the most cost-effective principle.

Energy Policy until 2030

An understanding that Poland must relinquish its strong dependence on coal forced the government to introduce the Energy Policy until 2030 (Warsaw, 2009) prepared by the Ministry of Economy. The issue of renewable energy sources plays an important role in the policy. Presently, it is the key policy in this particular area, although it must be underlined that the Ministry of Economy is working on the Renewable Energy Sources Act, which will be under public consultation in 2011. Within the Energy Policy until 2030 the government set up the following objectives:

1. Increasing the use of renewable energy sources to at least 15% of total energy use in 2020 and further increases in the following years;
2. Increasing the market share of bio fuels to 10% of the total transport fuel market by 2020, and increasing the use of second generation bio fuels;
3. Protecting forests against overexploitation in order to obtain biomass, and pursuing balanced use of agricultural areas for production of renewable energy sources, including bio fuels, so as not to create tension between renewable energy production and agriculture and to preserve biodiversity; and
4. Using the existing weirs owned by the State Treasury for power generation;

These objectives seem to be realistic on the condition that the public authorities facilitate the process, supported by the use of public resources (both Polish and EU funds).

In Poland, energy turnover is based on simultaneous transactions in physical energy and certificates of origin. Renewable energy producers receive about 255 PLN per 1 MW/h of green certificates and about 160 PLN for physical energy (2009). The certificates of origin are available on the market. When an energy seller is unable to supply enough certificates, they must pay a substitution fee to the National Fund of Environmental Protection, which, as a rule, must support new investment in renewable energy. The fee creates a ceiling for the price of buying certificates on the market. The introduction of third party access (TPA) increased the number of entities participating in the trading of energy with ecological certificates of origin.

There are three types of certificates of origin: **Green Certificates**, which concern energy originating in renewable energy sources, which all energy sellers (to final clients) should submit to the Office for Energy Regulation for liquidation; **Yellow Certificates**, which concern energy originating in the cogeneration of energy and heat in small units below 1 MW with gas as fuel; and **Red Certificates**, which also concern energy originating in the cogeneration of energy and heat from remaining energy sources. Up until now, the system of trading certificates and physical energy in parallel did not lead to a significant increase in energy production from renewable sources. The share of renewable energy in overall energy production increased by 2.5% over the last 5 years, reaching 7.5% of total energy production in 2009. The Ministry of Economy is working on a new substitution fee system, which will eliminate the sudden changes of this fee, and on stronger motivators for investing in renewable energy sources instead of facilitating the energy trade alone. The Ministry is also working on the *Renewable Energy Sources Act*, which plans to promote renewable energy more effectively than regulations contained in the *Energy Law*. The draft law is expected in 2011.⁵

Polish National Energy Conservation Agency

The Polish National Energy Conservation Agency (KAPE) was created in 1994 to facilitate the conservation of energy processes. KAPE's mission is to develop and implement principles for the

attainment of sustainable energy policies in Poland. KAPE's activities focus on the development and implementation of various projects, consultancy, and training and expertise, such as: (1) sustainable development in buildings (e.g. thermo modernisation of buildings and heating stations); (2) sustainable energy policy (e.g. renewable energy resources, energy saving transport); (3) environmental protection issues connected with energy processes (e.g. most efficient energy-saving technologies); (4) municipal policy on sustainable development and energy planning; (5) promotional campaigns aimed at better social understanding of sustainable energy policy; and (6) financing small energy investments in the fields of energy conservation and renewable energy sources. The National Fund for Environmental Protection is KAPE's largest shareholder and KAPE's activities are located within the Fund's scope of interest.

National Fund for Environmental Protection and Water Management

In Poland, environmental issues are regulated by fees for using the environment. Fees are paid for: (1) the emission of dust and gases into the air, (2) the use of water from deep or surface sources, (3) the introduction of sewage into ground water, and (4) the storage of waste. Each business or organisational unit has to pay fees for using the environment. Use of the environment is regulated by permits. Any action taken without the correct permit leads to a 500% increase in the basic fee, which acts as a form of penalty. The cost of fees is increasing over time, forcing enterprises to eliminate the high level polluters. The fees and penalties for using the environment are managed by the National Fund of Environmental Protection (and Water Management), which funds different investments aimed at improving the quality of the environment. The NFEP is a key resource for financing new sewage treatment plants, water purification and delivery, noise reduction initiatives and other essential amenities for local communities. Recently, top priority has been given to investments related to improving energy efficiency and using renewable energy sources. The Fund's resources are available for small local communities, leading to significant improvements in even the most distant locations. It must be stressed that most of the loans granted to improve water delivery and sewage purification are paid back and that NFEP funds are growing over time.

Green Investment Scheme in Poland (using resources from the Kyoto Protocol)

The operating entity for the Green Investment Scheme in Poland is the National Fund for Environmental Protection and Water Management (NFEP&WM). The tasks of the NFEP&WM include, among others: supervising the implementation of programmes and projects and assessing the environmental benefits achieved, concluding grant agreements with the beneficiaries of the scheme, and exercising control over the beneficiaries' use of resources. Within the green investment scheme four priorities were accepted: (1) energy management in public buildings, (2) agricultural biogas works, (3) biomass heat and power plants, and (4) construction and reconstruction of electricity networks for connecting renewable wind energy sources. Each priority has a detailed description and an action plan for implementation. Implementation is in its very initial stages.

Green Procurement Policies

Green Procurement Policy can be understood as the inclusion of environmental standards in procurement rules to support the purchase of environmentally friendly products or products produced in an environmentally friendly way. In Poland, public procurement is managed by a de-centralised system whereby each purchasing entity can use its own terms of reference for responsible buying. Public procurement is regulated by the *Law of Public Procurement*, which reflects two EU directives 2004/18/EC and 2004/17/EC. These directives have been modified and, at present, include numerous provisions on green procurement. In 2006, the first *National Action Plan for Green Procurement 2007-2009* was elaborated. The Public Procurement Office (PPO) dedicated a significant part of its web page to information on the practice of green procurement, including a Polish translation of the EC Handbook on Green Procurement Practices. The web page contains a wide range of information on EU initiatives,

regulations, and criteria in green procurement; links to sources on green procurement; contacts; and a description of the brand new *National Action Plan for Sustainable Public Procurement for 2010-2012*.

The National Plan provides for an increase in green procurement to 20% in 2012 and the stimulation of public authorities to “buy green”. Detailed objectives listed in the Plan include the following: (1) increase the number of people trained in green procurement by 20%, (2) increase of the number of business entities which possess ISPO 14001 or EMAS standards by 20%, and (3) increase the number of domestic products labelled with Polish Ekoznak or EU Ecolabel by 50%. In order to achieve these goals, the PPO plans to use a variety of publicity and training measures. National public procurement law does not include EU provisions on green procurement, but provides advice on opportunities for greening procurement (e.g. the use of environmental criteria in supplier tenders, allowing for the exclusion of suppliers who produce goods or services in a way that is harmful to the environment).

Ecolabels and Standards

Ecological labelling. Poland has a number of certifying institutions, including the Polish Centre for Testing and Certification (PCTC), which provide different types of eco-labels to products that meet high ecological criteria. The PCTC provides certification for eco-labels and for the Polish Ekoznak, which certifies ecological agriculture and others. Various other organisations have their marks. The National Fund for Environmental Protection and Water Management supports the certification in eco-labels and in Polish Ekoznak, providing 50% of subsidy to the cost of certifications. The process of promotion of eco-labelling is developing gradually and a critical mass is to be achieved.

Ecological standards. As concerns ecological standards (e.g. ISO 14001, EMAS, HCCP), since EU accession, the government has provided a broad support for the introduction of environmental standards and a critical mass of Polish enterprises introduced them up to now. This assistance is still provided and all enterprises requiring and applying for support are likely to obtain it.

Regional programmes that impact the green economy

The significant part of green economy regulations is a new issue and the advancement of the concept in Poland is low to moderate. There is a perception that the green economy is more connected with environmental protection only which makes the population more reluctant. This is true also for both regions.

Programmes and supporting institutions in Podlaskie

The Regional Operational Programme (ROP) for Podlaskie 2007-2013 specifies priority No 5.1. as the “Development of regional infrastructure for environmental protection”. The objective of this priority is to implement projects to: improve air quality, improve water supply systems, improve the quality of underground and surface waters, minimise quantities of waste produced and introduce methods for recycling and neutralising, manage the natural environment, develop ecological awareness, and grow unconventional sources of renewable energy. The ROP identifies the following intervention categories: wind, solar, biomass, hydroelectric, geothermal and other, municipal and industrial waste management, drinking water (management and distribution), water-sewage management, air quality, sewage treatment, promotion of bio-diversity, and environmental protection.

The ROP provides for the annual support of 4 projects on renewable energy and 4 projects on air quality improvement, in a bid to fight climate change. Only the results for renewable energy are listed. The increase in energy from renewable energy plants is expected to be 5 MW per year. This will result in a total of 35 MW at the end of the programme period in 2013. The programme lists the example projects that could be realised under this priority. The Podlaskie Region also lists the projects that were or are financed

under this priority. A list published on the regional government's webpage (wrotapodlasia.pl) shows 30 projects that aim at improving air quality by thermo isolation (mainly schools and hospitals), and no projects on renewable energy (a total of PLN 40 million). The ROP's resources facilitate the improvement of both air quality and local finances. There are numerous local initiatives, in the form of projects or small business entities, but neither their size nor impact have substantial financial importance. Local initiatives include the following: 2 051 ecological farms (or farms applying for green certification), 11 eco tourism entities (mainly small hotels and B&Bs), and the Green Technologies Centre (GTC) which has been completed and financing has been exhausted. A contact point exists at the Association of Nature Station Narew), Cluster of Green Technologies (agreement signed by 41 enterprises. There are no visible results of this Cluster's operations as yet), 3 small wind farms, and 17 bio mass producers⁶. These projects were co-founded using ESF Funds. It is important to mention, however, that there are only ERDF funds within the Regional Operational Programme.

In addition, there are numerous educational and promotional programmes showcasing environmentally friendly businesses and activities. The regional government's webpage indicates the organisations that conduct ecological operations in the Podlaskie region. The list includes:

1. Instytut Paliw i Energii Odnawialnej (Europejskie Centrum Energii Odnawialnej) – Institute of Fuels and Renewable Energy (European Centre for Renewable Energy), Warsaw.
2. Fundacja Ekonomistów Środowiska i Zasobów Naturalnych – Foundation of Environment and Natural Resource Economists, Białystok, Podlaskie. Conducts numerous activities including research and editorial activities.
3. Fundacja Na Rzecz Odzysku Aluminiowych Puzek Po Napojach Recal – Foundation for the Recovery of Aluminium Cans, Warsaw. Promotes the recycling of cans.
4. Fundacja na rzecz Efektywnego Wykorzystania Energii – Foundation for the Effective Use of Energy, Katowice, Silesia, South Poland. Promotes new types of energy.
5. Fundacja Nasza Ziemia - EkoEdukacja – Foundation of Our Earth – Eco-Education, Warsaw. Promotes of eco education.
6. Fundacja Partnerstwo dla Środowiska – Foundation Partnership for the Environment, Krakow, South Poland. Promotes environmentally operations.
7. Fundacja Wspierania Inicjatyw Ekologicznych – Foundation for the Support of Ecological Initiatives, Krakow, South Poland. Promotes educational activities.
8. Fundacja Zielone Płuca Polski – Green Lungs Foundation of Poland, Białystok, Podlaskie. Created by 4 regions in north-eastern Poland. Promotes and educates on renewable energy
9. Greenpeace Polska – protection of the natural environment, Polish headquarters, Warsaw
10. Instytut Na Rzecz Ekorozwoju – Institute for Eco Development, Warsaw. Research and editorial activities in environmental protection.
11. Klub Gaja – protection of the environment, Bielsko-Biała, South Poland.
12. Klub Przyrodników – Club of Naturalists, Swiebodzin West Poland. Promotes environmental protection.

13. Liga Ochrony Przyrody – Nature Conservation League, Podlaskie. National nature conservation organisation.
14. Narwiańskie Towarzystwo Ochrony Środowiska – Narvian Association of Environmental Conservation, Uhowo, Podlaskie Region. Undertakes education and research on the introduction of animals into the National Park.
15. Ogólnopolskie Towarzystwo Ochrony Nietoperzy – Polish Association for the Protection of Bats, Łomianki, Central Poland.
16. OTOP – Ogólnopolskie Towarzystwo Ochrony Ptaków – Polish Association for the Protection of Birds, Podlaskie regional office in Trzcianne, Podlaskie.
17. Polska Zielona Gospodarka – Polish Green Economy. Internet portal <http://www.environet.eu/pzg/podl.htm>, with latest data on the Podlaskie Region from 2006.
18. Polskie Towarzystwo Botaniczne – Polish Botanical Association, regional branch in Białystok. National organisation for research and education.
19. Polskie Towarzystwo Ochrony Przyrody SALAMANDRA – Polish Association of Nature Protection SALAMANDRA, Poznań, West Poland. Environmental protection and education.
20. Stowarzyszenie na Rzecz Ekorozwoju Agro-Group – Association for the Eco Development Agro-Group, ecological project management, headquarters located in Białystok, Podlaskie. Education, agro-tourism, promotion of responsible buying.

Most of the ecological organisations conduct some activity in Podlaskie, although their headquarters may be located outside the region.

Programmes and supporting institutions in Pomorskie

The Regional Operating Programme (ROP) for the Pomorskie Region 2007-2013 sets Priority 5 as “Environment and environmentally friendly energy”. Under this priority are two sub-priorities: 5.4. the increase of renewable energy sources and 5.5. the improvement of systems for the production and transfer of energy. It must be underlined that the ROP for Pomorskie reflects the *Regional Energy Strategy 2006*, a very detailed document, which takes into account renewable energy and builds a long-term regional vision for the reduction of greenhouse gas emissions. The *Regional Energy Strategy* provides for the following reductions in gas emissions by 2025: CO₂ by 55%, SO₂ by 70%, NO_x by 54%, dusts by 75%. The strategy lists detailed actions to be taken to achieve these targets. The strategy was adopted in 2006 and its provisions are reflected in the ROP.

In addition, there are numerous local initiatives aimed mainly at education and the reduction of energy consumption. These initiatives may use resources from the National Fund of Environmental Protection within the numerous programmes provided by the Fund or its regional subsidiary. Based on an Internet search and telephone calls to environmental professionals, a list of the key initiatives in this area is presented below.

1. Bałtycki Klaster Ekoenergetyczny – Baltic Cluster of Eco Energy. An agreement between 14 local and regional governments, 8 research institutions, and over 50 businesses (numbers are still growing) and the Scientific Council (led by Jerzy Buzek, Speaker, European Parliament), to promote ecological energy, mostly renewable energy. The Cluster focuses on the realisation of projects, based at the Institute of Fluid-Flow Machinery within the Polish Academy of Sciences.

The Institute provides accommodation for the secretariat and partly finances the administrative staff. The Cluster does not deliver its own services to its members, and the operation up to now has been based on the fulfilment of a couple of research and educational projects, financed by the European Social Fund. The Cluster is supported by the State Institute, which bodes well for its chances of survival.

2. Pomorski Klaster BioEcoChemiczny – Pomeranian BioEcoChemical Cluster. Created within the project financed in 2006-2008, the aim of the Cluster is to assist in the development of biotechnological, environmental and chemical businesses. The Cluster's website is: <http://www.bioecochem.pl> . On the website only 3 firms are named as members of the Cluster. BioBaltica is applying for funds to build a large centre of 27 laboratories. At present the cluster initiative is in its initial stages.
3. Centrum Informacji i Edukacji Ekologicznej w Gdańsku – Centre for Information and Ecological Education in Gdansk. Conducts numerous educational programmes for young people and adults. Provides environmental information on initiatives and organisations dealing with ecology.
4. Bałtycka Agencja Poszanowania Energii S.A. – Baltic Agency for Energy Conservation PLC. Deals with the promotion of energy conservation, energy audits, thermo isolation design and projects. Has conducted several international projects (e.g. in training). Now operating as a commercial entity. Small scale.
5. Eko-Net.pl – environmental portal conducted by the Gdansk University of Technology. Information source for training, ISO 14001 certification and different educational and professional initiatives for environmental specialists.
6. Polish Association of Wind Energy. Promotes and educates on the work of the wind energy sector. The association is also working on the creation of the Baltic Coastal Wind Energy Cluster (project BOSEC) in Gdansk, which is in its very initial stages.
7. Stowarzyszenie Gmin Przyjaznych Energii Odnawialnej – Association of Municipalities for Renewable Energy. With its headquarters in Kobylnica, near Słupsk, Pomorskie, the Association unites 28 municipalities, of which 12 come from Pomorskie. Promotes renewable energy in municipalities and rural communities.

Most of the initiatives are not particularly advanced, as they are dependent on project money, and characterised by institutional weaknesses.. During a meeting with many of the organisations in Gdansk, specific divisions could be observed. A significant number of the organisations are only operating thanks to green enthusiasts who devote their private time to developing new activities. The second type of NGO is driven 100% by public funded projects. The latter are much more similar in nature to business entities and operate only when they receive funding.

Policy system for the green economy

National level

At present, the policy system for the green economy is under construction. The Ministry of Economy is responsible for building policy on the reduction of gas emissions, although plans in this area are still far too general and there is not enough attention to detail. To achieve greater success in developing the green economy and the renewable energy sector, it will be necessary to simplify administrative procedures to allow for the start-up of such activities and to provide a rational system for investment. One of the largest problems in Poland is the administrative burden in starting renewable energy investments. Another

problem is that there is no effective system to support renewable energy using money from the National Fund of Environmental Protection generated by fees from certificates of origin.

Different agencies responsible for entrepreneurship and environment protection. The introduction of green economy principles requires the link-up of entrepreneurship skills and knowledge on how to use the environment in a non-harmful way. At present, entrepreneurship support policy is designed by the Ministry of Economy and implemented by the Polish Agency for Enterprise Development (PAED), whereas environmental protection policy is designed by the Ministry of Environmental Protection and implemented by the National Fund for Environmental Protection and Water Management (NFEP).

Shortage of collaboration between executive agencies. Key to building a policy system for the green economy is effective collaboration between the Ministry of Economy and the Ministry of Environmental Protection, together with collaboration between their executive agencies. At present, NFEP mainly cooperates with local and regional authorities, while PAED mainly works with entrepreneurs on SME development. It seems that the combined efforts of these two agencies could prove more fruitful than working separately. Both executive agencies are successful in their own core business operations, but neither has yet been effective in supporting green economy enterprises.

Training green employees in entrepreneurial skills. The green economy needs trained specialists in different fields, particularly business administration/economics and environmental protection or environmental engineering. Matching business/economics training and education with environmental protection skills can provide highly qualified specialists for the green economy. The green economy definitely requires better promotion, more practical training, and better advisory services for small and medium-sized enterprises. Public financed advisory services for SMEs in the green economy seem essential to achieve the goals of the public programmes.

Lower cost of equipment can support new investment. At present, most of the investment in renewable energy comes from the installation of equipment from abroad. This equipment is either costly or out-dated. To achieve better cost-benefit ratios, more production should take place in Poland for cheaper access to materials and machinery. This requires support for start-ups in such production areas. It also means that instead of simply supporting SMEs in general, some spheres connected with renewable energy or the green economy should be better supported than they are currently.

Regional level

Both regions address green economy issues across two areas. The first is environment and infrastructure, as part of the Regional Operational Programmes, and the second is support for entrepreneurship. The same policies are represented at national level. Regarding environment and infrastructure, key priorities are improving water and sewage systems and reducing of energy consumption in public buildings. Typically, in Podlaskie, the majority of resources went to local municipalities and hospitals to finance the thermo modernisation of schools, kindergartens and health centres, under supervision of the counties. In Podlaskie, cooperation between regional and local authorities focused on the reduction of heating costs. In Pomorskie, out of four key projects financed by the Operational Programme for Infrastructure and Environment (indicative list), three were concerned with waste treatment and one with anti-flood infrastructure. The other 25 projects submitted did not include any concerned with renewable energy, green labelling, or green job infrastructure. Within the Regional Operational Programme nearly all projects that obtained financing were concerned with water and waste management.

Low advancement of environmental infrastructure impedes green economy funding. It seems that there is much to be done in both regions regarding the low levels of capital investment in environmental infrastructure. There is a need in both regions to invest in the following environmental

priorities: 1) Water supply, 2) Sewage treatment, 3) Energy conservation, 4) Waste treatment, 5) Other activities (including those related to the green economy). It seems that until the first four priorities are achieved in substantial scope, there is no real chance that regional and local authorities will be involved in green economy activities. Of course, at the local and regional levels there are numerous small projects and programmes to support agro tourism, environmental education, and protection of the environment, but they are aimed more at shaping sensitivities to environmental issues rather than achieving goals that can be quantified in terms of numbers of jobs, sales of environmental friendly products etc.

Very low commitment of the educational sector to green economy education. In both regions there are powerful educational institutions, which teach bachelors and masters qualifications in environmental protection. Graduates can perform the roles of administrative officers working in public administration, or engineers dealing with the construction of environmental infrastructure. The priorities of the educational institutions are in line with the priorities of local and regional authorities, but they only slightly touch on the issue of green economics. A significant number of graduates cannot find jobs in the field of environmental protection because there are no vacancies. It seems that all regional departments teaching in environmental protection could combine with business or economics to improve opportunities for graduates.

Regional Funds of Environmental Protection play a key regional role. Important players at the regional level are the Regional Funds of Environmental Protection and Water Management. They exist in both Podlaskie and Pomorskie and manage 65% of all funds collected from fees and penalties for environment use at local levels. They mirror the activities of the National Fund and are members of financial pools providing financing for local environmental projects. Since 2010, Regional Funds are self-governmental bodies collaborating with Regional Authorities. In fact, they are subordinated to the regional authorities but must perform their activities according to national regulations. There is no barrier in either region to financing more renewable energy and green economy projects from the Regional Funds, but it would require changing priorities.

Overall assessment of the green economy

SWOT Analysis of Poland with respect to the green economy

STRENGTHS	WEAKNESSES
1. Significant results of energy conservation programmes at national and regional levels – strong positive demonstration effect	1. Vague and unclear policy on renewable energy that does not allow for the development of this sector
2. Powerful higher education institutions in the majority of regions, highly adaptable to new conditions, and ready to take on new training and educational projects in the area of green economics	2. Administrative barriers to renewable energy installations and investments
3. Growing sensitivity of younger generation towards environmentally friendly life and consumerism (green labelling and standards)	3. Inability to build a reasonable strategy for coal mining and energy produced by coal
4. Growing interest of consumers to buy energy efficient items and equipment (e.g. reduced usage of electricity, water, fuel)	4. Strong social resistance against closing traditional high carbon electricity plants and difficulty of public authorities to set up a clear policy in this area
5. Growing sensitivity towards the introduction of green or sustainable public procurement at national, regional and local levels.	5. Growing coal consumption in developing countries that makes the climate friendly policy ineffective on a global dimension – strong negative demonstration effect
6. High interest in wind electric power installations, both domestic and foreign.	6. Weak cooperation between executive agencies and ministries dealing with enterprise support and environmental protection
	7. Shortage of clear mechanisms to convert fees for the use of the environment and fees from

	certificates of energy origin into new investment in renewable energy 8. Shortage of training programmes with a practical approach to building green business installations, objects and firms.
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. Build the concept of the green economy in Poland as a cost saving activity 2. Construct new tax and fee instruments to force consumers to reduce their use of high carbon goods in favour of green economy products 3. Exploit the free labour resources that exist in Poland for employment in the green economy 4. Expand the definition of the green economy to include new spheres that reduce the consumption of highly processed goods in favour of more natural products, contributing to better quality of life 5. Use agricultural aid resources for improvement in farming to reduce gas emissions from agriculture 6. Offer good quality and well planned training programmes for enterprises and the unemployed in relation to the green economy. 	<ol style="list-style-type: none"> 1. Poland will not achieve its targets in the reduction of gas emissions 2. Quality of life in Poland will not progress e as quickly as in countries that make environmental improvements through green economy activities 3. Poland will not use the technological and innovation opportunities arising from renewable energy sources as effectively as other countries 4. Poland's dependence on the importation of natural gas will grow due to the underdevelopment of its own renewable energy sources 5. Poland will not expand energy security relating to the use of renewable resources 6. Cost of green products and green production will be too high in relation to traditional products and production 7. The economic crisis will prevent Poland switching to the green economy.

SWOT Analysis of Pomorskie with respect to the green economy

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Significant results of the energy conservation programmes implemented by public utility companies, housing cooperatives and municipalities to reduce energy consumption in the housing sector 2. Powerful higher education institutions (with the Technological University and University of Gdansk as the leaders), relatively adaptable to new conditions, and ready to take on new training and educational projects in the area of green economics associated with environmental protection 3. Wide exposure of the population to high environmental standards and growing sensitivity of the younger generation concerning environmentally friendly life and consumerism 4. Available capacities within the shipyard industry in the region, which can be adapted for the environmental energy industry 5. Strong exposure to the sea – a possible location for wind farms with minimal threat of ecological protest and growing potential for natural gas exploitation 6. Public utility companies, including transport, water supply and sewage treatment, strongly engaged in projects to reduce the negative impacts 	<ol style="list-style-type: none"> 1. Shortage of green economy strategic development plans at regional level 2. Poor knowledge, skills and attitudes of local and regional authorities towards supporting green economy initiatives 3. Lack of institutional support for organisations, initiatives and groups working in the green economy or supporting green economy initiatives 4. Lack of knowledge on how exploit available funds for green economy development, resulting in low performance of the green economy 5. Financial support tools for the growth of the green economy not entirely suited to the real needs of eco businesses at the regional level 6. Structure of environmental needs (aimed at improvement) focused only on basic areas e.g. water quality, sewage treatment – no exposure for climate improvement 7. Poor ability to overcome administrative barriers to locating eco-energy installations in the region, reducing investment in the green economy sector 8. Low performance of ecological clusters and other groups interested in the green economy 9. Very poor level of waste management; nearly zero recycling plans in the municipalities 10. Decline of ecological railway transportation,

<p>of transportation and city life on the environment</p> <ol style="list-style-type: none"> 7. Strong interest from wind energy companies to locate their businesses in Pomorskie and out at sea 8. Vibrant and dynamic regional economic sector, ready to take on new tasks and exploit new opportunities. 	<ol style="list-style-type: none"> decreasing number of rail passengers and growing congestion from cars in city centres 11. Weak cooperation between central and regional authorities regarding new investment in renewable energy 12. Training crisis for enterprises caused by the inflation of free low quality training financed from ESF. This also has an impact on potential training for the green economy. 13. Shortage of spatial plans for the sea allowing for wind farm locations and other installations
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. Locate wind energy businesses on the sea bordering with the region 2. Use the available potential of the shipyard industry for eco energy development 3. Increase air traffic and air accessibility to attract new streams of visitors and new investors in the green economy 4. Use the potential of the region's powerful educational institutions to provide professional training and formal education in green economy business conduct 5. Better use the financial resources of the Regional Fund for Environmental Protection and Water Management as well as other EU Funds (such as ESF or ERDF) for green economy development 6. Strengthen institutional support for green clusters or similar initiatives to improve their functioning 7. Use features of the vibrant private sector for the development of the green economy 8. Introduce environmentally friendly systems, which are highly effective from a financial and ecological point of view, through public utility companies, including public transport. 	<ol style="list-style-type: none"> 1. The green economy in the region will develop at a slow pace 2. The population of Pomorskie will not benefit from the widening of the labour market as a result of green activities 3. Quality of life in the region will not improve to the levels achieved in the leading European regions 4. Reduced number of development opportunities may push the labour force and businesses to migrate outside the region 5. The region will be paying financial penalties imposed for non performance in climate and environmental improvements 6. Poor level of development in the green economy, especially in the renewable energy sector, will lead to a growth in the importation of energy and increasing dependence on foreign energy sources 7. Continuing poor quality of rail transportation will worsen congestion from cars in metropolitan and city regions 8. Low level of regional public policy supporting the green economy will move potential eco investors outside the region.

SWOT Analysis of Podlaskie with respect to the green economy

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Substantial results of the energy conservation programmes implemented by public utility companies, housing cooperatives and municipalities to reduce energy consumption in the housing sector 2. Strong higher education institutions (with the Technological University in Bialystok and the University of Bialystok as the regional leaders), relatively adaptable to new conditions, and ready to take on new training and educational projects in the area of green economics associated with environmental protection 3. Increasing exposure of the population to high 	<ol style="list-style-type: none"> 1. Shortage of green economy strategic development plans at regional level 2. Poor knowledge, skills and attitudes of local and regional authorities towards supporting green economy initiatives 3. Lack of institutional support for organisations, initiatives and groups working in the green economy or supporting green economy initiatives 4. Lack of knowledge on how to exploit available funds for green economy development, resulting in low performance of the green economy 5. Structure of environmental needs (aimed at improvement) focused only on basic areas e.g. water quality, sewage treatment – no exposure for climate

<p>environmental standards and increasing sensitivity of the younger generation concerning environmentally friendly living and consumerism</p> <ol style="list-style-type: none"> 4. Public utility companies, including transport, water supply and sewage treatment, strongly engaged in projects to reduce the negative impacts of transportation and city life on the environment 5. Growing ecological agriculture movement with significant results from its operation 6. Significant natural resources and environmentally clean areas suitable for the development of sustainable tourism 	<p>improvement</p> <ol style="list-style-type: none"> 6. Poor ability to overcome administrative barriers to locating eco-energy installations in the region, reducing investment in the green economy sector 7. Low performance of ecological clusters and other groups interested in the green economy 8. Very poor level of waste management; nearly zero recycling plans in the municipalities 9. Weak cooperation between central and regional authorities regarding the green economy 10. Little interest among firms in the region towards corporate social responsibility, compared to the rest of the country, which in turn reduces interest in the green economy and environmental sensitivity 11. Location on the main land transport routes to the Baltic states creates environmental tensions 12. Relatively weak private sector, based strongly on agriculture, services, and commerce not directly interested in implementation of the green economy.
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. Locate wind energy installations in the region 2. Explore high potential of nature tourism development in the region 3. Develop environmentally friendly agriculture 4. Use the green experience of young people returning to the region from abroad (diaspora) 5. Exploit the potential of the region's higher education institutions 6. Better use the financial resources of the Regional Fund for Environmental Protection and Water Management to develop the green economy. Other EU Funds and cohesion funds should also be considered. 7. Support green clusters or similar initiatives via existing institutions 8. Introduce environmentally friendly systems, which are highly effective from a financial and ecological point of view, through public utility companies including public transport 9. Use the green economy to create new jobs to maintain the youth in the region 	<ol style="list-style-type: none"> 1. The green economy in the region will develop at slow pace 2. Current labour market conditions will not retain the population in the region. 3. The outflow of population will continue due to poor quality of life standards. 4. Reduced number of development opportunities may oblige the labour force and businesses to migrate outside the region 5. The region will be paying financial penalties imposed for non performance in climate and environmental improvements 6. Poor level of development in the green economy, especially in the renewable energy sector, will lead to a growth in the importation of energy and increasing dependence on foreign energy sources 7. Low level of regional public policy supporting the green economy will move potential eco investors outside the region.

CHAPTER 2: TRANSFORMATION OF THE LABOUR MARKET

By Elvira González Gago

Abstract

This chapter analyses the extent to which Poland and the two focus regions, Pomorskie and Podlaskie, find themselves facing the needs of a slowly growing green economy. It highlights the absence of a global and integrated strategy for its promotion and, partly as a consequence, the absence of sound and capable labour market and vocational training institutions. An emerging private initiative by enterprises and NGOs tries to deal with and make the most of existing opportunities.

Policy issues

Since Poland's accession to the European Union, the country has been undergoing an intense process of change at political, economic, social and cultural levels. This process is added to worldwide globalisation, the need to globally adopt common strategies to address climate change and the wishes of an increasing number of the population to promote sustainable growth as well as to take advantage of new opportunities that all these changes create. The Polish economy is greening and the pace at which it continues to do so will be determined by policies, as will its effects on the labour market.

Addressing these needs is not easy and requires enormous global strategic capacity and huge coordination, cooperation and communication efforts. In this context, cooperation at central level between the Ministries for Environment, Labour, Education, Economy (promotion of business), Infrastructure and Agriculture is essential, though this may seem difficult. On the other hand, Poland is a decentralised country, so vertical coordination, cooperation and communication between the central, regional and local levels are also a challenge. Whereas some conflicts between territories and inefficiencies may arise, the potential opportunity to adequately adapt such a complex strategy to the specific features of a territory should be fully exploited. In this context, the participation of all possible stakeholders, including members of the social dialogue, specifically Trade Unions and employers, NGOs and the civil society in general, will only reinforce the strategy and increase possibilities for its success.

All these changes are affecting the labour market and the skills needed to address such changes. New and highly complex technical capacities are arising, together with other soft skills, such as adapting to change, coordination, team working, and greening existing occupations. Some of these skills are expensive and complicated to deliver, others are quicker and easier to obtain. The availability of enough sufficiently skilled labour force is crucial so as not to hinder further developments in the green economy. In turn, this is only possible with a strong labour market, capable educational and enterprise support institutions and good coordination among them.

Analysis of Poland

The Polish economy is among the highest in the EU in terms of CO₂ emissions, which is mainly due to the fact that the energy sector is dominated by coal-fuelled power plants, representing about 95% of

energy production⁷. In this context, Poland lacks a sound and coherent strategy for the green economy that sends clear signals to the rest of the productive structure of the country, at central, regional and local levels. This reflects two things: 1) a limited capacity for cross-cutting work between different ministries and geographical levels of intervention addressing the same issues; and 2) a low, though increasing, degree of awareness of the public sector and citizens on the costs and benefits of a greener economy, so that ecology is still seen as a cost. Indeed, the lack of clear, long-term and stable strategies to promote a greener economy at central, regional and local levels is hampering the development of businesses in sectors that have already shown a certain potential for growth and employment creation, such as renewable energies, eco-tourism, green changes in construction, etc. This is further discussed in this section.

Economic policy and regulatory activity

The Ministry of Regional Development is the managing authority of the European Social Fund and the European Structural Funds. As such, it has the financial resources to address the needs of a sound and coherent strategy to promote a greener economy and could thus play a crucial leadership role in the promotion of the green economy and the creation of jobs. Regulations are crucial for the development of green activities. On the one hand, burdensome and time consuming permits, licenses or other bureaucratic procedures slow down the pace at which some new technologies or sectors are developing in Poland, as proven by long patenting procedures. On the other hand, the potential of regulatory tools to support private demand for certain products and services in the crucial initial phase of the development of a green market has not been fully exploited. Companies devoted to green products or services will only grow as private and public demand increases. If private demand for green goods and services does not develop, and this depends on perceived needs (awareness) and on relative prices, and if these activities remain unprofitable, then they will not be consolidated unless public support is provided in the form of appropriate regulations and/or in the form of grants or loans, depending on the profitability of the specific goods or services. For example, solar collectors are not compulsory in public buildings in Poland, whereas they are a great source of employment source other countries. This is also the case with certain compulsory ecological procedures in waste management, though some advancement is occurring in Poland, as fines are already forecast to be put in place in 2014, which will speed up businesses and job creation.

The regulation of renewable energies (offshore wind turbines, solar collectors, biogas) must be clear, transparent and stable, so that potential investors can make clear decisions on investing and creating jobs. They can also be subsidised, at least during the initial phase of the business, while raising demand and consolidating the market. Proper account must be taken of the returns of such financial help in the form of future taxes on eventual profits, and also of the employment creation and taxes paid by future workers. Moreover, excess workers from shrinking sectors (e.g. agriculture) can be occupied in these expanding sectors (e.g. biogas or eco-tourism), so that they do not spend time (and benefits) unemployed.

Poland's traditional policy of concentrating on protecting old jobs and supporting old industries has deterred resources and financial support to other up and coming competitive and sustainable industries, such as producing technologies for renewable energies. In this context, more transparent and stable regulation is crucial to support and help companies understand present and future changes arising as a result of EU regulations, and from the green economy itself. Finally, the role and potential impact of the central, regional and local public administrations' green activities seem to be undervalued and need stronger development. There is a great scope for job creation in green public activities, such as infrastructure, counselling/consultancy/control/regulation activities, and public campaigns to raise awareness. Accordingly, public procurement is a great source of demand, not only because it usually absorbs an important share of public budgets, but also because it can impose specific "green conditions", a variant of so-called "social clauses", e.g. demanding specific waste management procedures, the partial use of renewable energies or energy efficient products. These activities create and modify jobs. The more

coordinated, common among all territorial administrations, clear and stable they are, the higher the impact they will have. This is further developed in Chapter 4 of this report.

Related partly to the need for joint efforts to address common policy goals, the clusters phenomenon started to grow in popularity over the last decade, so that presently, some 130 clusters and cluster initiatives exist in Poland. Some of them are related to direct activities of the green economy, such as the cluster on renewable energies Nadwiślański Klaster Energii Odnawialnej, created in 2009 (see Box 1). Others are more focused on new technologies and innovation activities, indirectly related to the green economy, such as the Baltic Sea Region Innovation Network. All of them are in their infancy (the oldest was created in 1999) and have encountered and still encounter problems in their development. For example: lack of a comprehensive approach to clusters, because of the various policies involved (e.g. education, industry, innovation) relying instead on scattered programmes and projects; lack of a strong regulatory framework for public-private partnership in which the public sector acts as a catalyst for development; lack of clear and transparent financial support at regional/local level; too many bureaucratic impediments; ignorance of the authorities towards the needs of the clusters; sector mistrust; and conservative mentality of entrepreneurs. Well financed, well organised and well supported clusters are able to grow faster and achieve ambitious goals, thus contributing to successful development of the industry, the regions and the labour markets they operate in⁸.

Box 1. The Nadwiślański Klaster Energii Odnawialnej

The Vistula River Valley Renewable Energy Sources Cluster was established by the Industry & Technology Park of Kwidzyn in 2009. It gathers together entrepreneurs dealing with Renewable Energy Sources (RES) and/or energy efficiency matters, non-governmental organisations, business environment institutions, research and development units and local authorities. Its main objectives are to transfer and commercialise innovation and to exchange experience in energy efficiency and RES.

Its basic activities are: promotion of the cluster members and Vistula River Valley Renewable Energy Sources Cluster brand; organisation of specialised training courses, seminars and conferences in Poland and abroad; counselling and consultancy activities with experts; organisation of salaried internships for scientists within the cluster members; and support for SME's in applying for European funds. It is co-financed by the European Union, European Regional Development Fund, within the Regional Operational Programme for Pomerania Voivodeship 2007-2013.

Other examples of clusters in Poland include the Baltic Eco-Energy Cluster, the aviation Valley, and the Gdansk Construction Cluster.

Source : http://www.klasteroze.pl/?/content/read/About_Us.html

In this context, clusters adapted to the requirements of emerging green markets can be powerful tools for the promotion of the green economy and its needs. Clusters seem an adequate way to promote growth and employment creation in renewable energies in certain geographical areas, or eco-farming and food processing with eco-standards in others. Some good practices have already proved to be effective in coping with the aforementioned problems, and the government can play an important supportive role. For instance, the government could facilitate the adaptation of clusters to the needs of the green economy by encouraging partnerships with education institutions (technical universities) to ensure skills availability; investing in vocational education development; creating special centres for education and the realisation of traineeship projects; investing in technology and innovation development; creating technological and industry parks; facilitating application for financial support from the government and/or EU sources; and supporting extensive cluster-to-cluster cooperation, i.e. among clusters within the same region or industry⁹.

Labour market and training institutions

The labour market institutions show low institutional capacity to analyse, anticipate and address the skill needs of a greening economy and there is no real understanding yet on how the labour market is affected by the on-going process of greening the economy. The “green dimension” of their activity is very limited and the tasks undertaken in the labour offices with both the demand side of the labour market (i.e. unemployed people) and the supply side (employers) ignore the possibilities and needs of the green economy. More generally, the capacity of the public employment service seems rather limited, since only around one third of job placements are dealt with by the public employment services. Moreover, its activities are biased towards low-skilled workers/unemployed, whereas higher qualified vacancies and workers tend to be mediated in private employment agencies and web portals. Trade Unions do not seem sufficiently involved in the adaptation of worker’s skills, nor in the development or the provision of adequate training.

An important reference programme in the context of labour market development in Poland is the Human Capital Operational Programme 2007-2013, co-financed by the European Social Fund. This document was, however, drafted in 2006 and does not include any clear reference to a green economy strategy. Despite a 2011 review of this document, which considers the Europe 2020 objectives related to the green economy, it seems that, at present, a considerable mismatch exists between training programmes offered by both public and private institutions and market needs, specifically green economy needs. These training institutions do not yet have the knowledge on the green economy and the gaps that need to be filled.

There are also great difficulties in identifying future occupations and skills requirements. Indeed, Polish enterprises know what competences are needed at present, but they do not know what will be necessary in the future, particularly in such a rapidly changing context of new technologies and the green economy. In this uncertain context, the principle applied for providing training in Poland is responsiveness to demand: if there is no current demand for green training, then training suppliers will not offer it until they see interest from companies and the public administration. However, this solution does not seem to be the most suitable in cases where long, costly and highly specialised training is required. This is rather the field of education institutions such as the Universities/Technical universities, which operate at a generally high level in Poland, although they lack the capacity to anticipate coming changes and competences that will be required by companies. In these cases, the establishment of partnerships between higher education institutions and businesses seems essential to understanding and anticipating the skills needed. Furthermore, appropriate funding for technical and innovative universities should be granted to build strong cooperation mechanisms with national and international high-tech companies.

However, exchanges or collaborations between employers and students, i.e. between companies and education institutions, are scarce in the labour market system. Businesses are rarely involved in the development of curricula and are not interested in sharing their knowledge with students, specifically in the cases of new technical competences related to the green economy, because they do not see any benefits to doing it. As attested by employers and seen in previous studies¹⁰, a good level of competences related to the green economy is in many cases relatively easy to acquire; the shortest and most convenient way for employers to do this, at present, is through the on-the-job training system. In fact, according to some opinions gathered during the study visit, attitudes are scarcer and more difficult to acquire than technical skills. In other cases, however, a highly specialised workforce is needed. For instance, higher levels of engineering are necessary to apply knowledge to new models and systems, but there are also other more sector-specific skills such as heat recovery and water treatment currently being demanded in Podlaskie. These highly specialised skills are, at present, not sufficiently provided for by the Polish Universities that concentrate too much on theory and not enough on practical knowledge.

Moreover, training high quality technical engineers is expensive and financial resources are allocated taking into account the number of persons to be trained, rather than the cost of the education. Finally, some of the technologies involved in the greening of the economy evolve very rapidly and become obsolete quickly (e.g. energy efficient products, solar collectors, batteries, isolation materials), making it crucial for businesses to be flexible and ready to seize opportunities and adopt new technology, processes, and methods at a rapid pace. In line with this, enterprises need to adapt their workforce to the needs of new products, processes, services, and methods, which is not always easy to achieve. As a response to this, large companies usually organise continuous training internally, very often with the collaboration of external suppliers. However, smaller businesses do not have the internal capacity to undergo such a process, which makes them reticent to the transformation of the labour market to the green economy. To bridge this gap, professional internships in enterprises are being organised for students within the framework of the Human Capital Operational Programme. This kind of subsidised internship is also perceived as a good way to close the existing gap between businesses and students.

General awareness: the role of public and private actors

Although the degree of awareness of the public sector and of citizens in general is increasing, it still seems to be quite low, meaning ecology is seen rather as an economic cost than an opportunity. In spite of, or due to, some private campaigns by ecologist groups, ecology lacks credibility to a great extent. However, some not-for-profit organisations are playing an important role in putting together economic and ecologic activity, showing the possibilities of a positive relationship between both, particularly regarding the creation or adaptation of new activities and jobs for the green economy. As an example, the Scientific Society for Organisation and Management TNOiK (www.tnoik.org), an 85-year old NGO, has worked, within EU funded projects to: map competences in the labour market, investigate the need to introduce horizontal green competences, and train low-qualified workers, private managers, and public servants in social corporate responsibility. The organisation also acts as a mediator between ecological NGOs and the public sector and between the scientific sphere and the general public, in awareness raising campaigns. Another example can be found in the Green Technologies Centre of Podlaskie (www.zielonetechnologie.pl), a project that offers free training courses in six thematic areas: domestic sewage treatment plants; managing and packaging waste; traditional building; ecotourism; regional products; and renewable sources of energy, and helps to adapt businesses to green opportunities and create new jobs.

Pomorskie

The Regional Action Plan for Employment 2009-2011 has been developed by the regional government with the involvement of public institutions, as well as Social partners and other entities. The Plan defines priority courses of actions and its tasks include¹¹: elaboration of labour market analyses and labour demand surveys, including the monitoring of shortfall and surplus occupations; implementation of some actions under the Human Capital Operational Programme 2007-2013, co-financed by the European Social Fund; vocational counselling and job placement; responsibility for the register of employment agencies and training institutions; and promotion of enterprises and self-employment.

The analyses usually adopt the demand perspective, i.e. the point of view of the unemployed, and the active labour market policies in place to help them find a suitable job. They are complemented by the views and opinions of employers on their own employment and qualification needs, though these analyses are not yet systematic and make no explicit reference to the green economy. Coherence among analyses and their role in supporting the green economy are therefore also limited.

There is a lack of awareness and limited understanding of the positive effects of the green economy, not only on quality of life, but also regarding the eventual positive effects on employment and the

economy. The green agenda in the region is rather weak, as are the institutional links needed to push it forward. The employment office is not aware of the employment effects of a greening economy in the region or of the needs of the labour market; nor are the “green authorities” aware of the job and skills needs of their activities. Coordination with other public institutions, directly or indirectly involved in the green economy, is limited or inexistent.

As a result, there exists a risk of missing the right timing for developing training capacities that will be needed in the near future, if there is no clear and shared knowledge of forthcoming green events (e.g. regulations, plans, investments etc.) It is possible that eventual developments in some sectors will be stifled by a lack of skilled workers and, conversely, that frustrated skilled workers will have to migrate or re-qualify if the expected developments do not occur as and when expected.

However, a response from the private sector seems to be emerging, showing that this actor is the most aware of and best informed on green issues. As a consequence, employers and NGOs are becoming better organised, such as in the Trade Union of Manufacturers of Renewable Energies, the Polish Biogas Association, or the Scientific Society for Organisation and Management. It is an interesting approach towards fostering links and cooperation between entities of the third sector (social initiatives, ecologist NGOs) and social partners in order to raise awareness, create economic activity, and prepare the labour market for the green economy. Similarly, present in the region are strong and interesting clusters, more or less related to the green economy. Improving their performance and eventually supporting a specific “green cluster”, for instance in (offshore) wind production, could also be considered.

Certain green sectors with the potential to create employment in the near future have been identified in Pomorskie. The most evident are:

- **Renewable energies**, such as wind turbines, solar collectors for heating water, biogas, etc. These renewable energies have already shown significant development potential in the region. For example: the Baltic area is privileged for offshore wind turbine sites; only around 5% of waste management is processed in Poland; and solar collectors are appropriate for installation in family homes, although only a small share of homes have them as yet. Workers made redundant from declining sectors (e.g. shipyards, construction) can be absorbed by these growing activity areas, though they will need appropriate training to adapt to the needs of the new activities.
- **Construction sector**: as a result of regulations imposing new greener procedures and the use of specific materials and tools, works have to be carried out on existing private and public buildings. This is a source of jobs, not only the jobs created by the works themselves, but because workers have to be re-trained by “green trainers”, and enterprises have to be advised and updated by external experts. Enforcing the new regulations (eco-audits) is also a source of new jobs.
- **Agriculture, food processing with eco-standards, forest protection**: taking advantage of well preserved natural areas, the possibility of adding value to traditional products, through changes in production processes to ensure ecological standards, should be exploited to reach wider markets. The protection of natural areas and forests is also a source of job creation and should be considered as a profitable investment in rural areas with the potential of attracting tourism.
- **Natural and cultural tourism**, with the development of accommodation, sports or other cultural and leisure activities, a successful strategy can be developed that attracts tourists to the region and creates economic activity and employment, while preserving the environment

and the natural and cultural resources of the region. The promotion of enterprise creation, support of a regional advertising campaign attracting tourists from other regions/countries, and training to ensure an adequate quality standard in the services offered are important parts of an eventual strategy.

- **Services to change behaviours**, such as training, awareness raising campaigns, eco-audits. These are transversal to all sectors. The greening of the economy involves changes that can be incorporated more easily, effectively and quickly with the support of effective awareness raising campaigns, training, eco-auditing and consultancy, etc.

Podlaskie

Podlaskie is a region marked by and based on traditional agriculture and farming. Agriculture is twice as important in Podlaskie as in Poland as a whole, in terms of its share of Gross Added Value (10% and 4% respectively in 2008, according to Eurostat data). Podlaskie has faced important emigration flows to the rest of the country and to other EU countries, which have resulted in an aged and less dynamic population than in other parts of the country. Entrepreneurship in the region seems underdeveloped, as the working population migrates to better developed regions or cities, even abroad, looking for better working conditions.

Given the important weight of agriculture in the Podlaskie region, the Community Agriculture Policy (EU CAP) regulations and funds are particularly relevant, and also relevant to the green economy. Important points in Podlaskie's development include: the modernisation of agricultural methods and machinery; the requirements introduced by EU eco-standards; and the possibilities to complement traditional agriculture with new activities, such as eco and sustainable tourism, organic food, food processing, or biomass production. One important institution, the Farm Advisory System (FAS), has been providing advice to farmers for many years and is, at present, providing support for accessing EU and national funds and advice to upgrade skills and knowledge in modern farming. Examples include: pro-environmental methods of agricultural management (including organic and integrated farming); managing the farm as an enterprise; application of the cross compliance principle; standards of production, public health, animal welfare, and food quality; application of good agricultural and forestry practices compliant with environmental protection requirements; and active protection of natural resources¹². The results of an in-depth evaluation of the functioning of the FAS, to determine its strengths and weaknesses, could orientate eventual improvements and/or the need for other agents (e.g. regional/local labour market institutions) to collaborate or coordinate with it to improve its outcomes.

There is no definition of green jobs or the green economy in the region, although the endowment of natural resources, the existence of many natural parks, such as the Narwiański Natural Park, together with the strong agrarian tradition may have made the population and institutions more sensitive to the needs of sustainable growth. The regional Observatory of the labour market has already carried out some work on this and could eventually analyse the impact on the labour market of greening the economy. Two studies relating to the green economy have been planned, which is a sign of relatively high and growing interest. However, the region lacks the necessary expertise to conduct sound labour market analysis and the Observatory lacks the capacity to properly analyse skills supply and demand. More generally, the region has a rather limited reaction capacity to the changes expected as a result of developing the green economy.

The region has invested, through the Infrastructure and Environment Operational Programme, in several waste management plants and other projects related to water. This reflects the growing awareness of and demand for new skills for green or greening activities. The expansion of public infrastructures, often co-financed by EU structural funds, is a growing green market. Additionally, the development of public procurement can also result in the creation of green activity and employment.

Cooperation between labour market institutions and education entities in the region is rather weak. In a similar way to Pomorskie, some distance exists between the skills demanded by employers and those supplied by workers and students, reflecting scope for improvement to regional education and vocational training systems. In medium to large enterprises, R&D+i is developed within companies, with low or no cooperation with the University (this is too time consuming and yields no obvious positive results), with or without external technical and/or financial help, and with partial or total imported technology. As previously seen in other studies¹³, medium to large companies generally organise and provide (re-, further-) training for their workers themselves. Because general education standards are decreasing, the need for qualified workers forces companies to train their own staff further internally over a 3-4 year period.

Against this background, some interesting private initiatives have arisen that support self-employment and business creation or adaptation to the needs and possibilities of the new regional green economy. The Green Technologies Centre (GTC) can be quoted as a good example (see Box 2). Flexibility and adaptability to the individual needs of beneficiaries are key success factors. International cooperation with other countries, such as Germany, has also proven to be useful.

Box 2. The Green Technologies Centre (GTC)

The GTC is a publicly financed not for profit project, realised with the participation of the ESF, that aims to develop business, create (better) jobs, and counteract unemployment through sustainable development and utilisation of the Podlaskie region's rich natural resources. Within an international public-private partnership, the project offers a range of free training courses, workshops, and visits to other countries' initiatives in areas related to environmental protection, such as wastewater and waste packaging treatment, traditional building and roofing, ecotourism, regional products and production of biomass. The beneficiaries of the project are workers and employers – mostly SMEs – connected with these activities.

However, the project shows a more holistic approach, which is one of the key factors for its success. Indeed, it has promoted the creation of a local network that involves both public and private actors; it carries out sensitisation activities in the territories involved, while researching ways of improving the competitiveness of local actors, exchanging experiences and methods, and creating common products. As a result, workers and enterprises benefit from training, teaching models and specialist consultancy specifically designed for local SMEs and related to green technologies, which re-orientate or enhance the activity of the participants. Last, but no less important, thanks to its networking and acquired knowledge, the GTC has evolved into a reference centre for teaching and advising institutions in the region on green technologies and green jobs. As such, it has been able to propose regional legislation and policy changes that support the development of environmentally friendly activity.

In Podlaskie, the sectors with the potential to expand within the green economy are numerous, and the scope for growth is significant. Some are very much based on traditional and well consolidated activities that can be greened, gaining added value; others relate to completely new activities primed for development in this area of privileged natural resources. The transformations mentioned do not require large investments to build technical capacities, but rather training in green entrepreneurship for start-ups or consolidated traditional businesses:

- **Production of biomass and biofuel in farms:** the production of biomass and biofuel can take advantage of the existing farming activity in the region. Both a chain of producers and an appropriate distribution channel need to be organised, to make it worthwhile for farmers to enter into this activity.
- **Rural and natural tourism:** current successful experiences in the region, as well as experiences from other countries and regions, show that there is a wide scope for activity and employment creation in rural and natural tourism. This can complement the current income of

farmers or be developed as a completely new activity. The support of a regional advertising campaign to attract tourists from other regions/countries, along with training to ensure adequate quality standards are a must.

- **High quality eco-food production:** there is an opportunity to produce higher value added products by adapting the traditional production of food by farms to the sanitary and hygienic requirements imposed by EU directives and increasing access to wider markets. The region specialises in high quality dairy foods and meat from the autochthon red cows, which is a source of wider demand and expansion.

Some new complementary activities are increasing on the value chain, for instance processing high quality eco-food and complementing agro activities with eco or agro-tourism. These transformations do not require large investments to building technical capacities, but rather training in green entrepreneurship for start-ups or consolidated traditional businesses.

Challenges and Opportunities

Strengths

Renewable energy capacity

With current focus on carbon based energy production, the production and use of renewable energies is still very limited in Poland. However, a strong capacity to adapt the labour force being made redundant in certain traditional industries (shipyards or agriculture) can be used to develop new economic activity. For example, (offshore) wind energy production, biogas, biomass (involving farmers), or solar energy production. In many parts of the country, pre-conditions for such a development exist.

Unique and diversified places of natural beauty and rich cultural and natural heritage

Beautiful cities and historic sites are already an attraction element for tourism in many places. Natural assets and a strong agricultural environment in the more rural areas have already attracted many visitors both from the rest of the country and from other neighbouring countries like Germany. This is an opportunity to diversify and complement activity with high quality agri-food products.

Weaknesses

Lack of a coherent and sound green economy strategy

The country lacks a coherent cross-cutting strategy that harmonises all policies involved in the green economy. There are currently too many strategies in Poland, which makes it difficult to focus objectives and set priorities. However, these strategies are in the process of being simplified, which provides an opportunity to integrate the green economy objectives in a cross-cutting way. The challenge is to bring together energy, industrial, innovation, agriculture and environment, economic, labour market, training, education, and business support policies with a common green objective, as they are currently developed in silos. Environment and economy together must be seen as a unique opportunity to be exploited. Strong leadership and increased awareness on the green economy are necessary to succeed in this difficult task, particularly within the framework of a decentralised country, where regions and local authorities are important stakeholders in the strategy. The overarching strategy to emerge from the simplification, with long-term objectives and clear messages, will need to be implemented at the regional and local levels.

Lack of definitions and institutional capacity

Partly as a result of the previous weakness, there is no clear conception of what the green economy is, which jobs are created by it and what needs to be done to exploit its potential. The difficulties mentioned above also reflect a weak institutional capacity to build and promote a common understanding of the challenges and opportunities of the green economy and the share of the work ahead to be done by each integrating part of the strategy.

Existence of administrative barriers

Obtaining licenses for work in some specific green activities (construction, energy related activities) takes too long, thus limiting the potential to create businesses and green economic activity. The procedures for patenting are also costly in terms of time and money, which also restricts the ability to create new activity and develop new technology. Generally, access to subsidies is also complicated by unnecessary requirements. Such procedures should be revised and eased in order to accelerate the growth of these (and other) activities.

Opportunities

EU integration and EU structural funds

Poland's accession to the EU in 2004 brought about important changes and will continue to do so, particularly in the field of the green economy, since EU eco-standards are higher and stricter than those in Poland. New regulations will have to be adopted in many fields, but a coherent and sound strategy can already be developed, as these changes are more or less known at present. EU structural funds, particularly the ESF, should be exploited to advance towards building labour market institutions and a workforce able to adapt well to future changes. This should happen not only through the vocational or occupational training of workers and unemployed people, but also through the financing of mutual learning activities among regions and/or countries, analyses, studies, specific (pilot) projects and tools that make the best use of the information and funds available in the field of the green economy.

Build a cross-cutting green strategy, with wide civil and economic participation

On the basis of cooperation/coordination/communication, and with the Europe 2020 strategy in mind, a short, medium and long-term joined-up strategy must be built to address the challenges of the green economy and to fully exploit the potential economic, environmental and employment benefits of such a strategy. Advantage should be taken of the forthcoming opportunity to update the Human Capital and Infrastructure Operational Programmes to include green economy concepts. Discussion among all stakeholders must take place to widespread the effects and support to the green economy.

Support the development of the private demand of green products or services

The private demand (of individuals and firms) for specific green products (e.g. solar collectors, energy efficient goods, organic food) or services (e.g. rural/natural tourism, green audits) must be actively promoted and partly subsidised, at least as long as the goods and services are perceived to be too expensive, given the current lack of consumer awareness. This approach should be complemented by campaigns to demonstrate the consumer benefits of such good and services.

Help small businesses join supply chains

There is an opportunity for small businesses to join or build supply chains in green traditional sectors (e.g. organic food processing, biomass production) and in other related green activities, such as small

renewable energy plants. ESF funding can support the creation of such supply chains, by providing training to small businesses holders to equip them with the necessary abilities, and by cooperating with local entities able to act as intermediate and dynamising agents.

Development of the civil society, including NGOs

Public and private awareness needs to be raised, as ecology is still perceived to be a cost by many. The participation of the civil society is needed, including not-for-profit non-governmental organisations, to progress towards a general acceptance (and exigency) of new green standards. NGOs are usually more flexible and effective in dealing with the demands of citizens. They are also better equipped to carry out cross-cutting work with many stakeholders, and have also access to EU funding at present.

Threats

Instability and lack of transparency in regulation

There are many regulatory changes to come, which will have significant impacts across many sectors, for example construction, energy, training, eco-standards in waste/water management, tourism, and public procurement. Experience gained in other countries (e.g. Spain), in adopting similar regulatory changes, warns against the risk of disordered, confusing or even inappropriate adoption of such changes, which may have to be corrected afterwards, harming to a great extent the progress made.

Failure to capture economic benefits of greening the economy

There is a risk that the country may fail to capture a large share of the economic benefits of the green economy, including benefits to its labour market. Germany is a neighbouring country, with more developed strategies and technologies relating to the green economy, and a better qualified labour force, that could reap some of the benefits. If Poland fails to successfully train its own labour force, workers from other countries could arrive to fill vacancies and trained Polish workers could be forced to leave the country.

Failure to engage social actors in the green strategy

All social actors (private and public, for profit and not-for-profit, national, regional and local agents within various thematic working fields) must be involved in the design and implementation of a green strategy to ensure adequate exploitation of the green economy's full potential. Labour market institutions must be equipped to respond to the foreseeable needs of workers and employers resulting from the policies and strategies of the various departments involved (environment, agriculture, industry, energy, economy etc.) Only with a common and balanced understanding of the opportunities of the green economy can all social actors endorse a common strategy for success.

Pomorskie

Strengths

General positive attitude to innovation and business

The region of Pomorskie has proved to be dynamic in terms of business creation and swift adaptation to change. The restructuring of some traditional industries (shipyards), although difficult for the region, is giving pace to new activities in renewable energy fields (e.g. water, wind, biogas) and the process of adaptation is proving to be quick and efficient. The region can utilise available employment capacity to absorb the future need for workers in these activities.

Location near the sea and existence of two big ports

The proximity to the sea and the existence of important logistic centres, with two big ports and an airport, is an important comparative advantage for the region. More specifically, the development of wind (offshore) energy or of natural and cultural tourism can benefit from these facilities.

Weaknesses*Low capacity of labour market institutions*

Labour market institutions in the region are in their infancy and, though experiencing rapid progress, have too limited experience in analysing the needs of the region's labour market, much less in the specific field of the green economy. The absence of a global green strategy means that there is nothing for regional employment institutions to understand and base their activity on. There is also a limited institutional capacity to absorb EU structural funding at regional level, as evidenced by existing disorders in the market of occupational and vocational training.

Little training and adaptive capacity

Partly as a consequence of the previous weakness, the region has a low capacity to train and adapt its labour force to the needs of the green economy. Labour market institutions are not capable enough to provide the vocational training needed; training institutions, such as universities, seem to be too far away from the market; and communication with companies is too limited. Support to new entrepreneurs is also limited.

Opportunities*Future regulations in the framework of the green economy*

The need to adapt to existing and future regulations on waste and water management, building codes or other EU ecological standards will create economic activity and jobs. Other public instruments, such as subsidies to foster demand or public procurement, will also contribute to the development of a green market. The region of Pomorskie has already demonstrated its ability to quickly adapt its traditional labour force to new activities. Governmental programmes for restructuring these traditional sectors provide important help.

Further development of clusters and regional intelligence systems

Clusters are widespread in the region and their functions and outputs can be improved. Their experience acquired so far in cross-cutting work may prove useful. Improvements to their functions and better participation and/or coordination with public institutions, is desirable.

Threats*Risk of brain drain*

If the labour market, universities and other education institutions fail to provide the sufficiently qualified workers that the green economy needs, the risk exists that trained workers will not find job opportunities in the region and will therefore migrate to other more advanced regions, or even to other countries. Strong and close coordination with other regulatory instruments must exist to avoid this risk.

Podlaskie

Strengths

Endowment of natural resources

The region of Podlaskie has conserved its natural resources through a lesser extent of industrialisation, which is now an asset for its future economic development. In particular, the Narwiański National Park is an attraction pole for the entire region, with high potential for natural tourism. The region also has a strong tradition in agriculture, with a significant workforce able to be converted for diversified agro-activities, such as rural, agri- and natural tourism, high quality food processing, and biomass energy production.

Existence of a cluster: the Green Technologies Centre (GTC)

The existence of the established GTC, which has wide experience in cross-cutting work with multi-stakeholders, is an important asset that the region should take advantage of. Cooperation/coordination/communication among employers, NGOs, and regional and local authorities is the best way to further progress in the right direction. The GTC's role as a broker between enterprises and market opportunities has proven successful in supporting the adaptation of businesses to the green economy. The support of EU funding to such structures is also a tool that can be better exploited.

Low wages and prices

Compensating for Podlaskie's peripheral location and lack of good infrastructure, the current relatively low wages in the region can be a competitive advantage for the attraction of new investment, as well as support to newly created endogenous activities, such as tourism or biomass energy production. The region's generally low prices can also be a draw for tourists, as long as they have access to good quality products and services.

Weaknesses

An aged and undynamic population

Due to large emigration flows, the remaining population is aged and less qualified. Economic dynamism, a culture of entrepreneurship and innovation, and a young labour force are all missing. The regional specific weight in traditional rural activities may generate the feeling that there are no employment opportunities or other draws for the young; such activities are not attractive to them and employment conditions are very often undesirable.

Low training and adaptive capacity

Regional labour market institutions show limited capacity for vocational training, as do regional universities and the private vocational training market. This may lead to a migration of students to other regions to acquire higher level education and a lower development of green activities within the region if there is no available qualified labour force. The low participation of social actors (trade unions and employers' representatives) in training activities might also be seen as a weakness of the region.

Opportunities

Green transformation of consolidated traditional sectors

Agriculture and farming are well established traditional sectors that are undergoing rapid and profound changes due to the effects of the Common Agrarian EU policy, such as quotas and mechanisation of work. Thanks to EU funding and available workforce, the region has the opportunity to engage in the

transformation of traditional activities to higher value added ones, such as eco-food or biomass production. The re-training needs in these cases are relatively easy to organise.

Public and private partnership at local level

Thanks to the existence of the Green Technologies Centre (GTC), there is an opportunity to build upon a consolidated system of cooperation between local private organisations (employers, civil society through local NGOs) and local public institutions, including members of the social dialogue. The potential gains of establishing such an approach could materialise in the timely provision of adequately skilled workers, the emergence of new businesses, the attraction of new investors, tourists, etc.

Threats

Increasing peripherality as urbanisation increases (intellectual desert)

The local rural market could become too small if strategies to attract investors and tourists fail and if endogenous growth is not strong enough. Further brain drain of young and more dynamic people could occur if there are not enough attractive labour market opportunities and conditions consolidated within the region. Additional reasons for young people to leave include feelings of isolation from urban poles and of the region not offering enough intellectual and cultural opportunities.

Recommendations

Based on the above analysis, the following recommendations can be made for Poland and the regions observed.

Build a joined-up green strategy

Involve “thematic authorities” in the development of the strategy

On the basis of horizontal and vertical cooperation/coordination/communication among the different ministries and territorial levels involved in the green agenda, and with the Europe 2020 strategy in mind, a short, medium and long-term joined-up strategy must be built to address the challenges of the green economy and to fully exploit the potential economic, environmental and employment benefits of such a strategy. Several “thematic authorities” must be involved on a horizontal level, including agriculture, economy, infrastructure, environment, industry, energy, etc. At the same time, national, regional and local actors must be involved and consulted in the strategy on a vertical level, though with different roles. The process of re-focusing existing strategies and reducing the number of strategies in Poland is an opportunity to integrate green economy objectives in a cross-cutting way. The overarching strategy emerging from the simplification could be placed at central level, under the responsibility of the inter-ministerial taskforce led by the MRD, but the Marshal Offices in the regions could act as operational agents for implementing the strategy’s actions, as they manage ESF funds.

Create an inter-ministerial task force to coordinate and promote the strategy

As the managing authority of the European Social Fund and the European Structural Funds, the Ministry of Regional Development (MRD) could lead the definition and implementation of the green economy agenda. To achieve this, the MRD could encourage the creation of a horizontal or inter-ministerial task force, under the auspices of the Prime Minister, to bring together the efforts and interests of the different agents. Regional authorities should be involved in the consultation. Indeed, Poland’s accession to the EU has brought about intense change that affects the greening of the Polish economy in various areas, as the EU has higher ecological standards. The inter-ministerial task force could develop the

required integral strategy, promote quicker and deeper awareness and sensibility, agree on definitions, set objectives, prioritise actions, etc.

Empower the regions to adjust the actions to their individual contexts

Even though an overarching strategy is necessary to outline a vision and lead the country towards a common goal, it is essential that the regions have the knowledge, tools, and institutional autonomy to adjust the actions to their own priorities and individual local contexts. Responsibility for operational actions should be held at either the regional or local level, depending on specific competences. At the regional level, a strong institution (perhaps the Marshall Office) should be able to offer clear, coherent, stable and transparent scenarios on which to construct regional and local strategies, adapting the broader national principles to the specific regional and local needs and opportunities. It is also important that the institution provide the tools, knowledge and financial support to achieve these objectives. This scheme would ensure coherence between the resulting regional and local “green approaches” whilst allowing for the adaptation room they need. It would also ensure the coherence of relationships between employers/businesses and labour market institutions within the regions.

Integrate ESF priorities within the strategy

There is currently no strategic approach to the development of the green economy and green labour markets either at the national level or at the regional level in Pomorskie and Podlaskie. Information has still not been provided on: 1) the strategic challenges to be addressed, 2) the possible alternatives in addressing these challenges, 3) the problems to be solved, 4) what should be done, 5) how it should be done, 6) who can do it, 7) when it should be done, 8) who are the beneficiaries, 9) what are the opportunities, 10) what happens if nothing is done. This report provides a first assessment of the situation and some recommendations as to what the strategy should look like. However, it is up to the Ministry of Regional Development to decide, in consultation with the other government representatives and the regional authorities. Within this recommendation it must be cautioned that, without a strategic approach, EFS funding will not be effective in developing the green economy and green labour markets. To avoid this, the following could be considered:

1. Build scenarios for the development of the green economy at particular points in time (vision);
2. Organise working groups or partnerships with stakeholders in the regions to set targets for the green economy, green skills development and ESF support;
3. Establish action plans to achieve these goals;
4. Design a reliable and reasonable implementation plan with stakeholders; and
5. Adopt an approach to initiate the market and social processes.

More specific recommendations are discussed in Chapter 5 on how ESF Funds could contribute to the definition of the strategy and to the emergence of a green economy in Poland.

Open the strategy for consultation to all stakeholders

Debates on the strategy should be open to all possible stakeholders to make the strategy as strong and widely supported as possible. Account should be taken of the position and potentialities of the members of the social dialogue (Trade Unions and employers’ representatives); the value-added of NGOs, such as their flexibility and efficacy; and the support of the civil society, if they are well enough informed on and sensitised to the topic.

Create operational working groups on the green economy at regional levels

There is currently a group at the central level (coordinated by the Ministry of Regional Development), which deals mainly with the hard infrastructure connected with EU Funds and the EU 2020 strategy. However, there is a need to define the implementation programme of ESF Funds at the regional level and to regularly monitor its results. One of the existing bodies in charge of the coordination of policies at the regional level (e.g. Sub-Monitoring Committee for ESF or the Regional Council for Employment) could therefore be nominated to help the ESF administration to conduct the Green Economy ESF Programme in the regions. Members of the nominated body who are outside the administration should be compensated (in a similar way to municipality councillors, for example) as they will be responsible for preparing written assessments, conducting interviews with base-level stakeholders, and reporting back. It would be advisable to include representatives of business organisations and labour market institutions in the ESF-operated green economy working group to raise awareness and better target actions.

Reinforce labour market institutions and their coordination

Support the acquirement of knowledge and capacities

The acquirement of knowledge and capacities of national, regional and local labour market institutions should be supported. Their capacity to analyse the present and future labour needs of enterprises and workers should be improved, taking into account the foreseeable effects of on-going regulatory changes in other areas, such as energy, economy or education. The labour market must become a valuable tool for the promotion of the green economy. A sound, effective, efficient and agile market for vocational training needs to be built, across both the public and private sectors, fostering their relationships with each other to be complementary, and including other educational institutions, like the Universities.

Support networks and exchanges

The ESF could be used to create networks for mutual learning and to share experiences and new technological solutions from other countries and regions, in the form of workshops, identification and exchange of good practices. Poland should foster relationships with other countries more advanced in green issues and labour market policies to help introduce strong and effective vocational training experiences into its regions, thus increasing the number of highly qualified workers. The creation of intermediate actors or cooperation with existing ones (NGOs, employers' or sectoral representatives) can help to ease communication and cross-cutting work with all agents related to the green economy.

Strengthen the capacities of ESF staff to deliver green growth

During the study visit it was made evident that ESF staff knowledge and skills are very weak when it comes to supporting activities in the green economy. ESF officers from the two regions discussed this issue openly and are awaiting recommendations on how to increase their knowledge. It will be important to improve ESF staff knowledge and skills in green economy assistance as this will create a good base for effective development services and a better structuring of ESF projects in the future. Within the ESF funded programme itself, a special system should be adopted to increase the capacity and skills of staff. This system should also include international training and study visits. More specific actions to help achieve these goals are discussed in Chapter 5.

Fully exploit the opportunities of EU funding (particularly ESF) and regulation

EU funding opportunities, particularly ESF funding, should be fully exploited to adapt the labour market to the arising needs of the green economy. Many regulatory changes originating from higher EU eco-standards are already known. This knowledge can be built upon, along with the experiences of other

EU countries to anticipate future labour market skills needs and provide adequate training. At present, ESF activities are shaped by a labour market administration which deals with typical labour market problems. ESF should concentrate on the identification and exploitation of labour market development opportunities. Small businesses and NGOs could help in the identification of such opportunities if they are monitored on a regular basis. These entities are closer to the market and to the consumer, which gives them very valuable information that can be utilised by labour market administrations at regional levels.

Support the emergence of green economic sectors

Increase awareness

Activities should be organised to increase general knowledge on the various threads and opportunities of the green economy. These activities should include university research, sensitisation campaigns, NGO activity, and public debates devoted to raising awareness. Ecology must be linked with economic growth and sustainability, and successful cases can be identified and highlighted as examples of this positive relationship. The Tripartite Dialogue (Public Administration, Trade Unions and Employers) could also come together to play a responsible role in raising awareness of the green economy and in providing adequate training. At present, these bodies act in a rather uncoordinated way.

Organise small businesses to grow collectively

As in most OECD countries, small businesses in Poland do not collaborate. They are too focused on their day-to-day work and have little opportunity to exchange information or organise themselves to reach larger markets. Taking the example of the shoemaking industry in rural Italy, regions in Poland could foster collaboration among businesses in areas of central interest to position their region within a specific green sector. For instance, in Podlaskie, the Agricultural Advisory Centres could become reference points for small farmers in terms of communicating the opportunities of new markets at national and international levels, providing free advice on access to funds, providing information on certifications and new trends, and ensuring that small businesses can collectively grow and position themselves in green economy sectors (e.g. in organic food or biomass production in Podlaskie's case).

Change behaviours

Marshall Office staff can exploit opportunities arising from changes to environmental legislation and changes in civic attitudes to environmental issues. Legislative changes, together with changes to consumer habits, are the main drivers for green economy development in Poland and these changes also create new business opportunities. ESF staff can carefully monitor such changes and designate the areas, types of businesses and types of skills to be supported by the ESF funds. They can act as brokers between the green economy (market/business opportunities) and the labour market system in the regions. To fully achieve this, however, labour market institutions at regional levels need to strengthen their capacities in terms of data collection, information analysis, forecast and monitoring of business behaviour. This kind of information is not currently available, widening the gap between the labour market and the businesses reality. ESF Staff, Marshall Office staff or other public servants need access to this information in a comprehensive manner. This information should be obtained, analysed and communicated by regional labour market research bodies (like the Gdansk Institute for Market Economics in Pomorskie or the Podlaskie Labour Market Observatory). At the same time, changes in civic attitudes should be recorded and support measures can be undertaken based on such modified attitudes.

Stimulate the demand for green products and services

A market for green products and services will emerge as a consequence of regulations. These regulations can be used for proper, clear and transparent market development and combined with grants

and loans to support the demand for green products and services that may initially be unprofitable or too expensive. Public procurement is also a powerful tool to generate the green production of goods and services, and a good opportunity to lead by example. This is further detailed in Chapter 4.

Target support to sectors according to the capacities of each region

The competitive production of renewable energies and the development of other key sectors for potential green growth, should be supported according to the best capacities of the individual regions: cultural tourism and renewable energies in Pomorskie, particularly (offshore) wind and biogas energy; natural tourism, organic food processing and biomass production in Podlaskie. Support should also be made available for the development of other related occupations, such as consultancy activities, environmental auditing, trainers, etc. in order to reach out to a wider audience and educate consumers.

Contribute to job creation in the green economy

Support SME development and growth

SMEs need support to enter new green markets as well as to integrate supply and value chains nationally and abroad. In the two regions, it was made evident that SMEs lack the capacity to seize the opportunities arising from greening the economy. With ESF Funds, the regional governments could either support effective initiatives, such as the GTC in Podlaskie, to act as brokers and support businesses in their adaptation to the green economy, or train ESF and Marshall Office staff to provide free advice to SMEs and potential entrepreneurs on ways to enter green markets and cope with regulations. The lack of internal capacity within these small businesses may lead to the closure of enterprises and to the destruction of jobs. It is therefore important to ensure that the industry, at all levels, can adjust at a good pace.

Enhance collaboration between businesses and universities to drive innovations

Universities seem to show a lack of interest towards issues concerning the green economy. According to some interviewees, universities do not collaborate habitually with enterprises that have developed or are interested in new technological solutions to improve energy efficiency, produce renewable energies, or explore the skills and training needs for potential economic and job growth, etc. Even though it might seem difficult, it is worthwhile trying to bring businesses and universities closer together. ESF funds could be used to finance technological or socioeconomic research involving both groups, including transnational investigation, orienting such research towards practical application in enterprises. ESF funds could also be used to promote research within firms, with the possibility of cooperating (and sharing funds) with universities or research centres. There are similar experiences in other countries that are worthwhile reviewing. For example, in Spain the PROFIT project, managed by the former Ministry for Science and Technology, promoted cooperation between enterprises and universities or research institutes and gave priority, on occasions, to green products/sectors.

Build regional innovation systems

Collaboration between businesses, universities, technical colleges and regional administrative bodies should be made more systematic through the establishment of regional innovation systems. This would support both technological and non-technological innovation to emerge and would allow knowledge and skills to be retained locally. Such a system would also facilitate the exchange of information on market, product and sector opportunities, on-going research collaborations and the positioning of regions according to their strengths. For instance, Podlaskie could be well positioned as a rural innovation system, with the eventual establishment of a cluster on organic food and/or biomass production. The Agricultural Advisory Centres could be responsible for the management of the regional system in Podlaskie. Pomorskie, on the other hand, could be positioned as an innovation system building on the recuperation of the shipyards and

making use of the knowledge already in existence. This could be focused, as happened in Belfast (see Annex), on wind turbines or another green-related activity that could make use of the resources and assets available in the region.

CHAPTER 3: DEVELOPING GREEN SKILLS

By Vanessa Foo

Abstract

This chapter analyses skills development for the green economy in the regions of Podlaskie and Pomorskie and consists of a number of sections. The first section describes the state of the workforce in the two regions and the initiatives for its green development. It briefly analyses expected changes in job profiles and corresponding skills needs, while also addressing how the demand for these skills is currently being met in the private and public sector. The next section assesses the strengths, weaknesses, opportunities and threats of green skills development in the two regions. The chapter concludes with a number of policy recommendations for Pomorskie and Podlaskie.

Policy issues

As governments and industry increase efforts to take advantage of the economic opportunities provided by the low carbon economy, the need to ensure there is a workforce with the skills required to exploit those opportunities becomes more pressing. Growth in demand is likely to increase competition for workers with high-level, specialist skills. The skills strategies developed by governments with the private sector need to recognise and anticipate this demand to ensure new and existing workers are equipped to support and share in the success of these future growth sectors.

There is an emerging consensus that few of the skills critical to the transition to the low carbon economy are new. The French Ministry of Environment states that “very few jobs today are based purely on new competencies”. The Aldersgate Group, a high-level coalition group of UK businesses, politicians and environmental groups, has suggested that the fundamental skills for the majority of environmental or low carbon jobs already exist, and that the emphasis of skills investment should be to develop training to enhance existing skills rather than the creation of new skills.

The boundaries between what is and is not low carbon work are becoming increasingly blurred, and there has been much debate in recent literature about the type of green skills that are required in the so-called “transition to the low-carbon economy”. Some argue that green skills are traditional skills, which are possessed within many existing occupations, and are now being transferred into environment-related sectors and services. New skills are often associated with new occupations, but defining such skills is further complicated by the fact that what is a “new” occupation in some countries is actually quite “old” in others. For example, a carbon auditor in Estonia may be considered to be a new green occupation but in the United Kingdom, it could be seen merely as a shift in the competencies of a traditional financial auditor, which is a long-established occupation.

Others argue that the type of green skills required to build an adequately qualified workforce are completely new and also specialised, with common examples including knowledge of sustainable materials and carbon foot-printing skills.

The conclusions from the European synthesis ‘Skills for Green Jobs’ report for CEDEFOP¹⁴ would appear to suggest that building the stock of “newer”, more specialised skills sets is less important than

topping up existing skills sets and the more generic skills required. Skills development responses should prioritise investment in existing skills sets, as well as improving the generic skills of people across the entire workforce.

Analysis of Poland

Identification of green skills and anticipation of skills needs - who does this and how?

Interviews with various stakeholders in both regions, as well as the Ministry of Regional Development in Poland, suggest that there is a clear mismatch between labour demand and supply, though data substantiating this perception is scant.

A large proportion of activity to analyse, anticipate and forecast changes in job profiles, as well as to identify the types of skills and competences demanded by employers, is undertaken by labour offices and labour market observatories at both the county (*powiat*) level and the regional (*województwo*) level. Interviews with officials within these organisations have revealed two more general institutional issues, which in themselves are giving rise to a lack of understanding on the green skills concept:

- *A sectoral approach is being taken but progress is slow:* labour offices are tending to focus on particular sectors which they associate with the low carbon economy, but have made little progress in determining the size of such sectors and potential for employment creation, or the degree to which these sectors are “environmentally-friendly” or “green and decent”. This lack of progress is in part due to the fact that labour offices have not yet gathered the relevant data from enterprises within the sectors necessary for such analysis, the reason being the lack of clarity on businesses’ perspectives in relation to the green economy.
- *Poor coordination between labour offices at different spatial levels:* as analysed in Chapter 2, regional labour offices tend to focus on improving the quality of supply into the regional workforce, with county labour offices being responsible for unemployment benefit payments. Although there is a clear division of tasks between the different spatial levels, more coordination is required between the regional and county labour offices to better identify skills needs and the ways in which the unemployed could be up-skilled to become more employable. Furthermore, although some research has been conducted at the regional level, there is no “systematic” approach to date of researching employers’ skills needs at a national level, with regional-level research being relatively fragmented. This is currently being done by the Labour Market Observatories, but it needs more regular updates, monitoring and reliable data.

These issues feed into a lack of awareness and understanding on how to define green skills and occupations among the institutions responsible for identifying skills needs. The term “green skills” remains a relatively new concept to the policy arena in Poland, with regional labour offices only starting to become aware of such terminology in the last 2-3 years. Some studies have only just been commissioned to explore skills needs associated with the low carbon economy, with initial results and findings not likely to be made available until later this year (see Box 3).

Box 3. Regional level initiatives to anticipate skills needs

In Pomorskie, the Voivodeship Labour Office in Gdansk has recently commissioned a 3-year long study to undertake detailed research into employers' demand and the skills they require, publishing a report on a yearly basis. Viewed very much as a pilot project, the study – which is part of Measure 6.1 of the Human Capital Operational Programme (co-funded by the European Social Fund) - aims to fill the void on knowledge in this area, and is driven by the “obvious truth” that workers in the region are not well-adapted to the needs of employers, as well as the demand from educational institutions for this type of information.

In Podlaskie a study scheduled to run between June 2011 and May 2012 relates to establishing whether the current vocational education and training (VET) system can sufficiently prepare employees for green jobs, although the methodological approach has not yet been finalised. This study will be developed with EU support.

Issues of data collection and classification

The methods used in skills needs identification are likely to require improvement. At present, the voivodeship labour offices undertake studies, surveys and telephone interviews with employers to research their needs, with some research being conducted at the national level to look at “surplus positions”. However, much of the information relating to the types of jobs available is obtained from labour agencies at the county level only and is collected every six months. This information also relates predominantly to jobs in the public sector, some of which tend to require a lower level of skills and competences, and which is not necessarily an accurate reflection of the skills needs of most employers. One interviewee¹⁵ estimated that labour office statistics only “cover” a third of all jobs and labour market movements. The interviewee also suggested that the best sources of information on the skills needs of the “real labour market” are the human resources departments of major companies. Furthermore, it is the private employment agencies (intermediaries) which generally attract applicants with higher qualifications and skill sets and which account for the majority of labour market movements – notably due to the perception that public labour offices target less qualified workers. This would appear to suggest that much of the public labour offices' information on employer demand and skills needs is therefore limited in its coverage and application.

In Pomorskie, according to the Gdansk Institute for Market Economics¹⁶, a “Regional Intelligence System” has been recently introduced to facilitate better collaboration between public administration, citizens, and businesses as well as to enhance cooperation between enterprise, public administration and regional labour offices. Little information is available on this system as of yet given its relative infancy, although it is understood that the system has been introduced to improve information flows on - inter alia - labour market movements and the types of skills currently being demanded by employers, by enhancing coordination with, amongst other stakeholders, the human resource departments of major companies in the region. It is worth mentioning that the system is a new way of managing/programming regional development rather than a new “institution”. It is to be a new approach to programming the whole range of development issues – labour market movements and the types of skills currently being demanded by employers are just a part of them. The majority of labour market movements are perceived to be in the private sector, which is often poorly captured by public regional and poviast labour offices. HR departments are therefore often considered to have a valuable source of information on the “real labour market” in Poland, and to better reflect the demand for certain occupations and skills. However, HR departments are mainly present in major cities and in micro scale (i.e. consider needs of specific branches or a single company). Therefore HR departments do not necessarily reflect the situation on a regional labour market and that is why it is essential for public labour offices to strengthen their capacities in data collection, information analysis, forecasting and monitoring of occupations and skills profiles in close consultation with businesses.

In Podlaskie, the Labour Market Observatory within the Voivodeship Labour Office in Bialystok has had long-established ties with enterprises. Of the seven members of the Programming Council, three are entrepreneurs. Enterprises play a role in helping to define the scope of the Labour Market Observatory's studies, and the Observatory prepares information for entrepreneurs on the profile and situation of the regional economy on a systematic basis each year. The Observatory has also recently started analysing two British and two American web portals to gain a better understanding of the categories of jobs in demand, in the belief that it will provide some useful indication to Poland in forecasting what types of professions will be in demand in the next five to ten years.

The study visit has revealed that there is a scarcity of data on the classification and incidence of green jobs in Poland. Data that does exist tends to be snapshots of estimates – particularly in the renewable energy sector – rather than time series of rigorously collected observations across industries. This – coupled with the relative infancy of the “green jobs” concept in Poland – makes classification of jobs an even more difficult task. This in turn creates uncertainty in knowing what types of training to focus provision on – horizontal, “pro-environment” awareness raising or sector-specific training.

Despite such definitional barriers, Poland is currently adapting the national classification of jobs to bring it in line with the European classification system, to allow more direct comparisons to be made. More research on employers will need to be undertaken first, however, to establish the characteristics of certain jobs and it is likely that a number of jobs are not covered by the existing Polish classification. Currently, the existing Polish classification covers 213 professions¹⁷, which include for example, environmental protection technician, environmental engineer, land management technician, and hydrologist. In 2007, “new” professions, such as a renewable energy systems and applications technician, were added to this list of occupations, although there is recognition that the scope of the green economy is continuously widening, and the Ministry of Education is broadening its perspective to consider other more “conventional” occupations, which have major greening potential, such as farmers, foresters and technicians who operate forestry-related machinery.

Finally, the recognition of informally acquired qualifications is not yet a solid system, though it could be of help for easing the transition to new or greener occupations. The role of the National Qualification Framework for Life Long Learning, particularly for those low skilled or with few formally recognised skills, is crucial and its further implementation should concentrate on effectiveness and avoid procedures which are too cumbersome in terms of allowing for recognition of the more informal skills which have been developed by low-skilled workers in particular. In the Pomorskie region, efforts are being made to move in this direction, with a programme for validating “informal skills” being initialised to recognise those with no formal qualifications.

The role of enterprise in anticipating and providing skills

The private sector has a very important role in anticipating, and to a much larger extent, providing, appropriate training to enhance the green skills of the workforce in both Podlaskie and Pomorskie. There is a general consensus among all stakeholders that entrepreneurs are significantly ahead of the education sector in providing relevant, targeted training for their workers. Changes to the educational system lag far behind the needs of employers, with the content of educational material often viewed as out-dated and lacking reflection of good practices from business. Education is also perceived as too theoretical and lacking in practical application, which limits the possibilities of industry to react quickly to seize new market opportunities as they arise.

Businesses often take their own initiative to offer training to students in this area and are seen as more “reactive” in comparison with the “inertia” of the public sector. In addition, some companies have well-developed and rigorous selection procedures, which make them well-placed to make observations about

the suitability of current graduates to fill certain job profiles. Interviews with a number of renewable energy enterprises during the study visit provided insights into how well-equipped recent engineering graduates have been for graduate-level jobs (see Box 4).

Box 4. Bartosz company: Providing skills in-house

Bartosz Sp.j. Bujwicki, Sobiech Cybulko is a sanitary engineering company, providing equipment and complete systems that deliver significant cost savings by reducing water, heat and electricity consumption. The company has also recently entered the field of ventilation combined with heat recovery.

The company employs a mix of university-educated workers and manual labourers - 30% of the employees are estimated to have been educated to tertiary level (engineers), 40% are skilled manual labourers (trained largely on the job) and 30% are lower-skilled workers, requiring shorter training courses (e.g. cutting a pipe neatly). The company provides them with a clear career path to progress ("individualised training paths") and workers tend to change job profile over time.

The company employs approximately thirty engineers, who are required to pass a series of internal tests before progressing to making a full application for the job. The tests were developed by the chairman of the company after he observed that two new engineering graduates he had employed were unfamiliar with the "simplest mathematical and physics issues". Previously, the pass rate for the internal tests was as low as 10%, although this has improved to 30%. Currently 30-40 applications are received per opening in the sales department, of which only 2-3 are considered appropriate for the job.

The chairman of the company has the perception that the Polish education system has deteriorated significantly and that the current crop of graduates have problems with "abstract thinking".

On average, engineers require 3-4 years of internal training on-the-job. This is considered a pivotal part of their learning and development. They also require training by suppliers of the various components of the technology. The company cooperates with renowned research centres in Poland and offers extensive training programmes for external engineers so they know how to install the company's components elsewhere. The company also hires external companies to provide training to welders and manual labourers. Other training requirements include health and safety, which requires certification.

There are mixed views among employers as to which types of skills are most important for achieving a transition to a low-carbon economy. Evidence from the study visit suggests that traditional skills associated with engineering remain crucial. These range from "simple construction skills", such as welding and roofing, to more technical skills associated with the correct installation of devices that require greater accuracy and precision. In Pomorskie, the transferability of such traditional skills is becoming evident, with former shipyards facilitating a shift towards greener occupations supported by the renewable energy sector. Former shipbuilders, faced with the decline of their industry, are now finding themselves building wind turbine components and preparing to produce parts for the wave power industry. Such opportunities are all the more crucial in Pomorskie, where registered unemployment is now over 13% (based on information from county labour offices) and where there is currently a large labour surplus of metalworkers made jobless by the recent bankruptcy of the Gdynia shipyard¹⁸. Training and subsidies have been given in the past to metalworkers to re-skill them during the transition period¹⁹.

Interviewees also perceive there to be an over-supply of "academic" people who have graduated from higher education institutions (HEIs) with qualifications that provide "softer" sales and marketing skills but no technical ability. The unemployment rate among those with tertiary education is significantly higher than craftsmen with a more vocational background, which could also suggest that the more academic workers are struggling to find jobs. The demand for craftsmen in Poland is also likely to be pushed up by the fact that a number of Polish craftsmen leave to find work in countries such as Sweden and Germany, where pay is more competitive.

The key message from most employers was that manual skills remain important to their local and regional operations. Most private sector interviewees consulted during the study visit were associated with the renewable energy sector and agri-businesses, and hence may be more likely to attach value to manual skills than to softer skills such as teamwork and communication.

Having said this, in an economy which is perceived as fast-changing and project-driven rather than sector-driven, it is argued by others that interpersonal, more cross-cutting skills such as those previously mentioned are becoming increasingly more important. Attitudes towards new jobs also remain essential. Language and ICT skills are also held in high regard by some companies, who value people with broader skills sets²⁰.

Defining training needs for the public and private sectors

The study visit and existing literature both suggest that the most suitable skills development responses focus on “topping up” existing skills sets and the provision of more generic skills, rather than the more specialised, “newer” skills sets. One interviewee in the Podlaskie region²¹ suggested that the skills base in the region “does not require dramatic modification of existing skills” – simply “additional components” to the current skills base, which is particularly true in terms of low-skilled professions.

In jobs with high skill requirements, new specialisms may be needed, such as those among engineers. Skills development responses should be prioritised in favour of building on existing skills sets, as well as improving the generic skills of people across the entire workforce.

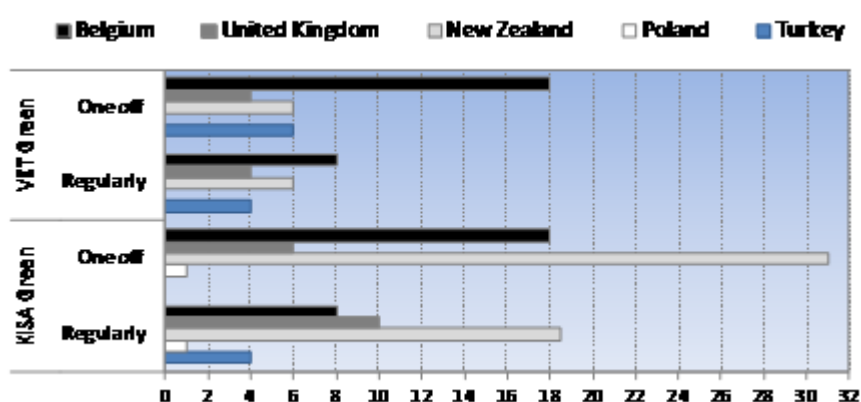
Government policy in recent years, in terms of providing environmental skills, has mainly involved raising general environmental awareness among Polish society and encouraging environmentally friendly behaviour. The ecological education of children and young people has been emphasised²². However, levels of environmental awareness, both within the public and private sectors, remain relatively low, despite such efforts and encouraging signs of improvement in the last few years. Scepticism about the severity of the impacts of climate change remains prevalent, worryingly so among stakeholders working in organisations associated with environmental protection and renewable energy. Interestingly, in a country with a cold climate, such as Poland, some view potential temperature and humidity increases resulting from climate change positively – seeing possible improvements in agricultural yield.

Societal attitudes suggest more progress is needed to raise awareness and to develop a better understanding of climate change, related policies and their impacts. This extends through to government, as climate policy in Poland is viewed by a number of the interviewees as “passive”. Municipalities remain averse to increasing environmental training offers for their workers. These issues will only act as further barriers to driving forward green public procurement within Poland and to effectively supporting green growth in the economy. SMEs are particularly constrained by this mentality, with a significant proportion also displaying reluctance to spend money on environment-related training given often limited resources and “higher priorities”. This goes in line with preliminary findings of the present OECD project.

Indeed, preliminary findings of the present OECD project suggest that the overall labour market adjustment to green growth has taken place at a slow pace until now, with few jobs already transformed or new or different staff recruited to meet green product demands or implement greener production processes²³. However, greening the economy is likely to quicken, and seizing opportunities along the transition will require profound transformations of occupational profiles and business operations²⁴. Since SMEs account for approximately 99% of all enterprises and two thirds of employment across the OECD area, their adaptation to sustainable practices, in both manufacturing and services, is key to a transition to green growth.²⁵ Most SMEs appear to have little awareness about the future needs for new green skills and their investments in green training and knowledge-intensive activities are very limited²⁶.

The OECD surveys on ‘Leveraging Training and Skills Development in SMEs’²⁷ and ‘Climate Change, Employment and Local Development’²⁸ find low levels of awareness about and activity in up-skilling employees as part of a strategy to green products and production. Poland participated in the former survey. As Figure 1 shows, employee participation in green Vocational Education and Training (green VET) programmes operated by firms and informal green knowledge intensive service activities (green KISA) are quite low, with green KISA being more frequently used by firms as a way to acquire knowledge than traditional forms of VET²⁹. The limited availability of green training services in the market and the difficulties for VET firms and trainers to design curricula that are relevant for SMEs in their adjustment process probably play a role in explaining low participation. It appears that SMEs face important obstacles to accessing training, but that informal knowledge intensive activities offer more flexible access to the knowledge required by firms to take advantage of green opportunities arising in the market.

Figure 1. Participation rates in green training tend to be quite low for employees in SMEs



Source: OECD (2010), Leveraging training and skill development activities in SMEs – Cross-country analysis of the TSME survey, CFE/LEED (2010)14, Paris.

ESF funds could potentially be used here to provide financial support to develop workshops which bring together companies within specific sectors. Such companies, mainly SMEs, may have expressed interest both in investing in environment-related courses for their staff and in innovative techniques and technologies which may result in cleaner processes and practices, but which need to take a final step in committing resources to such investments. ESF-funded workshops could provide demonstrations for companies on the long-term cost savings that could be achieved through investment in environmental training and cleaner techniques and technologies. In particular, demonstrations for SMEs could focus on how they can make savings through improved resource usage and energy efficiency in buildings and manufacturing processes, reduce waste through use of new materials and production processes, and how they can gain market share through responding to consumer demands for more environmentally friendly, low emissions products and services. Certain skills could be gained in relation to this, both in the public and private sectors. These could include³⁰:

- Improving energy and resource efficiency awareness within companies and homes through measures to highlight the benefits and savings that can be achieved at all levels;
- Promoting an eco-design approach with enterprises aimed at reducing the environmental impact of products throughout their life cycle across the product cycle in design, manufacturing, marketing, retail and final consumption; and
- Up-skilling procurement staff within the public service implementing green public procurement procedures – particularly the concept of life-cycle costing.

Businesses also continue to suffer from attitudinal issues, with a lack of “socially-minded thinking” and a perception that environmentally friendly practice is expensive. Podlaskie has had its environmental conflicts in the past (such as over the building of the Augustow ring road through Natura 2000 land which prompted strong opposition from NGOs). Changing public attitudes towards green initiatives and bringing both NGOs – who have a wealth of knowledge in nature protection – and public administration together to think of a common training strategy will be important. ESF funding could be used to create initiatives similar to those which exist in South Eastern European countries, where NGOs currently play a crucial role in raising environmental awareness and in changing public attitudes towards green initiatives.

For example, in 2002 the Regional Environmental Centre for Central and Eastern Europe (REC) designed a guide entitled ‘Public Education to Raise Environmental Awareness’³¹, which was aimed at empowering NGOs and helping them realise their potential as effective activists for raising environmental awareness, as well as being champions of knowledge, positive attitudes towards the environment and competency in citizen action skills. Among other things, the guide aimed to: improve participants’ ability to plan, implement and evaluate public education campaigns; offer a hands-on experience in developing strategy, selecting mechanisms and improving the skills required for effective public relations, working with the media and performing local public information activities; provide the technical skills needed for writing, designing and producing publications; improve participants’ ability to organise public meetings and hearings and special environmental education events; and transfer knowledge on how to make effective use of the Internet.

There are some examples of good practice in the form of up-to-date relevant training offers scattered across both Pomorskie and Podlaskie. One such example is the Pomorskie-based Scientific Society for Organisation and Management, which provides courses on negotiation in three HEIs in the area. It aims to transform thinking among students, illustrating the economic benefits of investments in environmental infrastructure (e.g. incineration plants) and the need for public participation and social dialogue during such projects.³²

Other initiatives providing training relevant to the low-carbon economy tend to be part-financed by European funds – particularly the European Social Fund (ESF) under the Human Capital Operational Programme. The budget of the programme amounts to approximately EUR 11.5 billion, of which EUR 9.7 billion comes from the ESF and the remainder is a national contribution. A good example of such an ESF-funded initiative is the Green Technologies Centre in Bialystok, in the Podlaskie region, which was funded through the Community Initiative EQUAL (ESF Programme in 2004 – 2008) and has made an important contribution to training small entrepreneurs in the region. See Box 5.

Box 5. Training activities for the low-carbon economy in Podlaskie

Through the Green Technologies Centre (GTC), the region of Podlaskie has a project that entails a system of free training courses, placements and presentations in six thematic areas: domestic sewage treatment plants, management of packaging waste, traditional building techniques, ecotourism, regional products (e.g. cheese and meat), and renewable energy sources. The GTC has helped to train over 3500 beneficiaries under EQUAL through lectures and workshops, using partners from other Member States who were responsible for sharing knowledge on various thematic aspects such as eco-tourism and the recycling of used clothes. In 2006 and 2007, over 100 participants, mainly from SMEs and farms in Podlaskie, were trained on the building of domestic sewage treatment plants by specialists from Polish universities and institutions, and professionals. The training helped workers to develop new skills and enhance their qualifications and it triggered the establishment of several dozen new companies and plants, some of which were set up by previously unemployed individuals. The number of people trying new things on their own is seen by the Project Coordinator as a good indication in itself of the success of the programme to date. The Centre has also been grouped with nine other “best projects” for national dissemination and has provided materials to a partner to facilitate the establishment of a competence centre in Lower Silesia, which was subsequently awarded a medal by the Ministry of Education in recognition of its quality.

The training programmes have experienced high demand, even receiving applications from other regions such as Pomorskie and Lower Silesia. In 2007, demand for training on the construction of domestic sewage treatment plants exceeded the supply of places by some 200 until extra funding from an environmental protection organisation in Germany (DBU) allowed for additional places to be provided. Although the Centre has observed high demand for training in solar PV, it has not yet been able to provide training on that topic. It is likely that demand for training in Podlaskie will continue to increase.

The study visit has identified certain concerns about EU-funded training provision. A number of interviewees suggested that the EU funds “interrupted” a well-functioning market for training and led to a “change in the rules”. Interviewees suggested that training companies received EU funds without undertaking any real analysis of skills needs and appeared to have problems targeting the right individuals for their training and creating the right courses. Bonikowska (2011) argues that there has been a concurrent commercialisation of higher education institutions that, stimulated by the possibility of EU subsidies, have started to act more like “training companies”. Focus is given more to the acquisition of knowledge and a “serious lack of focus given to obtaining skills and competencies required by employers”.³³

As ESF funding distribution shows, most of the funding goes to providers of very simple basic level training. In Poland, a limited number of training providers are ready to deliver training in the area of green business skills. Basic level training should indeed be strengthened in the education system but should be supported by the labour fund. Highly-specialised training, within enterprises and also in training centres, should be supported by ESF Funds. Currently, this highly-specialised training could be offered in Poland by either foreign experts in the topic, private companies, or business owners in the specific sector. This is why a close collaboration with private sector actors (i.e. SMEs, larger companies, private training centres, foreign investors) is essential for this kind of training to be made available in Poland in the short term.

A number of sectors in Podlaskie have the potential to bring greener skills to their job profiles. Agriculture remains the dominant sector in the region. The main crops are cereals and potatoes though the region’s dairy, poultry and meat products are also well-known. There is massive scope to train farmers in new materials and production methods that respect the environment, particularly biodiversity. Some progress has already been made in this area – for example in Podlaskie, cheese production has grown in popularity as an economic activity, which has stemmed from the use of Polish red cows to graze the land, providing favourable conditions for storks in the national stork protection programme (see Box 6). Podlaskie also produces a quarter of the country’s milk (approximately 1.5 million tonnes per year)³⁴, and there are some discussions around how milk producers could utilise unused fodder and bio waste from potatoes and corn for biogas production. There are also opportunities in organic farming.

Biomass is also seen as an area which could be developed further in Podlaskie, but there are concerns that entrepreneurs who have been trying to tap into this production may not be sufficiently informed about the effects of introducing energy crops such as willow, which can be negative in the long term as well as positive. For example, willow may spread into the wild or surrounding areas and either displace native species or become a serious pest. More awareness-raising is needed among biomass producers to ensure they are fully aware of the potential impacts of biofuel production on biodiversity³⁵.

Secondly, tourism has considerable potential in Podlaskie, due to the extremely rich natural heritage of the region: over 20% of the territory in the Podlaskie region alone is estimated to be protected by law (e.g. Natura 2000 designation), due to the richness and presence of important species and habitats. However, despite this wealth of internationally significant flora and fauna, growth of eco-tourism in both Poland and the two regions being studied has been slow. The interest of domestic tourists remains limited to using these green spaces for biking and fishing and raising awareness among tourists of the other opportunities associated with these protected areas (e.g. promoting bird-watching) will be crucial to driving

forward eco-tourism, which in turn will bring about a change in job profiles. In this context, integrating business skills into eco-tourism operations would be of tremendous use to budding entrepreneurs. Furthermore, given the low levels of awareness relating to the eco-tourism opportunities offered by much of Poland's natural spaces, using ESF money to fund workshops to promote the business case for eco-tourism could prove to be very effective in improving entrepreneurial skills among rural workers in particular.

Box 6. Popko Farm: Up-skilling the agriculture sector for the green economy

The Popko farm is a family-run farm of approximately fifty hectares and containing fifty cows (some of which are traditional Polish red cows), located in the area of Narwiański National Park, Podlaskie and mainly engaged in dairy cattle breeding and milk production. There is also a small cheese factory where cheese is produced using traditional methods and without food preservatives. The owner of the farm, Mrs. Danuta Popko, organises workshops where she teaches traditional cheese production.

A substantial proportion of the farm's revenue was previously earned from selling the traditional cheese in Warsaw, although stricter legislation regarding health and safety prevented the farm from continuing to sell its cheese there, due largely to the financial costs associated with compliance with the new regulations. The cheese products are now mainly sold in Podlaskie and neighbouring poviats. As a result of the loss of revenue, farms such as the Popko farm are looking to further diversify production, although a notable problem for small-scale farmers is the lack of resources to apply for subsidies available for diversification.

The traditional cheese production workshops have attracted a number of visitors from varying backgrounds, ranging from other farms faced with a similar situation of being unable to comply with health and safety requirements and hence suspending business activity in Warsaw, to farmers from the mountain region in South Poland who were already familiar with cheese production but were using primitive techniques in comparison. Farmers from elsewhere in Western Europe have also attended workshops at the Popko farm.

At present, the farm is run by three full-time staff. Despite the high unemployment rate in the region, the owner has experienced problems in recruiting staff to meet the needs of the expanding farm because of the lack of willingness to do this kind of job. As a result, the farm has created conditions on the land which allow for the application of more capital-intensive farming methods (e.g. motorised production), reducing dependence on labour inputs.

The level of support provided to producers to gain access to subsidies and funds varies by poviat, according to Danuta Popko. In some poviats, efforts are being made to increase the environmental awareness of farmers, and associations of producers are being established. However, farmers in other poviats are experiencing low levels of support, and ESF funding could potentially help to plug the gap in resources by establishing organisations which could identify opportunities for farmers to access financial support, and provide practical assistance throughout the application process.

Lastly, construction is a sector which presents significant opportunities to green job profiles in Podlaskie. Poland's upcoming hosting of the European Football Championships in 2012 is seen as a driving factor behind the demand for greener technologies and the use of eco-construction principles, as was the case in London for the 2012 Olympics, though there may be problems with access to relevant skills. Similar to the case of the London 2012 Olympics, major sporting events such as the European Championships could be used as an important platform from which to develop more skills within a community (see Box 7). People with good roofing skills and plumbers remain highly valued. Making use of the Polish diaspora abroad could be an opportunity to ensure skills in Poland for these kinds of sectors.

In Pomorskie, where construction is important to job creation, a strong construction cluster is already in existence, with cooperation improving between trade associations and construction companies. Unlike in other sectors, trade unions are actively involved in validating the competences of workers within the

industry, and are working with employer organisations to validate those of the bricklaying and roofing sectors.

Box 7. Major sporting events and the demand for skills in the green economy

Construction Skills – the Sector Skills Council for construction working in partnership with employers, government and training providers in the UK – forecast that the Olympics would create approximately 33 500 additional jobs over the next seven years from 2005 onwards, with civil engineering and a range of specialist skills in particularly high demand.

In addition, the industry needs thousands of technical and craft workers from bricklayers to plasterers, but, as with graduates, it cannot rely on recruiting solely from its traditional demographic to meet demand. Currently, only 1% of workers in trade roles in the UK are women, and more efforts are required to convince more women that construction is a viable career choice.

In order to monitor and plan for how many people – and in what roles – will be needed to deliver these projects, Construction Skills set up the Construction Skills Network (CSN), a comprehensive model for forecasting capacity, productivity and skills across the construction industry, backed by an alliance of key individuals from across the industry and around the country. The Model analyses national data on capacity, productivity and skills to predict future employment and training requirements, with the CSN structure consisting of 12 regional econometric models, drawn together by an overall national model. Experian – a global credit information group - runs the model and works with the Technical Reference Group to develop and improve it, CSN Members are then invited to a series of 12 observatory meetings to challenge the assumptions and inform the Model with up to date views and opinions, therefore “validating” its outputs.

The types of skills required in Poland are likely to be similar to those which were required during the construction of the Olympic sites in the UK. In 2007, the Ministry of Economy in Poland estimated that preparations for the European football championships would generate at least 100 000 jobs in Poland, with the Euro 2012 effort potentially generating as many as 370 000 jobs by the end of 2012, referring to a survey made by the Confederation of Polish Employers. Given the number of stadium renovations, the building of accommodation, and the expansion and renovation of major airports and rail lines required, this equated to a need to embark on a major construction effort, complicated by the out-migration of tens of thousands of Poles with construction skills to Great Britain, Ireland and other European countries after Poland joined the EU in 2004. Estimates in 2007 were that Poland would require about 200 000 construction workers.

The effectiveness of the current systems to meet training needs – both in HEIs and VET – remains a concern. In Pomorskie, the level of vocational training is “not what it used to be”³⁶. A well-developed network of trade schools provided a “good average level of vocational education” and the apprenticeship system previously in place was seen to produce workers with a good set of skills – largely because the apprentices were able to spend half of their time in production plants obtaining practical experience. There is now, however, a perception that this educational system has been severely weakened. In recent years, Poland has closed many vocational schools under a national reform scheme, which introduced “gymnasium” as another level of education in vocational schools and technical colleges. This is believed to have led directly to an increasing skills shortage in key sectors such as plumbing³⁷.

Poland’s favouring of a marketised model, with state funding directed towards schools rather than post-school or training programmes, also created wide disparities in the provision of vocational education. In particular, rural areas have been poorly served by vocational provision with poor quality courses and high dropout rates.³⁸ Demographic changes are also blamed, in part, for leading to the demise of vocational courses. There are attempts to support this VET once again and to recreate such trade schools, but such attempts are being hampered by the out-migration of skilled workers – in particular those who attended the trade schools – who would be the perfect candidates for becoming trainers.

Entrepreneurship is also considered to be lacking in both Pomorskie and Podlaskie, although it has been argued that support for entrepreneurship is very much alive. Workshops have been carried out on how to prepare a business plan and how to start a business and larger events such as fairs have been held to promote entrepreneurship. Entrepreneurship is also taught explicitly in schools as a stand-alone subject. The job market is dominated by micro-businesses, and subsidies are being offered both through ESF and national streams. In 2005-2006, small businesses were set up by unemployed people in Pomorskie with grants provided by the Labour Fund. Research conducted in 2009 into those small businesses showed that once the subsidies ended, half were still running, indicating a fairly good survival rate³⁹. Interestingly, recent research in Poland has also shown that 30-35% of young people say they would like to manage their own company, and many people in Poland already run sole trader or micro businesses⁴⁰.

In this context, ESF funds could be channelled through providing specific support in the shape of a local coordinator to sectors where the potential to create green jobs is high. Agriculture is a good example, particularly in Podlaskie, where the sector is dominant. It was argued in a recent paper on the entrepreneurial skills of farmers⁴¹ that the most significant barriers to growth of the Polish farming industry could be found in the farmers themselves, (their level of education, willingness to cooperate etc.), not in the lack of their physical resources. It is argued that farmers do not systematically access business advice networks and are less likely to access opportunities because of limited social networks. As a consequence, there is little professional interaction with other farmers who have experience of diversification into new business ventures. ESF funds could therefore be spent on employing a “coordinator” familiar with the local environment to enhance social networking in the area and to encourage farmers to develop closer links with one another in order to access business advice. Currently, support is often more likely to be sought from networks of family and friends before public sector agencies, a trend which ESF funds could help to change.

Barriers to greening HEIs and VET systems

The issues facing both HEIs and VET systems in greening their provision are common to both Podlaskie and Pomorskie, and relate to a number of institutional weaknesses.

Firstly, the VET system does not seem to follow suit. VET provision, particularly at lower levels, has almost dissolved in Poland, with only basic training being offered by VET institutions. VET is facing a decline in popularity, with secondary school students viewing VET schools as less fashionable. This is made worse somewhat by the fact that unlike academic schools and training institutions, which are usually located usually in cities, VET schools associated with agriculture and forestry are usually located in the peripheries, making them inaccessible through the lack of transport infrastructure. Self-governments have tended to close VET schools down in recent years, in part due to their unpopularity among students, but also because the costs associated with running a VET school are significantly higher in comparison with those of a “normal” school. As one interviewee stated, “running a laboratory demonstrating renewable energy techniques is much more costly than a language laboratory”. The private sector plays a significant role in filling in gaps in VET provision and the Chamber of Commerce, for example, is currently running a vocational school. However, what is being taught lags behind changes in the market, and even here institutions are being seen as reactive instead of proactive. Interestingly, a part EU-funded study planned this year by the Voivodeship Labour Office in Bialystok is aimed at establishing whether the current VET system is able to sufficiently prepare employees for green jobs, which will shed further light on how well the VET system is responding to skills needs.⁴²

Secondly, there is an inertia of trade unions and unwillingness to engage in changing the curricula. Determining the right strategies for green skills provision is made more difficult by the complete lack of engagement by social partners in the process. Although trade unions form part of county employment councils and thus should help to determine the training of specific skills, they lack the competence and

awareness to take part in the dialogue effectively – in other words, there is no tripartite dialogue. Trade unions have also been accused of being more interested in governance and decision making and less so in employee training and adaptability. Furthermore, despite the common knowledge that teaching is obsolete, there appears to be resistance by teachers themselves in updating the curricula, for fear of “infringing on several different interests”. Teacher trade unions in Poland are strong and well-organised and reinforce this attitude of “defending the interests of schools”.

Thirdly, HE provision of skills for greening the economy is rigid, too theoretical and not easily accessible to all. Indeed, improvements in all aspects of HE provision are required, as well as improved cooperation with the business sector to drive innovations in the institutions. It is hoped that this will in part be helped by the establishment of a new act on tertiary education giving universities the opportunity to create their own programmes, an autonomy which should lead to more relevant, targeted courses being created to respond to industry needs locally. At present, some HEIs do offer some green economy skills, although academics are expressing concern that such modules remain too theoretical and lack practical application. For example, in the Podlaskie region, the Faculty of Public Administration in Białystok teaches some modules related to greening the economy through the Faculty of Sustainable Development, but from a much more theoretical standpoint. In comparison, technical universities, such as the Białystok Technical University, are likely to equip students with practical skills that are helpful in the workplace, although understanding this distinction is not easy. Useful modules are also often embedded within certain degree courses, which make them difficult for other students to readily access. For example, environment-related modules are only available in the Economics Department in the University in Białystok and are not core. A number of interviewees in the study visit suggested that these modules should be rolled out across faculties and should become core.

Fourthly, there is insufficient incorporation of NGOs into the debate on how to provide the right skills. Non-traditional learning institutions, such as NGOs, are seen as invaluable in providing green skills training in the non-formal sector, as they are often closer to the people and understand the local context better thanks to their proximity. They provide a wide range of activities to move people out of social exclusion through learning and social work, and there are currently attempts to recognise such non-formal learning through the qualifications system. Greater support needs to be given to NGOs to allow them to enhance their role as training providers.

Lastly, there is an evident lack of highly skilled trainers with an understanding of the types of skills needed to green the curricula. These types of skills might include, for example, developing the ability to take a multi-stakeholder perspective and to negotiate the curriculum with interested parties. These parties could include academia, government, industry and industry professional bodies, for example. Trainers also need to be able to encourage students to situate and explain their own environmental perspective using examples appropriate to their professional specialisation, which relies on teachers themselves having enough knowledge of other professions in order to explain roles to students.⁴³

On a more general level, a new skills paradigm is emerging in the context of the green economy that places greater emphasis on design and working in multi-disciplinary teams. Projects often require bringing together professionals from widely diverse backgrounds such as engineers, planners and architects with ecologists and inspectors. Generic skills such as strategic leadership, communication and adaptability are seen to be very important in the green economy. The specific skills associated with greening are not considered to be entirely new skills. Rather, it is more generally the case that the skills are either an add-on of existing skills or amalgam of existing skills. For example, the provision of both specific technological skills and generic training related to carbon auditing and management is seen as being equally important.⁴⁴

“Training the trainers” is commonly identified as an issue in literature relating to skills provision, and this is even more necessary with skills for the green economy. In Poland in general, trainers need much

more assistance in understanding how to introduce greening ideas and concepts into “normal subjects” before they can influence the students.

Challenges and Opportunities

Strengths

Podlaskie

As remarked by many stakeholders, Podlaskie is a region of exceptional natural beauty, with the environment being an extremely important asset of the region’s development potential. The Bialowieza National Park is of outstanding international importance due to its unique role as a habitat to the European bison, which was once endangered. Ecological food processing and labelling is also on the rise in the region and is likely to continue to thrive given rising incomes in Poland and the likely impacts on consumption patterns, with consumers opting for healthier, organic, “responsibly-produced” food. Similarly, the region offers a wealth of tourism options, including bird-watching and cycling, which are currently under-developed.

Pomorskie

The region is situated along the coast and is an important academic and cultural centre. It is also one of only four regions with a positive balance of migration, and contains a high proportion of young people⁴⁵. Access to higher education in the region has also improved significantly, and entrepreneurial activity in the region is linked with a strong SME presence. Most businesses are located in and around the Tri-City area (Sopot, Gdynia and Gdansk), and the region has witnessed a major shift to the services industry, with particular strengths in tele-informatics, refinery, and paper production.

The region has a varied skills base with major potential to fulfil a range of green jobs, whether this be in relation to new occupations or the greening of existing ones. The largest academies in the region - the University of Gdansk and Technical University of Gdansk - both educate specialists in the field of IT technologies, in particular informatics and econometrics, automation and robotics or electronics, and telecommunication. The University of Gdansk offers other studies related to industries likely to be prominent in the future, such as biotechnology. This has direct positive implications for the creation of jobs in the region which relate to reducing the dependence on fertilisers within agriculture. The Faculty of Biotechnology operates in cooperation with the Medical University of Gdansk, where students are educated in, amongst other subjects, environmental protection. The region also has a strong skills base in marine and civil engineering, which provides a potentially well-suited workforce for the renewable energy sector, particularly wind energy⁴⁶.

The region also has a solid base in traditional shipbuilding skills, many of which are directly transferable to the offshore wind turbine industry. This is a particular strength at a time when the shipbuilding industry is in decline, as demonstrated by the recent closure of the Gdynia shipyard. The skills required by offshore wind turbine workers are, in many respects, similar to those developed by shipbuilders. For example, operating large complex structures throughout their life in harsh marine environments is a skill needed in both sectors, as are welding, surface treatment and outfitting⁴⁷. The skills requirement is not so much about specific skills, but rather a demand for a skilled workforce trained to work specifically in the sector. A worker involved in wind turbine production must be able to carry out a range of tasks including:

- Creation of technical drawings of wind turbines and individual subsystems;

- Assembly and disassembly of wind turbine parts;
- Installation of wind turbine systems and technologies;
- Adjustment of engine and other technical installations on the wind turbine;
- Use of measurement and diagnostic tools for identifying errors; and
- Specialisation in wing technology or engine technology.

Wind turbine production also requires generic competencies regarding project management, communication, cooperation, and language skills, which can effectively be gained through many different occupations. Modern day wind turbine workers must be able to undertake several tasks as part of the production and maintenance process and must be capable of functioning in a global market where language and broad knowledge around wind turbine technology is essential; skills which are not unfamiliar to shipbuilding workers.

Weaknesses

Podlaskie

The quality of tertiary education offered by the region is comparatively weak. A number of private universities exist in the region, but none of them are technical, so are therefore less likely to be able to respond to the skills needs of employers in Poland in making a transition to a low carbon economy. Social confidence in Podlaskie is perceived to be low, with little knowledge exchange and dialogue between companies due to fears of competitors gaining advantage. Despite the region having a large proportion of SMEs, the survival rate is low and entrepreneurs have demonstrated a low level of activity in exploiting commercial opportunities, such as those connected to organic food production and eco-tourism, with the only successful eco-tourism operators in the region notably being German and not Polish.

Pomorskie

Although the number of secondary and tertiary level graduates in the region is high compared with Podlaskie, there are concerns over their skills base being insufficiently technical to fulfil some of the jobs emerging in the low carbon economy, in particular those associated with wind turbine component manufacturing and other aspects of solar energy generation.

Opportunities

Podlaskie

Podlaskie has enormous potential in terms of creating jobs in agriculture, eco-tourism and renewable energy generation (namely wind, solar and biomass). However, this will require better training opportunities for farmers (for example, increasing awareness on how certain farming practices could enhance biodiversity conservation), and overcoming low levels of entrepreneurship and a culture that views environmental protection as damaging to economic growth and development prospects. Local government is viewed as being most likely to create the most jobs, with the role of green public procurement being potentially significant.

Pomorskie

Renewable energy production has potential in Pomorskie, with a number of private companies setting up businesses in the region. One municipality within Pomorskie is establishing an educational centre on renewable energy (a collaboration between the regional government and HEIs) with the aim of developing innovative technologies that could be transferred to businesses⁴⁸. There is also interest from investors in biogas production, although government support for incentivising this area is limited. The region is also taking more interest in “greening businesses” and is offering scholarships to PhD students, investigating ways in which their work could be applied to support the greening of businesses.

Threats

Podlaskie

Out-migration is one of the greatest threats to the region in developing skills for greening the economy. The region is demographically disadvantaged, suffering from the loss of a large proportion of its skilled, working-age population to neighbouring countries such as Germany. An effective and adaptable Life Long Learning system is therefore crucial to reducing the skills shortages caused by this demographic deficit. Employees must be empowered to adapt their skills constantly to new economic developments. Developing the right skills base in relation to green occupations will need to commence at earlier ages to mitigate the loss of skilled working-age employees. In general, participation in MINT (Mathematics, Information Technology, Natural Science and Technology) degree courses needs to be encouraged and greater permeability is required between vocational and academic programmes⁴⁹.

Weak policy development and implementation is also an issue for Podlaskie. Major regional strategies do not currently reflect the concept of a greener economy, with the current development strategy having been drafted before the current programming period in 2006, and in need of significant revision and updating.

Pomorskie

The decline of the shipbuilding industry in Pomorskie will pose a threat to the on-going development of the regional economy unless former workers are adequately reskilled or up-skilled to take advantage of their existing skills sets. Efforts by enterprise to diversify into other sectors – namely renewable energy – are being made, but these will need to be sustained and enhanced if Pomorskie is to continue to thrive as a region.

Recommendations

In light of the study visit and the analysis above, a number of policy recommendations can be made which relate to both Pomorskie and Podlaskie.

Ensure the provision of the right skills in the labour market

Identify and classify skills in the green economy at regional level

Due to the limited time and number of interviews during the OECD study visit, the identification and classification of skills has been impossible to define at this stage. Such a task requires a long-term project, with continuous exchanges and in-depth analysis of the market. A survey will also be required to classify skills by sector. A specific identification and classification of skills for the green economy should be undertaken by regional labour market offices. This should be done in consultation with business owners and industry representatives, and should be regularly updated according to the evolution of the sectors. An

example of categorisation of green occupation in a selection of countries is provided in Table 4. This table was prepared by the OECD, with entries from findings reported in a CEDEFOP⁵⁰ and ILO⁵¹ study, along with a number of other studies.

Table 4. Skills profile of green/greening occupations: illustrative examples (OECD countries)

Sector	Occupations	Growth prospects	Skill profile
Recycling and waste management	Waste sorting and reception	Long-established	Low qualification (minimal on-the-job training)
	Recycling and waste technician/waste recycling operator	Vocational qualification	Low – medium qualifications depending on country
	Hazardous waste management	Growing demand in medium term due to tighter regulations	Medium and high level
	Sustainable design manager, recycling and reclamation engineer, co-ordinator of recycling activities, regulatory programme compliance officer	Rising longer term demand from other sectors	Medium to high level skills to address organisational sustainability issues and embedding sustainability principles into product design and production techniques
Transportation (increase energy efficiency and/or reduce the environmental impact of various modes of transportation)	Specialised technicians of fuel cell batteries, automotive engineering technicians	Introduction of renewable and cleaner fuel for transportation	Low to medium for installation and maintenance
	Railroad conductors, locomotive engineers, truck and bus drivers	Greening existing occupations	Topping up existing skills
	Automotive engineers, freight forwarders, fuel cell engineers, logistics analysts/ engineers/ managers, supply chain managers, transportation engineers and planners	Reorganisation and re-engineering of existing (and new) transportation systems	Medium and high level skills combined with sector specific pre-existing medium-high competencies
Vehicle manufacturing (energy efficiency, waste and product lifecycle management, shift of business model from products to services)	Engineering technicians, welders, transportation equipment painters, metal fabricators, computer controlled machine operators, engine assemblers and production helpers	Greening production techniques for vehicle components	Low pre-employment skills with (up to) medium re/up skilling levels
	Computer software engineers, electrical engineers, and operations managers	Changes in production methods and business models	Medium and high skilled
	Applied researchers, fundamental researchers	Development of future technologies	High
Mining and extractive industries (shrinking the environmental footprint)	Operators of heat coproduction, geospatial information technologies	Upgrading core technologies	Medium
	Geospatial information scientists, managers for heat coproduction, energy auditors, technology developers and managers	Supply chain reorganisation and upgrading management practices	High level, particularly related to the development phase of renewable energy, new technologies.
ICT	Smart grid and building specialists, database administrators	“Smart” ICT applications and changes in business model for billing and customer relations	Medium to high

Source: OECD (2011) Labour Markets in the Transition to Green Growth: Challenges and Policy Responses. Background document for the OECD Green Growth Strategy. Internal Document. February.

Anticipate the specific skills shortages in the labour market

In order to identify and anticipate the specific set of skills required in the labour market, it would be important firstly to strengthen the labour market institutions in their capacities to (1) collect data, (2) analyse the data, and (3) monitor businesses' behaviour. The identification of skills requires a very sophisticated process of data collection at local and regional levels, and also a continuous exchange with business representatives to ensure the data is accurate. Secondly, this data should be made available to the business and industry representatives on a regular basis so that they endorse the results and update as necessary. Thirdly, these skills assessments should identify not only current skills shortages, but also anticipate businesses' needs in terms of new business or market opportunities. This could be linked to any current or forecast green economy activity. It is important that skills are identified at local/regional level by local labour market institutions to facilitate the exchanges with local/regional industry. A sophisticated tool of this kind has been developed in California through the Workforce Development Agency⁵².

Support and recognise training provided by NGOs

Enhancing the participation of "non-traditional" learning institutions, such as NGOs, is seen as crucial to improving the supply of relevant green skills training to the workforce. More efforts need to be made to incorporate the activities of NGOs into the education system. NGOs currently play a significant role in promoting environmental awareness in the workplace, and have experience in a broad spectrum of environmental protection activities. Much of the training they provide is not formally recognised, and more financial support needs to be provided to NGOs to increase their capacity to absorb European funds aimed at re-skilling / up-skilling workers, thus capitalising on their know-how and willingness to pass on knowledge.

Training the trainers

One of the most significant barriers to providing adequate green skills training is the lack of adequately educated and skilled personnel at both HEI and VET level. There is a sufficient supply of teachers, but they remain out-dated in their knowledge and are often resistant to adapting their competences. Evidence gathered during the study visit shows that the university faculty is not proficient in the area of environmental awareness and, consequently, their students have the same deficiencies in their education. This is likely to be exacerbated by an inadequacy of effective training programmes for trainers, especially when it comes to dynamic and technologically advanced fields, such as renewable energies and low-carbon technologies. It is crucial to incentivise teachers to be more pro-active in updating their content and teaching methods in response to the transition to a low-carbon economy.

Concentrate training in SMEs in areas that create strong opportunities for growth

Specialised and managerial training to facilitate the transition of businesses to the green economy and smooth their transformation must be supported. SMEs urgently need good managerial or high quality specialist training, which could include: strategic development, entry to foreign markets, design development, product development, management improvement, distribution upgrades, increased customer service levels, and construction and running of biogas installations, small wind farms, etc. Better managerial and specialist skills increase chances for the development of SMEs, which, in turn, increases their chances to create employment. With ESF Funds, training should be provided for SME managers to develop businesses and increase the number of jobs they provide. However, ESF-supported training in innovative or rare skills can be reduced, and the basic (more generic) training can be left to the responsibility of the labour market institutions.

Recognise informally-acquired qualifications

The National Qualification Framework for Life Long Learning (NQFLL) should be more flexible in its approach to recognising qualifications acquired informally. To make the process more efficient, the NQFLL should avoid procedures which are too cumbersome in terms of allowing for recognition of the more informal skills which have been developed on-the-job, particularly by low-skilled workers. This would also allow for an easier transferability of skills from one sector to another. Taking as an example the case of the shipyards sector in Pomorskie, it would be important for the NQFLL to ensure that the qualifications of former workers are validated as skills necessary for the wind energy sector (notably wind turbines). This has been done in other countries, like Ireland (see learning model), and could be beneficial for both the employers and the workers of emerging green sectors. Such a flexible approach should be defined in close collaboration with the industry representatives to ensure that the re-skilling or training necessary to achieve a certain type of qualification is put in place. The Pomorskie programme for validating informal skills is also a good starting point. This could be replicated in other regions.

Undertake research on employers to establish the characteristics of certain jobs

This could include periodically sampling employers' responses to skills and productivity issues, to better understand the current performance and challenges of companies within certain sectors⁵³. This could be achieved by undertaking a number of employer interviews and regularly publishing results every six months, for example, or through other primary research such as employer skills surveys. Other stakeholders, such as recruitment agencies and job centres, could also be interviewed to understand, for example, the level of recruitment activity, the characteristics of companies using the agencies, the types of jobs being advertised, and new and emerging jobs and the skills which they require.

Ensure better targeting of ESF funds through coordination of efforts

Although educational activities subsidised by ESF funds have been seen to help socially weaker groups to retain or find work, it has also been argued that European subsidies for education have failed to establish a strong linkage between the needs of the market and current education provision. This has been attributed in part to an insufficient dialogue between the ministries that are responsible for planning how to use ESF funds for the education of Polish citizens, and a lack of focus on employment opportunities. However, better understanding of employment problems (addressed by the Ministry of Labour and Social Affairs) and business issues (handled by the Ministry of Economy) by the Ministry of National Education (responsible for primary and secondary level education) can help adapt the education system of young adults to the changing labour market and requirements of employers and, hence, enable the government to develop more targeted education and training programmes funded by ESF, which are more directly relevant for employers in the green economy. This may require a change in the traditional "sectoral" culture of government, where ministries plan and execute their actions in isolation, into a mind-set which enables greater exchange of knowledge and experience between individual sectors.⁵⁴

*Make better use of the diaspora for skills anticipation**Consult with diaspora to identify skills/training used in green sectors abroad*

Given the important share of Polish nationals abroad, the regions of Podlaskie and Pomorskie could make better use of their diaspora to identify new market opportunities in the green economy, anticipate and prepare skills needed for the green economy according to the diaspora's experience, and even develop transnational collaborations to support skills/training development abroad. To successfully achieve this, the regions need to liaise with the diaspora on a regular basis, facilitate "skills platforms" to encourage people living abroad to come and share information back to the regions, for example as speakers in

conferences, trainers in specific courses or even as venture capitalists for potential entrepreneurs. Coordination with Podlaskie/Pomorskie offices abroad (e.g. in Brussels) is also needed, or at least with Polish offices, where the information is collected and then communicated back to the regions. This kind of skills platform, training abroad or data collection could be supported with ESF Funds. This has proven to be effective in other countries, for instance in Israel where the water treatment sector has developed to become a reference point worldwide, partially thanks to the support of the Israeli diaspora abroad in terms of technology and knowledge transfer.

Incentivise the return of skilled emigrants both internally and externally

The out-migration of skilled workers to other EU member states (in particular Germany and Sweden) is creating an under-supply of adequately-trained workers within regions of Poland, affecting the ability of the workforce to respond in a timely fashion to the needs of employers. Manual skills associated with tradesmen such as plumbers and welders are in high demand, particularly within the renewable energy sector, and incentives need to be developed to attract Polish emigrants with such skills back to their home country. Attempts to develop green sectors in more rural areas could be jeopardised by internal movement from the Eastern parts of Poland to larger, more urbanised centres, which risks creating “intellectual deserts” in the peripheries and a scarcity of appropriately-skilled workers.

Make training more relevant to industries and skills more adequate

Involve businesses in curricula development

The curricula at higher education level and within VET appear to be increasingly out of step with the requirements of low-carbon or green occupations and firms. Universities appear to be lagging in terms of being able to adapt their curriculum speedily and flexibly in line with the needs of employers, and teaching is considered to be out-dated. A more structured system of linking employers, HEIs / VET institutions and labour market observatories with one another to identify skills needs and develop skills development responses needs to be established as a matter of urgency. In part, this requires a need for greater business representation to ensure qualifications are selected correctly, as well as better coordination between the Ministries of Education and Regional Development. Furthermore, enterprise could help by collaborating with education in the shaping and development of project-based course work. Many companies consider well structured internship programmes to enhance graduate employability and benefit both the student and employer. Internships could identify learning goals and outcomes, with credits awarded towards the achievement of a qualification. Smaller companies could come together within a locality, pooling resources to offer a graduate internship opportunity between them. The benefits for business owners to participate in curricula development should be clearly presented. Besides the identification of new ideas emerging from students through class projects, business owners can ensure that training is more relevant to their needs. Business owners and professionals may also see this as an opportunity to open collaboration with students and professors around a topic or problem to be addressed or solved collectively. This is successfully done in various countries. The example of TAFE⁵⁵ institutes in Australia could provide inspiration.

Make courses more practical and industry-oriented

Greater collaboration is required between SMEs and technical universities to ensure that courses are made more practical and are adjusted to make graduates more industry-ready and of greater value to their employers. Industry representatives may be involved in training provision so that they share their knowledge in a more practical and useful way. Work placements for university students within companies that are greening their practices could be a useful way of fostering entrepreneurship and environmental awareness. As well as promoting experience-based learning, these courses are also more attractive to students put off by purely theoretical learning and who want to see more tangible results to their training.

Furthermore, an industry-oriented approach to learning may lead to the acquisition of the right attitudes towards green economy activities which are scarcer and more difficult to acquire than technical skills.

Concentrate on certain areas and create training in a modular fashion

The main focus within initial education and training and continuing professional development should be on the development of core business, engineering and ICT skills capabilities. Additional expertise in emerging areas such as wind, marine, solar, and geothermal could best be acquired through the integrated provision of “add-on” specialism modules, for example during the third and fourth years of undergraduate courses or through Masters Degree/ Postgraduate Diploma provision – particularly important for continuing professional development. Training programmes aimed at unemployed people should take account of the qualifications/competences individuals already possess and then provide additional up-skilling in the specialism area required to obtain employment. There is also a range of technical and non-technical generic skills important across occupations, which needs further emphasis. These skills include entrepreneurship, commercial awareness, maths proficiency, critical thinking, problem solving, ICT, foreign language fluency, creativity, customer service, finance, initiative/adaptability, project management, communications/influencing, and teamwork.

Green the curricula across disciplines

More diversity needs to be promoted in university faculties in terms of the breadth of courses provided in relation to environmental skills. Currently, universities are limited in only providing courses on environmental engineering and protection, whereas courses need to be developed that encourage more innovation in science and technology and R&D. Plans are currently underway to introduce a pilot scheme that provides technical universities with grants to develop curricula and to open new facilities in relation to renewable energy, and more initiatives like this need to be developed. Innovation in technology is particularly essential to prevent Poland from continuing to be a “net importer” of low-carbon technologies.

CHAPTER 4:

ENABLING GREEN GROWTH

By Randall W. Eberts

Abstract

The purpose of this chapter is to look at policies and practices at the national and regional levels in Poland that are intended to enable green growth. This chapter identifies barriers to green growth, the governance of the green system, policy coordination, policy delivery arrangements, the role of public and private actors in enabling green growth, and the mechanisms and incentives to support the transformation/adjustment to the green economy. Considerable attention is given to the strategies and policies that government units, at all levels, have put in place and the effectiveness in which these strategies and policies are being carried out.

Introduction

This chapter offers an assessment of the role of Polish national government agencies and the regional and local government units in the Polish regions of Podlaskie and Pomorskie in enabling green economic growth. The assessment is based on interviews with regional and government officials within the two regions and with officials from national government agencies in Warsaw. The OECD expert team also interviewed a select number of business owners, as well as heads or key personnel of non-profit organisations that focus on issues related to the green economy. Obviously, the one-week of interviews and follow-up research did not permit an in-depth analysis of the myriad of issues related to devising and carrying out a comprehensive and integrated green growth strategy for Poland and the two regions covered in this study. Nonetheless, the purpose of the observations and written assessment is to offer an independent view of the strengths and challenges of the current effort toward devising and implementing a strategy of green growth for the regions of Podlaskie and Pomorskie.

Assessment framework

Effective green growth strategies need to be tailored to the needs, culture, and circumstances of the specific region they address. Therefore, no two strategies are expected to be completely identical. Furthermore, the progress toward implementing a strategy and achieving its intended outcomes will vary across regions. This is the case for the two regions covered in this study. The regions of Podlaskie and Pomorskie are different in their level of economic development, industrial composition, assets, and institutions. Pomorskie has an industrial tradition whereas Podlaskie has an agrarian legacy. Pomorskie has twice the population of Podlaskie and nearly three times the GDP, resulting in 30% higher GDP per capita. Pomorskie has more and better universities, more adequate infrastructure and better linkages with the rest of the country and world. Yet, the Polish society has long been dependent on coal mining and has strong views on how moving away from coal towards cleaner forms of energy could damage Poland's economic growth ambitions: "if you cut the branch on which the economy is sitting, this will not have good prospects for development". However, some interviewees expressed concern that conserving jobs in mining may discourage investment in low carbon technologies, leaving Poland trailing in the wake of its competitors, and becoming a "green importer". A recent study on the production potential for renewable energy in

Poland suggests there is still a great deal of funding from the Operational Programme for Environment and Infrastructure that is available to be spent on such technologies.

Despite these differences between the two regions, there are basic principles that are common to each region with respect to successful implementation of green growth strategies. To provide a framework for assessing the two regions, this chapter adopts the principles of the Green Growth Strategy of the OECD. The OECD Strategy provides a set of principles, tools, and recommendations that are intended “to assist governments to identify the policies that can help achieve the most efficient shift to greener growth” (OECD 2010, p. 9). The strategy provides a framework to help “ensure that green growth policies contribute to greater economic integration, technology co-operation and reduced pressure on scarce environmental resources” (OECD 2010, p. 9). An important component of the strategy is the role of government policy in an effective transition toward greener growth, with an emphasis on the importance of co-ordination among government units and the need for meaningful partnerships between government, the private sector, and educational institutions.

Strategies and practices to enable green growth, according to the OECD Growth Strategy, require a mix of policy instruments, including market-based approaches, regulations and standards, measures to incentivise R&D, and information-based instruments to facilitate consumer choices. The OECD Green Growth Strategy recognises that green growth initiatives need to be embedded in a coherent, integrated strategy covering demand and supply aspects, both economy-wide and at the regional and sectoral levels.

The government sector has a key role in enabling green growth. It must pursue policies that provide proper incentives to develop green technologies and form green businesses, ensure that market pricing signals are not distorted by misdirected government policy, and make available sufficient resources to shift the economy from its current trajectory of intensive carbon dependency to one that is much more dependent on greener technologies and consumption practices. To achieve this, government must have a clear and decisive strategy, and policies must be coordinated vertically and horizontally among all relevant government units. Markets are tightly integrated and extend beyond regional and national boundaries. Public policies have to be similarly integrated and coordinated.

Each of the pillars of the OECD Green Growth Strategy, to varying degrees, is related to the direct purpose of this chapter. Because the pillars focus on government policy and intervention, each pillar addresses issues of incentives, governance, and the proper role of the public and private sectors, as well as policy coordination.

The tenets of each pillar are described briefly below. These tenets are then used to organise the observations gleaned from the interviews with key stakeholders in each region and with government officials in Warsaw. Observations were also informed by the background report prepared for the study visit and supporting documents. Not all aspects of the tenets were associated with findings and recommendations. Still they are included here in order to convey the extent to which government may be involved in enabling, or if not done properly, impeding green economic growth. Finally, recommendations based upon the assessment are listed.

Analysis of Poland

Remove barriers to green growth

Policy barriers to green growth include government policies that distort market prices or that ignore the mis-pricing of market externalities and market failures. Examples of policies that distort market prices are agricultural subsidies that drive a wedge between the prices producers receive and the prices consumers pay. Another example is the absence of taxes on CO₂ emissions, which distort the cost to society in the

form of pollution of using carbon-based energy sources. This is particularly prevalent with coal-burning energy production if the environmental cost of emissions is not somehow figured into the cost of energy production, either through taxes or the assignment of property rights.

Another distortion may be the funding of public infrastructure investment, such as the construction of new highways, which subsidises and encourages the use of intensive carbon-based modes of transportation over less polluting modes. Public investment, on the other hand, may enhance green growth by providing the jump start for proper waste management and water treatment. Public investment may also be necessary when the investment is too large and the risk too great for any one investor to create a new market, such as for biomass, wind farms, or other types of renewable energy production. Government assumes the risk and creates a new market, which once created the private sector can build upon with investments of its own.

In line with this, there is a coordination component to creating such markets. In some areas, such as sparsely populated rural areas in Poland where some markets are not well integrated, it may be necessary for government to help coordinate activities. An example is the formation of a biomass market, in which disparately located farmers must be connected to more centrally located facilities, through providing the proper information and linking the entities through better transportation. The efforts of the City of Kristianstad, Sweden, as described in Box 8, are a stellar example of the role government can play in reducing its dependence on fossil fuel by promoting the use of biomass-related fuel.

Box 8. Using Biogas to Transform a Community, Kristianstad, Sweden

When Kristianstad, a city of 80 000 in the southern, rural area of Sweden, could barely afford to heat its schools and municipal buildings during the 1980 oil shock, its city leaders vowed to wean the community of the use of fossil fuels. Thirty years later, the city and surrounding area essentially use no fossil-fuel based energy to heat homes and businesses. Recognising the potential of using by-products of the bustling agriculture sector in the region, their energy is generated from a large biogas facility that transforms biomass into biogas. The 10-year-old plant transforms ingredients like potato peels, manure, used cooking oil, stale cookies, and the like, into a form of methane gas. This gas is burned to create heat and electricity and is refined as fuel for cars. Start-up costs to construct the biogas plant and build a centralised heat distribution system were sizeable. The city received grants from the Swedish government to help with some of the costs. But the payback has been significant, saving the municipal government alone more than \$3.5 million a year compared to what it would have had to pay if it still relied on oil and electricity. The city also saved tax dollars by not having to pay the Sweden carbon emission tax, which was imposed after 1991.

The benefits of the system go beyond saving money on heating. Farmers can now dispose of their waste by sending it to the biogas plant, whereas before they had to pay a fee to dispose of it. The large quantities of waste needed to fuel the biogas plant have created a collection system for the waste. It has also raised awareness about how pollution can be reduced by disposing of farm by-products, which otherwise would have affected water supplies, and by reducing emissions by burning less fossil fuels.

An additional role for government in enabling green growth is the granting of licenses, patents and building permits. Depending upon how these processes are handled, they can be seen as a hindrance or help to growing the green economy. With respect to business licenses, they are a hindrance if the bureaucracy restricts licenses to the extent that it stifles the growth of businesses in green sectors. Licenses can be seen as helpful if they act to recognise new sectors and the granting of licenses provides the confidence to potential customers and suppliers that these new entities are legitimate firms in a recognised business sector.

Related to licensing is the granting of patents. If the process becomes onerous, then patents become an impediment to growth and without patents a company risks losing its intellectual property to other companies and there is less incentive for the private sector to invest research and capital in green economy sectors.

The issuance of building permits, if done strategically, can promote green growth in local economies. For instance, the City of Santa Fe, New Mexico adopted a Green Building Code in 2009, which calls for progressively reducing greenhouse gas emissions from buildings until they produce zero emissions in the year 2030. As a first step, the city formed a Green Building Code Task Force to develop compulsory green building codes. The building codes focus on resource efficiency, energy efficiency, water efficiency, and sustainable practices. The requirements increase for larger residences to help offset the increase in embodied energy in the building materials. Included in the Sustainable Santa Fe Plan are incentives to builders for performance significantly above the mandatory thresholds. The city is now considering green building codes for remodeling residences and commercial buildings. The building codes will be the basis for transforming the city's residential and commercial properties into more energy efficient structures, while at the same time supporting emerging green construction businesses in the area. The initial cost is offset in the long-run by cheaper utility bills due to the energy-saving features of the new and remodeled structures. Buildings account for 39% of the energy used in the U.S., 71% of electricity use and 39% of CO₂ emissions, according to the U.S. Green Building Council.

The issuance of building permits can also impede green growth if building codes and other requirements are not coordinated across government entities. There is nothing more frustrating to businesses than to face conflicting building codes or the need to obtain permits and licenses from several different government entities, which may use different permitting forms and even use different code definitions. For example, when the City of Santa Fe, New Mexico implemented its green building codes, the task force made sure that their codes were consistent with the codes previously established by the state.

Promote trajectory shift

Government support may be required to fund research and development on green technologies. Without established businesses of sufficient size in the green technology arena that can fund and commercialise their own research, government may need to step in at the beginning and fund research at universities or at innovation/incubator centres to jump start a region's capacity to compete in that arena. If technology development and transfer is successful, then the private sector typically sustains the future development of the industry which utilises that technology. The private sector requires access to funding in order to expand. New ventures utilising untried technologies may have difficulty finding funding through traditional channels. The government may need to step in with direct grants, tax credits, or the underwriting of financing, to start-up companies or existing companies that need capital to expand. For example, Italy's extensive solar energy production incentives provided by the Italian government have been tremendously successful in expanding the country's alternative energy sector and in attracting the world's biggest photovoltaic module makers. Its installation of new capacity in the past two years has made Italy Europe's second largest market in terms of new installations. Biomass heating is also well established in Italy. Since 1999 end-users have earned tax credits for connecting their properties to biomass or geothermal-based district heating schemes.

Define the green economy and measure progress

Government may also need to pursue measures to increase public awareness of the benefits of greener consumption and the potential for job growth within the green sector and overall economic growth when the green sector expands. Along the dimension of public awareness, which is also related to the definition of the green economy, is the labelling of green products and services. Many places in which the green economy is flourishing have a well-functioning private sector that promotes green products through extensive media campaigns and trade associations. In regions where the green economy is struggling to gain a foothold, the government may have to step in as a catalyst for the private sector. The ability of consumers to identify green products, and the education of consumers as to the benefit of purchasing green products, helps to create markets for businesses.

Government may need to establish a concise definition of green occupations and green sectors, so that the general public and the markets better understand where opportunities may lie. A clear, agreed upon definition, also facilitates tracking the progress of government interventions, which is essential in understanding the effectiveness of government programmes and the significance of the green sector in a regional economy.

Another way that government can try to shift the trajectory towards green growth is to encourage the formation and expansion of green firms by offering them procurement opportunities. For example, a recent action by the Toronto District School Board to replace the ageing roofs on their school buildings with solar panels is an excellent example of using government procurement to promote local green initiatives. The board estimates that it faces a CAD 3 billion backlog in roofing repairs. By installing solar panels on about 450 of its 558 schools, the board can offset the costs by selling electricity to Ontario's government-owned utility. The first phase is expected to generate 36 MW of electricity, which will create enough revenue to help with the board's most urgent needs in the next four years. By working with two Canadian companies, the board's action will stimulate the economy and set an example for other public and private entities to follow. It should be mentioned that the success of the plan depends upon the Provincial government's policy of promoting the development of alternative energy by paying a substantial premium for solar-generated electricity, which is fed back into its electrical grid⁵⁶.

Support the transition

Finally, government may need to step in to help with the transition from traditional sectors to green sectors. As the green economy grows, some of that growth will be at the expense of established sectors. Workers may need retraining in order to meet the needs of businesses in the green sectors. Some may also need income support and re-employment assistance during the transition period in which they are seeking new jobs. Educational institutions are vital in helping with this transition. They provide the retraining for those changing careers, as well as the initial training for students deciding upon their first careers. Often training programmes and educational curricula do not match the needs of employers, and government can play a role in bringing businesses and educational institutions together to coordinate the development of curricula.

Challenges and Opportunities

As described in the previous section, the tenets of OECD's Green Growth Strategy identify several functions that government can pursue to enable green growth. In its deliberations during the study visit, the team of experts found several areas within these tenets that it believed government policy and practice were insufficient in enabling green growth in the Podlaskie and Pomorskie regions of Poland. In broad terms, these areas include:

- The lack of a clear definition of the green economy and green jobs;
- Insufficient public awareness of green jobs as a driver of future growth;
- The need for greater leadership on the part of government to champion green growth;
- Confusing administration of some policies stemming from poor coordination among levels of government (including the European Union);
- Unsuccessful attempts at forming meaningful public/private partnerships;
- Missed opportunities to provide funding to green business start-ups and incentives to green industries to develop more fully; and

- Weak institutional capacities at regional and local levels to understand, endorse, define and deliver green growth policies and programmes.

By identifying these areas, the team is by no means stating that the government has failed to address these issues. Rather, the team found that the government could do more in these areas, based upon the interviews and the experts' knowledge of practices and initiatives undertaken by governments in other parts of the world. Therefore, along with the team's opinions regarding these areas and a description of its findings, examples are offered of what other areas have done. Some examples have already been offered to illustrate the OECD tenets and more are included in this section.

Lack of a clear definition of the green economy and green jobs

As already mentioned in Chapters 2 and 3, the first barrier identified to the emergence of a greener economy is the lack of detailed information on the labour market in general and the green economy in particular. This marks a basic handicap in pursuing green strategies: if one cannot define the green economy, then one cannot help to enable it. Furthermore, without a clear and meaningful definition, it is difficult to target support for green initiatives.

The Polish government, at either the national or regional levels, does not offer an official definition of the green economy nor green jobs. The Institute for Ecological Development does, however. It defines green jobs as "jobs resulting from capital and non capital investment undertakings which ease the pressure from the economy and public utilities on the environment. Green jobs can be created in each economic sector, the condition is that the employed persons should be directly or indirectly involved in the improvement of the condition of environment in the given area and operating against the environmentally harmful activities both in the short and the long run" (Institute of Ecological Development). Based on this definition, the Foundation of Natural Resources and Environmental Economists estimates that 374 000 jobs are in Poland's green economy. The sectors that the Foundation classifies as "green" are concentrated in waste disposal, sewage treatment, water treatment, and air and climate protection. The classifications do not appear to include activities related to more energy-efficient technologies, such as production of wind turbines, solar, or the new generations of battery technology.

While the Institute's definition of a green economy is an important start in identifying and promoting green growth in Poland and the two regions, it presents several problems. Firstly, since it does not come from the government, it is unclear who subscribes to this definition, raising the specific question of whether the Polish government agrees with it and supports it and the extent to which the public is aware of it. Secondly, the Institute's definition appears too narrow, focusing mostly on environmental protection and thus leaving the public with the impression that the green economy is about protection not growth. Thirdly, unless the government endorses it and the public is aware of its acceptance, it is difficult for the definition to be used as a focal point for green growth strategies.

Misperceptions of a green economy

Without a clear government-endorsed definition of a green economy, there is a risk that the public may misperceive the benefits and cost of pursuing a green growth strategy. During the study visit the team noticed that interviewees were associating a green economy with an environmental protection strategy more than a growth strategy. Several commented on the perceived cost of implementing environmental protection and sustainability policies and offered that they have higher priorities such as creating jobs and improving their livelihoods and the government should support these initiatives instead. This is not to say that the Institute's narrow definition of a green economy as primarily environmental protection has gained public awareness, but it does illustrate that if a clear definition that provides a comprehensive view of green growth is not presented, then misperceptions may arise making it difficult to gain public support for green growth strategies.

Insufficient public awareness of a green economy

It is unclear how visible the Institute's definition is to the general public. No one that the study visit team interviewed mentioned the Institute or the definition. Therefore, it is clear that the government needs to take a more proactive role in defining the green economy in terms of potential job creation and in replacing declining sectors of the Polish economy. Many national and sub-national governments in other places have taken the lead in defining the green economy and describing the potential in terms of jobs and future growth sectors. In several cases, their effort has helped jump-start the private sector to achieve more sustainable green growth. For example, the State of Michigan in the U.S. undertook a detailed analysis of its green economy and from that analysis developed a comprehensive definition of the green economy. It has formed the basis for state-wide strategic planning and the creation of job ladders (Box 9).

Box 9. Defining Green Jobs: The Cases of Michigan and California

Before the U.S. government defined and catalogued green jobs, various states developed their own typologies. Michigan was one of the first states to assess green jobs in their economy. The state's purpose of setting forth green job classifications was to be able to incorporate green job growth into a strategic economic development plan. Such a plan not only provides a blueprint for businesses to understand the state's priorities for future growth, but also provides workers with an assessment of the skills they need to qualify for green jobs. Furthermore, by identifying the sectors of the green economy and documenting their growth, such a report can be a catalyst for broader support and enthusiasm for pursuing a green growth strategy. The Michigan study relied on survey responses from businesses to assess the skill needs and the projected growth in occupations. It also drilled deeper into the requirements of green occupations and the career progression associated with such occupations. As part of this initiative the state has focused on wind energy and advanced battery technology.

As another example, the Environmental Defense Fund produced a Green Jobs Guidebook for the state of California, which is intended as a resource for job seekers, students, guidance counsellors, career advisors, and policy makers. It includes job descriptions, salary information, education requirements, potential certifications, employer types, and job market growth potential, among other information.

The Polish government has taken some initiatives to promote certain sectors of the green economy. For instance, the Ministry of the Environment created GreenEvo, a green technology accelerator, to provide international markets with a guaranteed quality of Polish environmental technologies (Box 10).

Box 10. GreenEvo: The Green Technology Accelerator

The Green Technology Accelerator, GreenEvo, was organised by the Polish Ministry of the Environment in order to promote Polish companies and technologies in international markets by providing international markets with a guaranteed quality of Polish environmental technologies. Companies selected as GreenEvo winners offer tested and innovative solutions and have undergone specialised training, have been well prepared for managing their products in a competitive manner, and have been educated in specific legal regulations as well as technical standards applicable in those markets. The Ministry of the Environment has identified 510 companies operating in Poland that provide green technology. The technologies include wastewater and water treatment technologies, innovative hazardous waste technologies, solutions supporting renewable energy sources, technologies for the coking industry, and energy saving technologies. The industry employs about 25 000 workers, predominantly in small companies.

Once a comprehensive definition of a green economy is established, another avenue of promoting public awareness is through trade associations and consumer groups. For example, the Polish Chamber for BioMass Programme, according to its website, was established "to enhance profitability of energetic agriculture, and biomass processing, as well as ensure higher safety of energy supply chains." The

Chamber deals with lobbying favourable resolutions for alternative energy sources in legislature and activates local communities around the issues of biomass and renewable energy (see Box 11). The Polish Chamber of Waste Management is another organisation that focuses on a different aspect of the green economy. Each association focuses on a specific aspect of a green economy, which helps to leverage the efforts of government in increasing public awareness.

Box 11. The Polish Chamber of Biomass Programme

Recognising Poland's great potential to develop biomass energy, the Polish Chamber of Biomass was established in 2004 to promote the development of this energy source. The Chamber is an association of 100 firms from various regions of Poland. Its members are producers of biomass energy and manufacturers of the technology and equipment used in biomass processing. The Chamber participates in drafting regional programmes for biomass production and use, organises the financial basis for implementing those programmes, supports its members in developing and financing investment projects, serves with advice and consulting in respect of legislative and regulatory provisions falling within the area of its activity, and carries out information and education related to sustainable utilisation of biomass. It also activates local communities, especially small agricultural ones, to address unemployment and underdevelopment by exploring the feasibility of developing biomass facilities capabilities. One project being pursued by the Chamber is to develop greater coordination between the farms providing biomass and the producers of biomass energy. Such a union is seen as a way to optimally utilise Polish agricultural resources. The Chamber also conducts training workshops, disseminates best practice, and facilitates the development of new markets.

Lack of sufficient leadership in promoting green growth

The government can take leadership in promoting green growth in several ways. One has already been discussed; developing a comprehensive and workable definition of a green economy. Another opportunity for the regional governments to provide leadership in promoting a green economy, in addition to providing a clear and comprehensive definition, is for them to emphasise a green economy strategy in the regional plans and operating programmes prepared for the two regions. However, in examining the plans and in talking with interviewees, these plans seem to lack sufficient emphasis on promoting green growth. Each region has developed a regional development strategy, which is a requirement for all regions in Poland. These strategies are instruments of planning and management used by regional authorities for aiding development. The purpose of a regional economic development strategy is to plainly state a vision for the region and the objectives that will be pursued to achieve that vision. It can, and should, serve as a rallying point for all stakeholders so that they can work together to help promote the vision and carry out the objectives. In addition, the strategic plan should have measureable milestones so that stakeholders can judge the progress toward achieving their goals. It also determines a concept of operations connected with the sustainable development of the region, which is presented in the form of a compact document that includes the procedures of achieving the intended purposes. Such a document consists of diagnosis of current social and economic situations, SWOT analysis, strategic purposes and mechanisms of monitoring and revising strategy in response to major external forces. The ability to carry out and realise the strategy depends on the level of engagement of representatives from all institutions and interest groups in the region.

The question of appropriate leadership is raised by examining these strategic plans. Each region has, in its Regional Operational Programme, a component related to green growth, although Pomorskie's is much more detailed than Podlaskie's. However, there seems to be no consensus on who is seen as assuming leadership in the promotion of the strategy to the region and taking responsibility for its implementation and success. The Ministry of Regional Development directs regional development policy, while voivodeships and local authorities have the responsibility to manage the policy. But managing a policy and assuming leadership in making it happen are two different things. The former could be satisfied by simply ensuring that all contractual requirements are met and procedural regulations are followed.

Leadership, on the other hand, requires that the desired outcomes be achieved, which in this case is significant and measurable growth of the green economy.

The interviewees in both Pomorskie and Podlaskie seldom referred to the regional plans as offering guidance in pursuing a green economy in their region. Successful implementation of economic development strategies requires a clear vision and set of objectives, but it does not appear that these documents offer the detail or emphasis. Greater specificity is perhaps included in other documents, but the team did not identify a specific plan that the region could point to as a blueprint for green growth.

Conflicting government policies and confusing administration of some policies

Conflicting government policies and confusion in administering some of the policies surfaced in several areas. One area concerned inconsistencies between the regional development Strategies and the Regional Operational Programme. Another related to permits and patents. A third had to do with the selection criteria for ESF funds.

Inconsistencies across strategies at European, National and Regional levels

Regions that receive European Regional Development Funds are required to develop a Regional Operational Programme. This programme must be consistent with the Regional Development Strategy. In the case of Pomorskie, for example, the Regional Development Strategy was revised at about the same time as the Regional Operating Programme was developed. It is interesting, however, that the Regional Development Strategy barely mentions green economic growth, except with regard to renewable energy, and this reference is quite short. The Regional Operating Programme, on the other hand, devotes considerable attention to the environment and environmentally friendly energy (priority 5). The two documents are prepared for different purposes and audiences, but they are required to be consistent. The question raised by looking at these two documents side by side is whether the regional authorities have the same commitment to a green growth strategy, which is reflected in the document prepared for the EU in receipt of their funds.

Cumbersome administration of permits and patents

As previously mentioned, business licenses can either help to legitimise green products and services or impede the formation of businesses. It all depends on the purpose of the licenses (i.e. restricting competition or promoting it) and the efficiency in which they are administered. Information provided during the study visit suggests the licensing process is inhibiting the formation of green businesses. During the study visit, the OECD team noticed that although 6 000 biogas plants are expected to be built by 2020, the licensing process has slowed down the construction of these facilities. It can take up to two or three years to obtain a licence, mostly due to the lack of coordination among the various agencies involved in the permits. Approval seems not necessarily difficult at the central government level, but more difficult at the local government level. Even the simplest issues are made complicated, the team was told. For example, government agencies use different definitions of technology and energy. The policies and agencies are working in silos, not communicating and coordinating efforts. It would be much more efficient if the permitting and licensing process could be coordinated across government entities. Furthermore, because of the difficulty in accessing information on the requirements, new regulations, and certificates, among other licensing and permitting requirements, a one-stop-shop platform may be considered. Many states and localities in the US offer one-stop assistance to businesses in obtaining licenses and local building and use permits. Minnesota, for example, has created a collaborative environment in which organisations across the state work closely to align the right resources for each project. The state has created the Green Enterprise Assistance Programme to help companies navigate agencies that offer financing, monitor environmental compliance, provide technical assistance, and help with local permitting.

Unclear selection criteria to access ESF Funds

Some potential project providers complain about the confusing selection criteria for ESF funds. They declare that they will never again apply for grants, after their frustrating experience. The companies complain that their projects were rejected due to reasons outside the main thematic priority and that horizontal and formal criteria are a means of excluding good projects from competition for funds. Proposals were rejected, for example, because they did not include horizontal criteria, did not have the right signature of the person authorised, and other similar reasons. On the other hand, the terms of reference to the ESF contests are created on the basis of laws (called “guidelines”) created by the Ministry of Regional Development itself, without Parliamentary control. This creates situations in which the Ministry creates new requirements not stipulated by the general law. In many cases, Ministry guidelines are contradictory to general Polish law, which is more or less based on common sense. One example is the rule that a firm must follow to protest to the Ministry’s decisions concerning the results of the contest. According to ESF rules, the only person who can sign the protest is the person who signed the application or another authorised person, but written authorisation for this person should be included in the protest. General Polish law, on the other hand, provides that any company document can be signed by any person who is authorised in the court records. Court records are open and anybody can check on-line if the signatory is authorised. Therefore firms which operate at a certain level of legal culture do not want to deal with ESF, for which the Ministry of Regional Development creates its own laws, called “guidelines”. In summing up, the Ministry creates stricter rules than the general Polish law, sometimes contradictory to the general law, and both firms and NGOs have serious problems coping with this.

Poor policy coordination and policy delivery arrangements

A recent OECD study⁵⁷ on national policy integration and coordination found that Poland has a relatively decentralised system with respect to economic development and labour market programmes. The current system is a result of a series of reforms introduced in 1990 to decentralise responsibility for policy design and implementation for employment and social policy, vocational education, and regional economic development. Decentralisation offers greater flexibility for regional and local government units to meet the demands of workers and businesses in their regions. However, it also opens the possibility that these government units may not have the capacity, with respect to leadership, skilled staff, and resources, to take advantage of this flexibility. Furthermore, decentralisation can lead to fragmented and confusing policies and practices across regional and local governments. In addition, local flexibility may lead to poor implementation of national policies and thus, unequal administration of national policies across regions. The study concluded that local capacity and local cooperation in Poland was low.

From the interviews, the team identified issues that were consistent with these findings. On various occasions the team heard about the weak cooperation between the education system, workforce programmes, and businesses. The team also perceived a fragmented administration of government policies, such as with the licensing and permitting process, and the inconsistency in the definitions used across local governments pertaining to green technologies - issues that have already been highlighted. Weak institutional capacity to understand, endorse, define and deliver green growth policies and programmes was also evidenced. There is a lack of leadership among local governments, which is also a problem in raising public awareness of the importance of the green economy and in spearheading various initiatives. These issues are not unique to the regions studied; nonetheless, they do impede progress in enabling green economic growth in the regions.

Unsuccessful attempts at forming meaningful public/private partnerships

Public/private partnerships are an important vehicle for implementing the Regional Development Strategies and for the private sector to communicate their needs to public agencies and institutions.

According to the *Regional Development Strategy* for Pomorskie, the primary approach to implementing the plan is the nurturing of public-private partnerships (p. 62). Furthermore, the strengthening of public-private partnerships is one of the goals of the strategy (p. 63). An important role of public/private partnerships is to bring businesses and educational institutions together so that education and training and research and technology transfer can be responsive to the needs of the businesses. However, that is precisely one of the areas where partnerships appeared to be unsuccessful. The issue of training qualified workers is the focus of Chapter 3 and has been given full attention there, but the issue is addressed here as well because of the role government can play in nurturing partnerships.

Insufficient collaboration between businesses and the education system

Despite efforts to understand business needs, attempts to bring businesses into meaningful and on-going partnerships with the educational system appear to be inadequate. During the study visit, business representatives complained that universities do not understand their needs and are inflexible in developing courses to train students to meet their needs, but also that universities are not proactive in providing knowledge to businesses in relation to green opportunities. The role of universities in providing human capital, and also in supporting innovation and technological transformation, is crucial in enabling the transition to a green economy. No one that the team interviewed mentioned the establishment of on-going partnerships to address this gap. Because of this lack of coordination and collaboration between businesses and universities, some business owners stated that they were obliged to send their workers to Sweden or Germany for the training they need. This lack of response by the educational community undermines the ability to establish the green economy sectors, or even traditional sectors, in these regions. Indeed, without students graduating from universities with the appropriate training to meet business needs, businesses have less incentive to stay in the area or to locate in the region from elsewhere. This lack of cooperation also puts at risk the emergence of new economic sectors in the green economy (either locally or attracting foreign investment), as well as the ability of existing small initiatives in Poland to become more competitive internationally.

Attempts have been made to assess the needs of businesses, but in some cases without involving businesses directly. For instance, the employment agency in the Podlaskie region is trying to access the needs of businesses through internet searches of job postings and other methods, but it does not have a systematic consultation process with businesses themselves. There is also a project in the Podlaskie region that aims to involve businesses directly in training students for green occupations. The plan is for businesses to help develop the curricula for the educational programmes and then set up internships and apprenticeship programmes to keep them attached to local businesses. Some interviewees believed that this is important for attracting international green companies. Government agencies also expressed frustration in trying to engage businesses on an on-going basis as active partners, primarily because of their reluctance to commit the necessary time to the partnership.

Insufficient leadership to address the gap between business and education

It is difficult to identify who has assumed leadership in addressing the gap between business and education. There is little doubt that the concern is shared by most, but it is unclear where the leadership may come from. Universities and their faculties appear to lack sufficient accountability to businesses and local and regional government agencies to provide the necessary leadership. Businesses, particularly in Podlaskie where most are small enterprises, have little clout individually and do not have strong inclinations to pursue a collective agenda. Large businesses may not be concerned enough to step forward; as one business owner said, the large firms provide most of their own training and can access international markets more easily.

From the experience of the experts, the problems of engaging businesses and educational institutions are not unique to the two regions. The WIRED initiative in the United States is an example of a government programme that attempted to foster local partnerships among businesses, educational institutions, and economic development agencies (see Box 12).

Box 12. Workforce Innovation in Regional Economic Development (WIRED)

The WIRED Initiative by the U.S. Department of Labor (DOL) focuses on the integration of workforce development with economic development activities. Effective partnerships among key regional entities are seen as essential in developing the workforce talent necessary for the U.S. to be competitive in a global economy. The U.S. Department of Labor provided funding on a competitive basis to regional partnerships based on four basic criteria:

- Recognition of the importance of talent in economic development;
- An understanding of the power of partnerships among workforce, economic development, business, and educational institutions in promoting economic development;
- Recognition that some regions need more assistance than others and a one-size-fits-all policy is not as effective as regionally based initiatives; and
- Regional entities typically have a better understanding of their challenges and can derive better solutions than national agencies.

Regional partnerships submitted proposals to the U.S. DOL for funding of up to USD 15 million over three years. Thirty-nine regions were selected. Each region had to engage in a series of activities starting with a detailed analysis of their regional economy that identified the key industries and their strengths and weaknesses. They then had to form a core leadership group, which was tasked with identifying a shared regional identity and vision for the regional economy. Based on that vision, the group was required to develop a regional strategy with a set of actionable and measurable objectives. The WIRED regions were required to monitor their progress using these measures. Finally, the WIRED regions were required to leverage government funds with private resources and demonstrate that their partnerships could remain viable after the three-year grant expired. All WIRED regions were required to pursue a sector-based strategy in which they identified a cluster of industries that would be the focus of their efforts. Key businesses from those industries were required to undertake leadership roles in the regional partnerships. Many of the partnerships included local community colleges and universities. Community colleges provided much of the skills training required by businesses, and universities offered research, technology transfer, and technical assistance to local businesses. The effectiveness of the WIRED regions varied, depending upon the level of leadership and the commitment of the key partners. An evaluation of the programme has not yet been completed, but is in its final stages.

Missed opportunities to provide financial assistance to green businesses

Lack of assistance to invest in the development and commercialisation of green technologies

Investing in new technologies is a primary concern in the two regions. Pomorskie, in its Regional Development Strategy, explicitly cited the lack of innovation by firms in its region and the fact that the region has fallen behind other regions in the past decade, as a priority it wanted to pursue. Closing the shipyards and related businesses has contributed to that concern. Polish firms appear to have the resources and capability to generate new technologies in the green sector, as recognised by the Ministry of Environment. However, many interviewees in both regions, but particularly in Pomorskie, stated that much of the green technology was acquired from other countries. There appears to be potential for further development in the area of green technologies. Nonetheless, the general opinion was that the universities were not interested and did not have the practical knowledge to develop such technologies. Furthermore, partnerships between universities and businesses were not sufficiently strong to commercialise the ideas. Of course, it takes more than an idea upon which to build a profitable company, and other resources such

as skilled entrepreneurs, patent lawyers, and other business services are required to launch and sustain successful ventures. From the interviews, there appears to be a lack of technical assistance for businesses. Providing technical assistance is particularly important in the Podlaskie region, where the economy is almost completely dominated by small or micro-businesses. Businesses of this size generally lack the knowledge and experience to take an idea, particularly when it is based on new technologies, and transform it into a viable business. Several regions elsewhere have established green incubators to provide low-cost space, networking with like-minded companies, and technical assistance (Box 13).

Box 13. Bethesda Green Incubator

The Bethesda Green incubator was founded in Maryland, USA, in autumn 2009 to complement Bethesda Green's mission through the creation and support of companies that will contribute to a dynamic sustainable community. Like all incubators, it is intended to provide resources and services that will increase the likelihood of entrepreneurs' chances of success. What defines and differentiates this incubator is its focus on creating and growing companies that offer products and services that improve the environment and promote energy efficiency.

- For the region, the incubator assists in the following ways:
- Creation of jobs, wealth and added tax revenues to the local economy;
- Diversification of the local and regional economy to become a centre of new green business development;
- Enhancing the development and commercialisation of new clean technologies;
- Encouraging green entrepreneurship in new businesses and green intrapreneurship in existing businesses;
- Melding green entrepreneurship into the larger fabric of economic and community sustainability through partnerships with government, non-profit organisations and private companies; and
- Providing educational opportunities to strengthen local businesses and encourage community building.

For young companies, the incubator provides the following benefits:

- Provision of affordable space and shared expenses (equipment, training, rent, utilities, maintenance etc.) for participants;
- Networking and collaboration among fellow incubator entrepreneurs who share common values and goals;
- Affiliation with the County's innovation network of five incubators;
- Marketing assistance through Bethesda Green's website and other promotions;
- Advice from Bethesda Green incubator staff; and
- Access to business services from outside experts.

The Bethesda Green incubator works closely with Montgomery County's Department of Economic Development to promote the creation, expansion, attraction and retention of businesses with a focus on environmentally sustainable technologies, products and services. It helps leverage Montgomery County's strengths to create a green industry cluster that will generate economic, environmental and social value for the County's businesses, residents and the region.

Difficulty accessing capital and relevant information

An important barrier to entrepreneurship in general, and to green entrepreneurship in particular, is access to capital and access to relevant information. Funds are available to assist micro-businesses in getting started. Funds come from at least two main sources: the National Labour Fund and the European Social Fund – both managed by self governments but at the different levels, sub-regional and regional. Amounts range from EUR 5 000 to EUR 10 000. To receive these funds, businesses are obligated to operate for at least one or two years. If they hire any staff they are obliged to keep the workplace for at least 2 years. Eligible businesses also receive discounts on the cost of providing employee benefits, such as social security taxes, which are halved. The discounts are good for one year.

During the study visit, the team was provided with evidence of the various requirements for receiving government financial assistance for small businesses. For example, business owners can access subsidies for solar panels only if the business receives a bank loan and not if it receives financing through other means, such as personal savings, family funds or from outside investors. Also, if the financial support is granted, the company is taxed at a higher rate because it changes classification; the financial assistance received is usually offset to some extent by higher taxes. It appears that the ease in which financing is available depends on the level of government offering the assistance. Financing through local governments seemed to be easier and less bureaucratic than through higher level government units.

Need to expand green public procurement

The public sector could lead by example while stimulating the demand of green products and services through green public procurement⁵⁸. Estimates place public procurement in Poland at 8.6% of GDP in 2008.⁵⁹ Government procurement takes place through a decentralised system in which each purchasing entity can use its own term of references in buying goods and services. Public procurement is regulated by a national law, which complies with EU directives. Recently, the national government has adopted a National Action Plan on Sustainable Public Procurement, which lays out procedures for government units to purchase services, goods and works that relate to green activities. The Plan states that “Green public procurement (GPP) constitutes an effective tool for development of sustainable production and consumption patterns, and may contribute to the development of the market of more environmentally-friendly goods and services” (p. 4).

Green public procurement, according to the Plan, means “a policy under which public entities introduce environmental criteria and/or requirements into procurement process (contract award procedures) and seek solutions which minimise a negative impact of goods/services on the environment and consider the entire life cycle of products, and thus influence the development and dissemination of environmental technologies” (p. 5). Analysis of 2009 public procurement revealed that 10.5% of total public procurement in Poland was “green”. Green procurement in case of works referred, among others, to building thermal efficiency improvement (i.e. window replacement, thermal insulation in buildings) or modernisation of water-sewage systems (e.g. installation of sewage lift stations, sewage pumping stations, etc.) Pro-environmental supplies were mainly related to computer and medical equipment meeting requirements equivalent to technical parameters of applied certificates. Preparing a special development plan including environmental impact may be considered as a green supply contract.

Green procurement in Poland is in the early stages of development. The Plan has been in place for only a few years, and since it is voluntary on the part of government, it is unclear to what extent regional and local governments have embraced this approach. The Plan sets a goal of green procurement up to 20% of total procurement by 2012. To help achieve this goal, the plan has also set a target of increasing the number of trained persons by 20%. This is expected to increase the awareness of green procurement practices.

However, the Plan explicitly recognises the problem with using procurement to develop markets for green technologies, goods and services. Public procurement in Poland is decentralised, with each government unit taking responsibility for its own purchases. In recognising this institutional framework, the Plan states that “procurement decisions of awarding entities, although in accordance with binding provisions, are taken on individual basis, which results in market fragmentation and makes it difficult to create coherent and uniform demand e.g. for innovative products.”

This realisation and recommendation from the Public Procurement Office underscores the concern about coordination and cooperation among government units, both horizontally and vertically, as mentioned previously. Such coordination would be more effective in supporting a targeted sector with coordinated procurement. However, the risk is that procurement may be too concentrated in one sector or for one group of suppliers. Furthermore, regional governments will more likely want to support green sectors in their own regions, and coordinated procurement needs to be balanced with regional interests.

Basic infrastructure investment is not following suit

Investing in basic infrastructure, such as highways and water and waste treatment facilities, is a top priority for Podlaskie. However, the fact that considerable funds are available from the Polish government and the European Union for this investment offers the opportunity to incorporate environmentally friendly technologies into these projects. For example, transport investment should include not only highway linkages, but also more energy efficient public transportation systems. It is noted that the Podlaskie infrastructure investment plan includes bicycle routes and municipal public transport systems, but the environmentally-friendly technologies should be embedded further.

Providing better connections among smaller, rural markets through highway investment in Podlaskie can stimulate green energy activities, without directly investing in green technology. For example, introducing and sustaining biomass operations in the region requires farmers to be able to transport their biomass to more central processing and energy-generating facilities. Without the proper transportation system, the required inputs into the operation would not be readily available. In addition, biomass operations need to be connected to the power grid and additional infrastructure investment is required for this to occur.

Lack of sufficient support to develop a local/regional market

Another issue that came up in a discussion with a business owner was the misalignment between subsidies to consumers and to producers. From the interviews it seems that government could do more to support businesses by offering subsidies to the consumers of a green product or service rather than providing subsidies mainly to businesses. If the market is not receptive to new green products or services, there will be no businesses. This illustrates potential issues of misaligned subsidy policies and government coordination and responsiveness to business needs.

Labelling eco-friendly products

Labels can be useful in facilitating the choice of products and services. Poland has adopted the European Ecolabel criteria, which covers an increasing number of product groups, taking in major areas of manufacturing and also tourist accommodation services. The criteria for each product group have been identified on the basis of comprehensive studies of the environmental aspects related to the entire life cycle of the product. These are normally valid for three years. Thus far, Ecolabel certification is voluntary and firms must pay the Polish Centre for Testing and Certification to have their products certified as Ecolabel. However, there are other labels, such as the Polish Ekoznak, and certifying organisations. Some producers find it difficult to choose which organisation to use and consumers at times are not sure what the different

certifications mean in terms of environmentally friendly products and services. Nonetheless, the number of Polish products labelled under Ecolabel and Ekoznak are included in the benchmarks laid out in the National Action Plan on Sustainable Procurement, so that this can be tracked over time. The current goal is to increase the number of national products certified by either label by 50% (see Box 14).

Box 14. Ecolabelling

Businesses increasingly find that it is simply not enough to talk to consumers about being green. Instead they will need to educate them about the advantages, as consumers and as responsible citizens, in purchasing green products. Through promotions, handouts, special deals, and other means, businesses find that an educated customer better appreciates the new emphasis on being green. To differentiate their products or services as environmentally sound, many progressive businesses obtain certification from an independent, third-party. Being certified means that a business can include an organisation's "ecolabel" on their product's label and other marketing materials. This ecolabel is important for attracting "green" customers and strengthening the value of their brand.

For example, the U.S. has more than nine independent certification organisations, of which all but two are non-governmental. The programmes certify a wide range of products and services. Green Seal, for instance, is a non-profit organisation that, since 1989, has used science-based programmes to set product standards to help shoppers find truly green products. Over the years the reputation of the Seal brand has grown to symbolise environmental leadership, and it continues to represent unquestionably green products and services.

Germany's Blue Angel is the world's first and oldest environment-related label for products and services. Created in 1979 by the Federal Minister of the Interior, the Blue Angel label is recognised as identifying the best possible ecologically friendly products and services. The designation is determined by the Environmental Label Jury, an independent decision-making body composed of representatives from environmental and consumer associations, trade unions, industry, trade, crafts, local authorities, science, media, churches and federal states. Today, more than 11 000 products, from 990 suppliers (21 % from outside Germany) display a Blue Angel label.

The European Ecolabel is a voluntary scheme, established in 1992, to encourage businesses to market products and services that are kinder to the environment. Only the very best products, which are kindest to the environment, are entitled to carry the EU Ecolabel. The criteria are agreed upon at European level, following wide consultation with experts, and the label itself is only awarded after verification that the product meets these high environmental and performance standards. Many producers wanting to sell their products across Europe have realised the benefits that the European Ecolabel brings. Products bearing the Flower logo can be marketed throughout the European Union and the EEA countries (Norway, Iceland and Liechtenstein). The voluntary nature of the scheme means that it does not create barriers to trade. On the contrary, many producers find that it gives them a competitive advantage. The EU Ecolabel is part of a broader action plan on Sustainable Consumption and Production and Sustainable Industrial Policy adopted by the Commission on 16 July 2008.

Little capacity to replicate or grow successful initiatives

During the study visit, the number of projects reflecting green markets was very limited in both regions. There appears to be little experience in disseminating best practices, which is a key concern. There was an example of two small farm cheese manufacturers in Podlaskie that started production with the assistance of the German-based Euronatur Foundation. However, none of the hundreds of visitors who visited those farms reported success stories about starting a similar production in other regions. Similar experiences come from the Green Technologies Cluster in Podlaskie, which started a successful operation thanks to ESF project assistance, but proved unsustainable after the initial funding ended. The Green Renewable Energy Cluster in Pomorskie exists only with the financial assistance of the main organiser of this cluster – the state Machine Flows Institute. The conclusion drawn from the interviews is that there is little knowledge in the two regions on how to turn good implementation examples into models that work on a wider scale.

Evidence gathered during the study visit also showed the difficulty in creating a critical mass of businesses in such sparsely populated areas, and more so among rural populations. There is a lack of coordination among the small initiatives in place, which makes it difficult for them to integrate larger value or supply chains. More could be done to ensure that these regions with an important potential for development in green sectors (such as biomass or renewable energy in general) seize the opportunities. The University could play an important role in this. The example of Puglia in the south of Italy (Box 15) could be of inspiration.

Box 15. Puglia: An example of local supply chains in rural Italy

Puglia is the first region in Italy concerning the production of renewable energy (almost 38% of total production in 2005), and has the natural resources and technical know-how needed to support a vibrant renewable energy sector. The regional government promoted a deregulation in 2005 to ease the installation of small scale RE facilities, and produced a regional energy strategy for RE in 2007. After an initial support to large scale plants located in remote rural communities, the regional government now promotes small-scale installation integrated in local supply-chains all over the territory. This strategy supports the “third generation” renewable energies. The “first generation” lasted from 2007 to 2010 and was dominated by large-scale industrial wind installations. The second generation is focused on rooftop PV and was largely driven by the national feed-in tariff. The third generation is in a nascent stage and aims at creating manufacturing activities, and job opportunities, linked to the renewable energy industry. Regional Universities (Bari) play an important role in providing technical support and, above all, skilled workers, which are abundant also in rural areas. Besides political will, regional specialisation depends on:

- Public incentives for the production of renewable energy. These are EU Cohesion Funds; Rural Development Funds (CAP Pillar 2 money is used to diversify farming activities and encourage the production of renewable energy); national funds (support to areas lagging behind); and regional investment. Subsidies are high because this is considered as a new industry and a public good.
- The production of electricity from conventional sources. The region is home to one of the largest coal powered plants in Europe. Specialisation in the energy sector may provide RE with the competences needed (skilled labour). Moreover, because of the production of electricity, the grid is denser in Puglia vis-à-vis other regions that do not produce electricity. This may favour the creation of a more decentralised system, based on small to medium-sized power plants.

Puglia is a good example of how small scale power projects can add to local employment. Although each project adds only a small number of jobs, there are multiple projects and in a rural area even a modest increase in the number of jobs leads to a meaningful percentage increase in employment. Small-scale power also seems to offer more opportunities for employment in related industries such as service providers and manufacturing. Because these are small volume activities they are not attractive to multinationals who seek scale economies.

On a general basis, rural areas could dramatically improve their performance in renewable energy production (and then development) by increasing collective action and cooperation among rural actors (farmers, above all).

Source: OECD (2011), Project on Renewable Energy as Policy for Rural Development. Internal working paper.

Recommendations

Several recommendations flow from the findings described in the previous section. The recommendations are based on the basic premises of how government can enable the green economy, which were articulated in the framework section. The premises stress that government should, firstly, do no harm in the sense of distorting market signals, instituting misdirected policies, or impeding desirable business activity. Secondly, it also stresses that government should ensure that proper institutions and infrastructure are in place to support markets, in this case green markets. Thirdly, government should step

in when the risks of desirable investments are too large for businesses to undertake and when common goods (or externalities) are not captured by the markets.

Set definitions and objectives to better support the green economy

Develop a definition of the green economy

The government, either at the national or regional levels, should conduct an in-depth analysis of the green economy. The purpose of the survey is threefold. Firstly, a rigorous study that includes input from key stakeholders will help gain consensus on the nature of Poland's green economy. Secondly, the study will form the basis for understanding the extent to which the green economy, as defined by the study, has grown in Poland. Thirdly, it will offer a comprehensive look at the number and types of jobs associated with the green economy, the skill requirements for these jobs, and the growth prospects of various green occupations. The study could follow the methodology used by the State of Michigan in conducting their analysis of Michigan's green economy and labour market. The jobs guide, compiled by the State of California, is a good example of how career ladders can be developed for green job careers. Obviously, a dynamic green economy will grow in ways unanticipated at this particular time, but as the green economy in Poland continues to grow, it is important to have a comprehensive view of what it is today and what it can become tomorrow. It was obvious that misperceptions about the green economy have arisen and it is important that these are not used to turn consumers and the public sector against efforts to further enable the green economy. Trade associations and consumer groups, which are already promoting and developing various aspects of the green economy, can then use the state definition as a point of legitimacy and a departure point for expanding in various directions. A definition of green economy that could serve as basis for discussion is that of UNEP⁶⁰: "green economy is the one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive". OECD's definition of green growth could complement the latter⁶¹.

Integrate the definition of the green economy in regional economic development strategies and operating programmes

Regional economic development strategies provide the roadmap for how public and private resources will be prioritised to promote growth. For the government to enable the green economy, the green economy needs to be fully represented in these strategies and the objectives need to be championed by key stakeholders and actively pursued by the parties responsible for the plan. In addition, quantifiable measures need to be established and monitored so as to track the progress in activating the plan. When opportunities arise, the government units should re-examine how they can better integrate the green economy into their strategic plans and then use these plans as ways to enable the green economy in their regions.

Clarify vision and set measurable objectives

As it has been argued throughout this chapter, the successful implementation of economic development strategies requires a clear vision and set of objectives. For the green economy to emerge, it is essential to offer detail on the vision and objectives to be pursued, both within the national and regional programmes and strategies. Once the priorities for the country as a whole have been identified, each region should integrate in their plans their own vision and objectives that will contribute to the national overarching framework. This must be done in consultation with the various stakeholders in the region, as well as with national representatives. It would be important to ensure that the objectives set are measurable and flexible enough to adjust to emerging needs as the green economy evolves. This would all ensure that the strategies at national and regional levels are well coordinated and that both contribute to a long-term project.

Identify a leader

The strategy should be based on the unique and strong leadership of a member of the national government (think of the mentioned inter-ministerial task force reporting to the Prime Minister) with the resources and institutional weight and capacity to take on such a responsibility. Indeed, for a strategy to move and the green economy to develop, it will be essential to have a clear leadership in Poland that truly believes in it. Beyond awareness rising campaigns and the incentives that could be put in place, the government should lead by example (public procurement is therefore important) and a leader should support the actions in the longer term. The most successful examples of transition have been identified in places where a mayor (e.g. London) or a prime minister (e.g. South Korea) has taken the leadership to push the transition agenda in the longer term. The leadership is not clear in Poland, and it should be identified at national and regional levels. A strategy without leadership does not go far.

Build capacities on the green economy*Raise greater awareness of the full scope of the green economy*

The government can help raise awareness of the benefits of a green economy for Poland and its regions. Presently, the common perception is that pursuit of the green economy is really pursuit of environmental protection, which is seen as more of a cost to the economy than as a benefit. Changing attitudes toward the green economy as a growth initiative is critical for more broad-based support for the development of green businesses and green markets. The study mentioned above is a first and important step in defining the green economy and showing the public the possibilities that lie ahead in terms of new growth sectors of the economy and new jobs. This will help give new sectors and new businesses legitimacy. The government is already pursuing this for certain sectors, for example through the GreenEvo initiative, but this type of recognition and promotion needs to occur at the local and regional levels to help develop and expand markets at those levels and not only at the international level. Once such regional initiatives are jump-started by government involvement, the private sector, through business associations and consumer groups, can step in with their own efforts, as already seen with the Polish Chamber for Biomass Programme.

Greening from an early age

Levels of environmental awareness and the need to green business remain low in Poland. Promoting awareness raising in primary and secondary schools would go some way to addressing cultural barriers, as schools are important vehicles for influencing children to promote behavioural change in their parents. Greening early stage education is likely to have a significant impact on shaping the values, attitudes, habits and methods of the next generation of employees, which is crucial to affecting change.

Educate the public on eco-labelling and green certification

Proper labelling and certification of green products and services is also critical in promoting green markets, but there appears to be some confusion as to what the labels mean and which ones are reliable. The government can help educate the public on what these labels stand for and the selection criteria used to label products and services as green. By providing an assessment of the testing used by different organisations and agencies to label and certify green products and services, the government can help to ensure quality certification.

Train regional government and ESF staff to better support green businesses

Both regions could conduct in-depth training for the regional government and ESF staff, with a team of domestic and international experts, on how best to provide technical assistance to businesses and on how

to identify market opportunities with ESF support. Without such training, ESF regional contest for grants to businesses will be inefficient and risks overlooking businesses with potential to grow in the green economy.

Improve the coordination of policies and programmes

Better link policies of education, employment and economic growth for the green strategy

Poland and the two regions need to make more efforts to bring the public education offer closer to businesses demands. These sectors are working in isolation, widening the gap between the skills offer and the demand in the labour market. Beyond skills provision, it is essential to align education, employment and economic development policies at national and regional levels to ensure that there is clarity in the vision and strategy in general. This will allow for more effective programmes and tools to be put in place to support the development of a healthy labour market, with a good provision of skills that can be absorbed by the business sector creating wealth and economic development locally. The need for definitions has already been addressed in this report, but there is also a need to work in partnerships (see the following recommendation) and to have a better governance of the green system. This could be achieved by establishing a committee with representatives of employment, education and economic development departments at national and regional governments that meets regularly to adjust the policies and define programmes according to the lines of action agreed. See the example of WIRED in the USA for inspiration.

Help nurture and sustain regional partnerships

Bringing together key stakeholders from business, educational institutions, and economic development agencies is essential in promoting the green economy. Concerns were raised about the lack of communication and collaboration between businesses and educational institutions. More specifically, businesses did not believe that their needs for qualified workers and for technical assistance were being met by universities. Some programmes to address these issues have commenced, but it does not appear to be enough. Government cannot force meaningful partnerships, but they can provide incentives for such partnerships to grow and flourish. Following the WIRED model, the recommendation is that government provide funds to facilitate the formation of partnerships and that continued support be based on accomplishing quantifiable performance milestones that are consistent with the objectives of the partnerships.

Effectively support the development of green markets

Form a taskforce to examine the needs of emerging green industries

Government can support the development of green markets by ensuring that government policies and practices do not impede the growth of green businesses and green markets. With the emergence of new industries and markets, government needs to ensure that current policies and practices treat these businesses fairly and efficiently. Inconsistent policies across government units, as well as cumbersome procedures for processing permits or licenses, can discourage the formation of new businesses. ESF funding procedures are also confusing and cumbersome. The recommendation is to form a taskforce that would examine the needs of emerging green industries and determine whether current government policies and practices are unnecessarily impeding their development. This taskforce would also advice on the ways in which the permitting and licensing process could be streamlined to make the processes more efficient and less bureaucratic.

Facilitate the access to support schemes and information for businesses

The recommendation calls for establishing “one-stop” help centres at the local level that can help existing businesses and prospective entrepreneurs to understand government regulations and permitting needed to start and sustain their business and provide advocacy in assisting them with this process. The help centres would also assist businesses and organisations with understanding and applying for ESF funding. This recommendation does not suggest creating an additional centre, but rather to concentrate the information and assistance provided by the various centres currently in place (ROEFS centres, Chamber of Commerce etc.) into one-stop shops. This would create a single place where businesses can obtain information ranging from access to finance, sector prospection, green economy opportunities, administrative procedures, access to human capital, business opportunities etc. (See the learning model annex for the example of the green entrepreneurship network in Spain).

Expand the procurement process to support green businesses

Government units already purchase green products and services from Polish businesses, but green procurement policy is in its early stages of development and there is the potential to do even more. The procurement plan recognises issues with a decentralised and thus fragmented procurement arrangement. The recommendation is to continue to pursue a more coordinated procurement policy and to devote resources to train staff to be more knowledgeable of green products and services and how government can lead by example in being a greener organisation. The example of Toronto public schools replacing old roofs with new solar-panel roofs shows how government can lead by example, while at the same time saving money in the long run. Procurement of this type could also be extended to promote green infrastructure, for example with respect to highway construction and new municipal projects.

Support green entrepreneurship

Establish local green incubators to support green entrepreneurship

Entrepreneurs starting a green business or trying to grow one can benefit from a variety of services. Services include mentoring, assistance with developing business plans, access to capital, access to business services such as accounting and legal services, technical assistance, office and production space, and simply networking with other entrepreneurs. It has proven helpful to have these services available in one location through business incubators. Recently, local governments and authorities have begun to establish incubators primarily for green business. The Green Incubator in Bethesda, Maryland, outside of Washington D.C., illustrates the type of services that can be offered in a one-stop shop arrangement (see Box 14). Based upon this example, the recommendation is to explore the needs of green entrepreneurs and establish local incubators that can cater to these needs in establishing new businesses and sustaining existing ones.

Increase access to financing for green entrepreneurship and business growth

Access to capital is one of the major obstacles to forming new businesses, and green entrepreneurship is no exception. For long-term viability and sustainability of individual businesses and the green economy in general, funding must come from the private sector through bank loans, venture capital, and equity financing. However, the government can provide avenues to financing to help new businesses get started. Financing arrangements can include direct loans, subsidised loans, tax abatements, tax credits, and community venture capital funds. In addition, small green business innovation grants could be awarded to small firms engaged in scientific research and development (R&D) on green technologies and that has a high potential for commercialisation if successful. The type of financial assistance needs to be tailored to the needs of businesses and the circumstances of the particular region. The recommendation is to consider

ways to incorporate various financing arrangements into a package of financial tools that can be tailored to meet the needs of green entrepreneurs. This could be combined with existing programmes, such as those offered through ESF.

Extend subsidies to support energy-efficient practices

Green markets can also be supported by subsidising the purchase and installation of energy-efficiency appliances and practices by businesses and consumers. This practice not only supports local companies that build and install these devices but also reduces reliance on carbon-based fuels. Many programmes are already in place at the national level, but the regions could consider how extending or enhancing some of these programmes could benefit their local green economies.

Support the development of supply chains in key sectors

There appears to be considerable opportunity to further develop some key economic sectors within the regions and to therefore contribute towards greater value added being retained. Indeed, there is a need to add value to some of the current activities, namely agriculture and other small initiatives (e.g. renewable energy in rural areas) in order to reach a critical mass able to absorb the labour force in place and anchor some industries of potential to grow in Poland (i.e. onshore and offshore wind, organic food, hydroelectric). The efforts of the Green Technology Centre should be supported and other similar structures should be created in order to provide a targeted and tailored assistance to small businesses in specific sectors. This would also enable the organisation of the rural population into more economically viable structures (e.g. cooperatives or associations), as small initiatives in scattered territories are difficult to grow and create wealth locally. The example of Puglia in Italy could be of inspiration.

CHAPTER 5:

EUROPEAN SOCIAL FUND TOWARDS EFFECTIVE GREEN GROWTH

By Przemyslaw Kulawczuk

Abstract

This chapter presents an analysis of the potential utilisation of the European Social Fund (ESF) in Poland, and in the regions of Podlaskie and Pomorskie, to facilitate green growth and support the development of green labour markets. This chapter also includes a set of recommendations on how to exploit existing potentials, overcome barriers, and achieve targets of green economy and labour market growth.

Policy issues

The European Social Fund is a European part of the cohesion policy. Its aim is to create equal opportunities for social development in the different regions of the European Union. In Poland the basis for ESF operations is mostly defined in the National Strategic Reference Framework (NSRF). Within this framework, the entire intervention of the ESF for the years 2007–2013 is covered by the *Human Capital Operational Programme*. The objectives of the Programme are to: allow full deployment of human resources, through an increase in employment and in the adaptation potential of enterprises and their personnel; improve the education level of society; reduce areas of social exclusion; and support the establishment of state administrative structures. Within the Programme support is provided to the following areas: employment, education, social integration, development of the adaptation potential of employees and enterprises, creation of efficient and effective public administration at all levels, health promotion, and human resources⁶², including issues related to the development of human resources in rural areas. The only allocation of the operations of the ESF is the Operational Programme Human Capital (OPHC). Thus, ESF and OPHC will be used as equivalents.

The total value of the financial resources involved in the fulfillment of the OPHC 2007–2013 constitutes 14.6% of total funds assigned to the execution of Operational Programmes, or EUR 11.4 billion. Within this amount, the value of ESF allocation amounts to EUR 9.7 billion, and the national input amounts to EUR 1.7 billion. The level of national co-financing was estimated to be approximately 15%. Within the Programme, about 60% of allocated funds were designated for regional support, while the remaining 40% of funds are to be implemented within sectors by the relevant ministries. Within the regional component funds will be allocated for the support of individuals and social groups, while within the central component funds will be designated first and foremost as support for structures and systems.

ESF Funds in Pomorskie and Podlaskie

In Pomorskie and Podlaskie the managing entities responsible for the fulfilment of ESF activities are Marshall Offices and Regional Labour Offices, which are subordinated to Marshall Offices. Both regions benefit from the funds of the ESF, the scope being decided by a special algorithm, which supports not only economically weak regions but also some strong ones. To a certain extent, the algorithm takes into account the size of the population along with other factors, which can sometimes work in opposite directions. The

general rules of ESF implementation are prepared under supervision of the Ministry of Regional Development, but the regions can change the focus of their support, mainly by using specific criteria for project selection according to their needs. These changes must, however, reflect the rules of the National Frameworks in the execution of the Human Capital Programme.

How could ESF Funds prepare the labour market for the green economy?

It is suggested that the supply and demand approach of labour market development will be taken into consideration, and this will determine two main directions of intervention⁶³.

Demand-side preparation

In the context of Poland, it seems essential to provide enterprises and institutions with tools to assist them in the definition and implementation of actions in the area of the green economy. Information on national and EU regulations, the green market, green economy activities supported by public authorities, and other related information should be provided. To achieve this, indicative actions may include:

Certifications for CSR and Environmental Sensitivity

This would imply the support of programmes and certifications leading to the implementation of Corporate Social Responsibility and Environmental Sensitivity in enterprises and institutions. Specific actions may include:

- Partial or total subsidies to enterprises being certified in CSR and green issues;
- Support for innovations in certification programmes leading to the inclusion of green issues; and
- ESF funds for contests and certifications leading to CSR and green certificates.

Collect data on market trends

This is an important gap to be filled, as data availability is still scarce. It would be essential to support research on market trends of the products and services delivered by the green economy to anticipate future scenarios in Poland in terms of larger investments or market niches. This should enable producers and service providers to seize opportunities and prepare for the market. Specific actions may include:

- A call for research papers, with special selection criteria related to green economy trends and data collection. The call for papers could be managed by the Marshall Offices.
- Constant benchmarking comparisons to leading countries in the areas where Poland has a competitive advantage or in those in which Poland is willing to enter. The areas may be those identified in Chapter 2 of this report. The comparison does not necessarily need to measure an indicator, but rather to keep abreast of the innovations and trends abroad. An example could be the organic food sector, and the innovation abroad could be the opening of a large organic food hub for the export of Polish products, as well as information on the certifications required to enter those new markets.
- Dissemination of the results of such research among companies that could be affected by changes. The information could be condensed into small periodical brochures (bi-monthly)

and sent out to a mailing list through either the Chamber of Commerce or the Marshall Offices.

Strengthen green procurement

With the support of ESF Funds, a series of training could be organised for municipalities, counties, and regions on the methods of defining, building, and implementing procurement procedures based on corporate social responsibility, including environmental issues (green procurement). Specific actions may include:

- Creation of a joint working group with the Office for Public Procurement on how to address the issue of green procurement implementation in public administration;
- A call for tender for organisations experienced in procurement, CSR, and green issues to propose innovative training for the target groups and conduct such training;
- Finance for the preparation of handbooks and other training materials in Polish to facilitate the dissemination of the information; and
- Participation of a professional from the Polish Public Procurement Office in a seminar for local authorities to explain green public procurement in Poland, standards, objectives and other issues.

Enhance the green standards

In order to compete internationally, it will be important for Poland to reach the level of “greenness” of leading countries. Green washing should be avoided, and therefore the standards of what is green and what is not should be set to a minimum. Through ESF Funds, Poland could support legislation change that would increase its green requirements to the levels of leading countries. Specific actions may include:

- Finance for research on the legal issues concerning green regulations;
- Broad dissemination of the outcomes and opportunities; and
- Creation of an online platform with the standards of “greenness” open to the public.

Conduct energy audits

To reduce energy consumption, energy-efficiency audits should take place in private and public institutions. This would raise awareness of and communicate the need to improve energy consumption, mainly in buildings. Specific actions may include:

- Organisation of specific courses to train a number of energy auditors to undertake the policy audits. The case of London (Box 16) could be of inspiration.
- Preparation of a programme to support energy efficiency in public and private buildings. This should include specific standards, measurements, and deadlines to be met. The case of London (Box 16) could again be of inspiration.

- Organisation of programmes to communicate the need to become more energy efficient, to disseminate knowledge on the benefits of improved energy efficiency, and to support energy audits.
- Development of practical tools and brochures for private and public business owners to better understand the potential to reduce energy consumption.
- Provision of financial support as a subsidy or grant in order to undertake a maximum of energy audits for private and public buildings.

Box 16. London: Energy efficiency in buildings

The Mayor of London launched a series of programmes to support energy efficiency in private and public buildings across the city. To support the transition to an energy-efficient house stock, a parallel programme to train energy auditors/advisors was subsidised. This programme allowed for unemployed people, who underwent a selection, to undertake a training course to become energy auditors and advisors. Several boroughs were selected to be the first to be visited by the energy auditors/advisors. Leaflets were distributed to homes in those boroughs to inform the owners about the possibility of having an energy auditor/advisor visit them to provide information on opportunities to improve the energy efficiency of their homes. This was supported with data on the potential savings to electricity bills, heating costs and energy consumption in general. The programme of energy auditors/advisors will be replicated in other boroughs as more energy auditors/advisors are trained.

RE:NEW Home Energy Efficiency for Tomorrow Programme (formerly HEEP): this retrofitting scheme is aimed at reducing CO₂ emissions from London's domestic sector, which represents the largest single source of CO₂ emissions in London. RE:NEW seeks to create a proven and effective delivery model which includes free-of-charge, easy-to-do and innovative measures. Ultimately, it aims to offer more expensive measures such as loft and cavity wall insulation at no upfront cost. In addition to reducing CO₂ emissions and achieving cost savings for households, the RE:NEW programme is expected to stimulate significant growth and jobs in the low-carbon sector.

The Mayor's Housing Strategy and Beyond Decent Homes: the Mayor will work with the Homes and Communities Agency, London boroughs and other partners to explore options for the delivery of an enhanced Decent Homes standard, and support improvement of social rented homes so that they are more than "decent", with environmental standards a priority for any enhancement to the Decent Homes standard. The Mayor will also maximise funding for the retrofitting of homes from central and regional housing funding pots and ensure that this complements the overall approach adopted by RE:NEW.

RE:FIT programme (formerly BEEP): RE:FIT provides an innovative commercial model for public bodies to finance energy efficiency improvements to their buildings and reduce CO₂ emissions. The model guarantees a future income stream to fund investment in improvements, and the economies of scale achieved through retrofitting a group of buildings at once allows for more long-term infrastructure investment than through cheaper, quicker measures. A pilot of 42 public buildings has so far yielded energy savings of 28% over an average seven-year simple payback period. It is anticipated that, if successfully rolled-out across the public sector, the model could be modified to function within the private sector as well.

The Better Buildings Partnership (BBP): the BBP provides support for commercial landlords' collaborations with occupiers and managing agents to make London's existing commercial building stock more energy efficient. The BBP brings together 14 of the largest and most influential commercial landlords in London. For the first time, these companies are developing sustainability solutions not just for their own portfolios, but with the intention of rolling them out to the entire market. By 2025, the aim is for the BBP to have catalysed activity that will be reducing CO₂ emissions by 30 000 tonnes per year.

Source : OECD (2011), Climate Change, Employment and Local Development in London

Facilitate access to capital

Entrepreneurship and business growth is lacking in Poland, not only because of a scarcity of skilled workers, but also because potential entrepreneurs and business owners do not have access to investment. Through ESF Funds, a programme could be created to support capital investment funding in small and micro-scale green economy enterprises. Specific actions may include:

- Creation of a programme to support start-ups in specific areas of the green economy (subsidies and preferential loans). The areas may be those identified in Chapter 2.
- Training the existing small business advisory centres on green business opportunities to ensure that the advisors are well aware of the opportunities in the green economy so that they can assist in the preparation of well targeted business plans.
- Creation of platforms (meetings, groups) where business owners and potential entrepreneurs can meet with financial institutions and venture capitalists interested in the green economy. Facilitation of the match making process.

Support training institutions focusing on green technologies

Training related to green technologies, and the green economy in general, will only be possible if training institutions have the right staff. It will be important to support the development of specific curricula related to green technologies (e.g. wind farm engineering) and provide the facilities for practical training (e.g. solar panel installation lab). Some specific actions may include:

- Provision of mid-term (3-5 years) institutional grants for training institutions to support the definition of specific green economy curricula relevant to the locality; and
- Support for international exchanges to enhance training methods through site visits to other similar training institutions and centres abroad.

It must be underlined that the proposed activities are tailored to the very specific situation of Poland. The implementation of European Social Funds to support the green labour market is also in its very initial stages in most EU countries. Most critical for green economy development is: a) regulation supporting the green economy; and b) direct capital investment support or fiscal incentives to start up green businesses. The green labour market is a result of growing production capacities, not the contrary. Therefore in order to support the green labour market, business potential should be created and expanded. Some recommendations on how ESF Funds could support entrepreneurship, business growth, and the emergence of a green market are described in Chapter 3.

Supply-side preparation

To build and strengthen the supply of businesses and skilled workers for the green economy and to reach a critical mass, it will be important to ensure that businesses and potential entrepreneurs know which opportunities exist in the green economy sector as well as the economic activities that will be taking place locally. With this information to hand, enterprises and institutions could join efforts as part of the supply chain. It will also be essential to provide training to students and guidance to educational institutions on how to conduct green economy-related educational programmes. Some concrete actions may include the following:

Support innovative green business and technology education

- Provide grants to educational entities willing to establish green economy oriented educational programmes (this currently happens in Poland but does not cover the green economy directly); and
- Provide educational grants for students who decide to undertake studies in areas connected to the green economy (this also currently happens in Poland but does not cover the green economy directly).

Build the attractiveness of green jobs amongst students

- Organise information campaigns to potential students on future job opportunities within the green economy and on how the green economy can create such job opportunities.
- Subsidise traineeships (for students) and apprenticeships (for young graduates) in which they can apply their knowledge in green economy related activities within a business. This would allow students and graduates to gain better understanding of the opportunities related to the green economy and for employers to benefit from a better skilled labour force.
- Identify and promote business successes within the green economy to build a positive attitude towards studies in this area. Include short case studies with personal views of business owners in brochures directed to businesses and students.
- Organise business games or entrepreneurship contests (across different disciplines) in a subject related to the green economy. This would allow for students to think about an idea and perhaps carry it out at a later stage.

Include green business and technology in post-graduate courses and lifelong learning

- Subsidise post-graduate courses in green business and technologies. This could be included as a core component of all courses, regardless of the discipline.
- Subsidise workforce skills development for workers and the unemployed. These courses should be designed in consultation with business owners or representatives of certain industries (e.g. water management) to ensure the courses meet specific needs.

Build the institutional capacities of labour offices and ESF staff in the area of the green economy

During the OECD study visit, the review panel observed that Labour Offices and ESF staff members have very limited knowledge on the green economy and green labour markets (business regulations, business models, new industries, key development problems, available technologies, skills shortages, etc.). This limited knowledge results in little understanding of the project proposals submitted for ESF funds. Consequently, green projects have less chance to succeed than more traditional businesses. Moreover, during the OECD visit, there was perceived general criticism towards the generic/broad scope of ESF funded training. Moving the generic perspective of ESF support towards the green economy and environment oriented business skills support could meet business needs and facilitate the expansion of green activities. However, such a move requires an understanding of the concept (definition and implications) and the necessary skills within the staff. It is therefore proposed to:

- Organise training courses for ESF staff in the area of green business and green labour markets. This could be done through the creation of working groups by job category (i.e. executive directors, management, administrators), including staff from different labour market and ESF offices in Poland, to explain the green growth strategy, provide definitions, clarify a vision, set objectives (by category), and provide information related to this new economic model. These groups could meet for two-day workshops. The course should be conducted by a Polish expert, but may invite “peer” staff members from other European labour or ESF offices to exchange on the ways this is happening elsewhere.
- Organise site visits to leading organisations supporting the green economy in EU countries and the rest of the world: (e.g. United Kingdom: Green Economy Coalition, London Development Agency, Low Carbon Innovation Fund, Low Carbon Trust, UK ministries; Germany: Bloomberg New Energy Finance, ENERGLOBE.DE, Glocalist Media – Media for Sustainability, B.A.U.M., Clean Energy Project, federal ministries in Berlin; Belgium: Brussels, where most of the international green organisations’ European offices are located; Canada: Canadian Youth Climate Coalition, Climate Action Network, Green Communities Canada).
- Provide a programme of site visits to leading green business support organisations and green businesses within Poland, including: National Agency for Conservation of Energy (KAPA), National Fund for Environmental Protection and Water Management, Bank for Environmental Protection (BOŚ), National Chamber of Renewable Energy (KIEO), Zielona Gora Wineries Association, Ecoland Association, and others. These site visits could be enriched with visits to green businesses set up by Polish entrepreneurs and successful pilot projects introduced in Poland.

How could ESF Funds contribute to developing skills for the green economy?

The skills development concept should be the result of the accepted green growth strategy. Because there is currently no single overarching strategy for green growth in Poland, the potential activities are only conditional. It must be admitted that some aspects of sustainable growth and climatic issues are addressed in the report Poland 2030⁶⁴ and the National Strategy of Regional Development 2010-2020. Regions, cities, rural areas.⁶⁵ These documents, however, do not represent the national green growth strategy and are neither recognised as such. No definitions are provided (“green economy”, “green jobs” or “green skills”) and no specific actions to support them are listed.

Proposed support programmes could include two components: entrepreneurial skills training in the green economy and employee skills training. Given that the green labour market supply side is not very developed, entrepreneurial skills training should receive a larger financial contribution than employee skills training.

Entrepreneurial skills training

Entrepreneurial skills training is aimed at increasing the skills of entrepreneurs and their knowledge on how to start up and maintain small enterprises. With time, some enterprises will grow, while others will remain stable or fail. For those which have the chance to grow, the support policy should assist in delivering more advanced managerial knowledge aimed at exploiting the business opportunities for expansion. Currently in Poland, however, the green business area is young and has not been expanded broadly. Therefore, more stress should be placed on the demonstration of successful green businesses (observing how they overcame barriers) and on fundamental thematic branch knowledge and skills. Fundamental training in the area of green business start-ups could be essential.

Indicative actions could include ESF grants programmes for:

Starting and running business in:

- renewable energy
- small ecological food processing
- agro and natural tourism
- recycling and waste disposal
- thermo isolation and ecological housing heating
- energy auditors.

These thematic areas could be addressed by the following:

- Training programmes (both managerial and branch approach);
- Advisory services to managers of small companies – delivering skills and knowledge on how to develop and maintain small green businesses (with dedicated consultants experienced in green businesses); and
- Small investment grants programmes (providing, for example, grants of up to EUR 30 000).

It must be clearly stated that all entrepreneurial training should be demonstrative and should take a practical approach, learning by doing. These trainings should include technical assistance over a certain period to ensure a larger proportion of successful cases (see Chapter 4). They should also be accompanied by the preparation of working documents, such as business plans, operations plans, financial calculations, marketing plans, and any other practical instruments available. It is highly advisable that all participants should have to spend some time on internships or traineeships in similar businesses located in different parts of the country or abroad to observe how real green businesses are conducted.

Entrepreneurship programmes in the green economy

In the green economy, the share of new businesses based on brand new ideas is higher than in the traditional economy. Creative thinking plays a key role in the development of green business models. Training experience shows that creativity grows with the expansion of knowledge on how to conduct business in the given branch area. This knowledge is low in Poland with respect to the green economy. Also, young entrepreneurs are at the forefront of the future development of small businesses in the country. Investing in youth entrepreneurship now will produce results in the near future. It seems that providing a certain level of expertise and skills in the conduction of green businesses can stimulate the interest of the younger generation on green business development. Actions to tackle these issues may include:

- Training programmes aimed at building creative thinking in green business and technology, green business development, teamwork for green business growth etc. The training should include both a theoretical component related specifically to the economic sector of the business (e.g. engineering of wind turbines) and a practical component, including internships or traineeships in businesses operating to maximise the chances of survival. A mix of theoretical and practical training would be ideal. Seminars and other kind of business-to-student exchanges should be envisaged.
- Grants for students' projects. This kind of financial support may be granted to a fixed number of youth businesses annually (maybe ten or so) that have the strongest potential for growth and job

creation in Poland. These businesses would be selected by a national commission formed by labour offices, ESF managers, entrepreneurship faculties, and business advisors. This kind of competition would encourage youth entrepreneurship and support green business development.

- Creativity training and mentoring programme for prospective entrepreneurs. Creativity training should be accompanied with branch area knowledge. The prospective and existing entrepreneurs should be trained not only on how to create new business models but also on how their ideas and creativity could become a real business.

The youth green entrepreneurship programme should be of a primarily educational and demonstrative nature. Young people should understand that the green economy creates new opportunities. They should be trained on how those opportunities can be exploited in a creative way.

Advancement of competences in running green businesses (2nd stage courses)

Apart from the first stage start-up courses on running green businesses, a more advanced approach is needed to transform existing businesses. Such companies need a different type of advisory service, and the existing business advisory services need to be tailored to their particular needs. Enhancing the competences of this group should include a smaller focus (maybe 40%) on management issues and a larger focus (maybe 60%) on management problems and the firm's opportunities within the green economy. This means that advancing competences should combine knowledge and skills training with management consulting offered for a defined period of time (e.g. 2 years), provided by consultants with good experience in green business, from countries with good experience in the green economy. Most valuable would be to match advanced knowledge courses with tailored consulting on green business development.

The indicative activities of ESF in this area should include:

- Advanced small green management courses and consulting support;
- Market development strategy courses for entrepreneurs matched with individual consulting; and
- Technology competence courses for engineers and technicians.

Employee skills training support

Employee skills training in the area of green business and the green economy should be concentrated on: 1) providing fundamental knowledge on the particular thematic areas of the green business operation; and 2) training in particular skills with high potential for practical implementation and use. The issue is not only focused on the explanation of how green business knowledge can be utilised, but also on practical demonstration and the business opportunities available as a result. This includes in-company training. For various reasons, an important part of such in-company training could only be provided abroad. Therefore training could consist of courses organised locally, combined with a site visit or (ideally) a 2-3 week internship in a company abroad, demonstrating how this knowledge is used in practice elsewhere. The thematic areas embraced by such courses, matched with short internships, could include:

- Green marketing (including green labeling and green promotion);
- Green procurement and social responsibility procurement (for enterprises and municipality employees);
- Green business management:

- Green business financing and fundraising;
- Green technologies implementation and maintenance;
- Green economy support at the local level (for municipality employees); and
- Energy efficiency.

The above mentioned thematic areas could be addressed through:

- Short training courses in-company, but also within certain business platforms such as the Chamber of Commerce.
- Mentoring in professional careers. An advisor (e.g. an energy auditor, green manager) could visit the company to offer an assessment and a customised report with recommendations.
- Showcasing success stories on green economy businesses. Good practices could be described and included in a brochure or online newsletter providing tips for managers on how to improve their businesses and seize opportunities arising.

Supporting green skills training

It seems that Polish providers of training services should expand their knowledge on green skills training. Firstly, it will be important to identify specific skills requirement for green economic activities and emerging green sectors. Secondly, due to the observation that such training in Poland is rare the solution could be either to “train the trainers”, effected by experienced organisations from countries with significant achievements in the green economy, or to build innovative original programmes. In fact, both approaches could be used, but ESF should insist on the very practical orientation of such programmes. Support for designing innovative green training should include the following indicative activities:

- Identify and classify skills shortages in the green economy. This has been developed in Chapter 3 of this report. ESF Funds could contribute to making this classification.
- Identify the sectors that will be expanding and those that will shrink. This will enable the anticipation of changes within the territory and the adjustment of the skills offer in the regions. Achieving this requires a strong data collection system, continuous analysis and regular exchanges with businesses and, more widely, with sector representatives.
- Provide grants for “training the trainers” programmes in the green economy area. Once the necessary skills have been identified, train Polish trainers to a satisfactory level. Make use of business representatives and foreign trainers and/or business owners if necessary.
- Provide grants for the innovative design of green skills delivery. Green skills should be delivered in a quicker and more flexible way. The need to adapt the workforce to businesses development is pressing. Therefore, innovative green skills delivery should be supported, such as apprenticeships, traineeships, short professional seminars, etc.
- Facilitate the reconversion of workers. Provide advisory services to both employees and unemployed people on professional orientation towards green economy jobs. This will be essential to make the transition happen. Workers aiming at reconversion will need guidance on the opportunities available within the green market. Job placement centres should be the antennas

to centralise information and exchange with businesses and, more widely, with sectors to identify transferable skills. The example of Mulhouse Employment Office in France could serve as inspiration⁶⁶.

It must be underlined that the proposed approach is not taken too often. Typically, green economy development is supported through direct capital investment aid or through investment tax incentives. However, the green economy should be developed from grassroots. Therefore, it seems reasonable to start the training of new skills in the new area with entrepreneurial skills training. Such an approach was used at the beginning of the nineties, when Poland had to move from a centrally planned economy to a market economy with no previous experience. At the time, entrepreneurial training gave very positive results and proved to be efficient. Because experience in the green economy in Poland is low, a similar approach may be adopted.

How could ESF Funds support the removal of barriers to the green economy?

Raise awareness on the green economy

ESF funds can be used for the promotion of green economy concepts among entrepreneurs, municipalities, youth, academic circles, and strategic planners to build awareness on the significance of green economy issues. It will be important to put forward the economic advantages of shifting to a green economy (new market opportunities, long-term savings, reduction of energy bills, etc.) rather than the pure protection of the environment, as this is currently perceived negatively. The indicative activities in this area may include:

- Preparation of case studies on success stories. This implies the identification of good practices in Poland (e.g. the Green Technologies Centre in Podlaskie) and the dissemination of this information to a wide audience. The information should be clear, highlight the achievements, and distill the outcomes (i.e. jobs created, impact on the environment, new markets, business growth, etc.). This could be done by regular newsletters to business owners, students, and civil society in general.
- Organisation of conferences, seminars, and other events aimed at building awareness on the green economy. These events should communicate the opportunities available. To enhance their impact, these events could become a platform where the various actors interested in the green economy are brought together, for example entrepreneurs, business owners and investors (business angels, venture capitalists, banks) It would be important to emphasise the economic aspects of shifting to a green economy, rather the protection of the environment.
- Organisation of a publicity campaign to promote the development and significance of the green economy. This campaign should specify the vision for Poland (how Poland and its regions will ideally look in, say, 2030), an agreed definition of the green economy that is owned by the various Polish stakeholders, the targets to be met, the main industries concerned, the public long-term commitments in terms of investments in green economy sectors, and the support schemes available for small, medium and large companies.

Support prioritisation indicating a strategic approach to green economy development

Strategic development documents prepared within Poland typically include significant diagnostic sections, discuss possible challenges, and even present some decisions, but do not indicate strategic choices and typically do not discuss the costs and benefits of such choices. There is a need to prepare realistic, practical documentation indicating strategic choices in the area of green development. When awareness on

the problems and opportunities of the green economy increases, society and governments will need knowledge and skills on how to cope with the green economy development challenge. The following activities could assist in this task:

- Building social and expert working groups for the construction and consultation of strategic development principles (based on best practice throughout the world, local assets, social needs and support). Ensuring the participation of experts on the topic, as well as national and regional authorities.
- Putting together a formal document on the green economy strategy, indicating decisions which should be made, strategic choices, available resources, costs and benefits of proposed actions, and also providing an alternative view on green economy development.
- Providing wide dissemination of the documents. Executive documents for businesses, didactic material for students, and easy-to-digest material for households.
- Preparing an operational plan to implement the strategy (this usually includes the use of best practices throughout the world). Indicating actions, a timeline, and the actors accountable for each of the actions.
- Monitoring the plan and strategy implementation. Evaluating, at various stages, the impact of the strategy and realigning when necessary.

It must be underlined that the strategy for the development of the green economy could be either a separate document or a part of the regional development strategy. The OECD study group does not insist on the preparation of a separate document, but on addressing the issue of the green economy as a separate, significant strategic issue of the regional and national development strategies.

Simplify investment procedures and administrative burden to green economy development

During the OECD study visit, one of the main problems reported by entrepreneurs was the issue of complicated and difficult investment procedures in green business. For example, complaints in relation to EU procedures were identified. Indeed, regional products are not allowed to be sold outside the county where they are produced. This creates a challenge to change this kind of situation. This aspect was not discussed in detail due to the fact that ESF resources are not used to reduce legislative obstacles for businesses. Typically, ERDF funds can be used for this kind of improvements. However, within the process of preparing strategic documents for green economy development, the ESF can certainly support the finance of a section devoted to eliminating legal barriers. This section could be titled: *Legislative environment for green economy and green labour market development*, and may include an analysis of the legislation and regulations, and an assessment of the way in which they restrict green business development. It could include recommendations on how to improve the system and propose implementation tools.

ANNEX: LEARNING MODELS

This section provides some practical examples (learning models), for the regions of Podlaskie and Pomorskie, to illustrate some of the approaches and recommendations suggested in the report. These models cannot necessarily be replicated, as such, in Podlaskie or Pomorskie as the local context needs to be taken into consideration. However, these models do intend to provide some practical guidance on how similar challenges were dealt with in other places that could be of inspiration for these regions. Table 5 presents a synthesis of the examples that are included in this section.

Table 5. Synthesis of learning models

Model	Region (country)	Recommendation/Approach
CENIFER foundation for renewable energies	Navarra (Spain)	Anticipate skills needs for renewable energies and ensure skills availability in renewables
FONAMA training programme	Extremadura (Spain)	Provide training adapted to green skills needs and enhance the capacity of labour market institutions
Development of rural tourism	Castile and Leon (Spain)	Develop a tourism sector in rural areas, either related to culture, nature or agriculture
Shipbuilding to wind turbines	Belfast (UK)	Identify transferable skills from a shrinking industry (shipbuilding) to a green industry (wind turbines)
Institute for the Diversification and Energy Saving (IDEA)	Spain	Free and applied training courses for the greening of agriculture
Siemens Wind Power Training Centre	Bremen (Germany)	Up-to-date and appropriate specific training for employees within the wind power sector
Biogas in Kristianstad	Kristianstad (Sweden)	Production of biogas from landfill and other agricultural waste
Emprendeverde – Green Entrepreneurship Network	Spain	Promote green entrepreneurship with the support of ESF
Programma Operativo Interregionale	Puglia (Italy)	Overcome the issue of lack of coordination between different policies around renewable energies
Converting the Rust Belt to the Wind Belt	Lackawanna (USA)	Make use of skills available from a traditional sector to a green sector. Transform the highly contaminated Superfund sites into useable brownfields while creating jobs
Seeding innovation in regional green manufacturing	New Mexico (USA)	Provide a nurturing environment for green businesses and engage universities in promoting innovation, commercialising ideas, and training students effectively

CENIFER foundation for renewable energies, Navarra, Spain

Description of the model

The Navarra region has undertaken a fast development of renewable energy over the last few years. Thus, it has seen a rise in demand for renewable energy specialists, including wind power maintenance staff. In this context, the CENIFER foundation was set up as a public sector initiative with the goal of delivering skills training for renewable energy. CENIFER offers a wide range of renewable energy courses, including a wind power maintenance course, delivering training in the skills needed for this new occupation. The foundation also organises training for trainers (technical updates) and participates in international programmes.

Wind power maintenance staff is responsible for the effective performance of wind power installations, checking and organising repairs, ensuring the correct energy efficiency performance and managing material resources for the maintenance of the wind power installations.

Relevance to Podlaskie/Pomorskie

The low capacity of both regions to quickly train their labour forces to the arising demands of the green economy may be an obstacle to their development. The Pomorskie region is developing renewable energies (wind turbines and biogas) and might face similar skills constraints to the Navarra region. The Podlaskie region might develop biomass energy production. Both regions are going to face new greener skills needs and the Navarra project could be an example for them.

Results of the approach

Since 1994, when there was no renewable energy production in Navarra, the region has expanded its electricity production from renewable sources to 65% in 2009 including 993 MW of wind power and almost 100 MW of photovoltaic power. Navarra has been able to cover the jobs needed for this new activity, facilitating the rapid expansion of renewable energy production in the region over the last 15 years. This points to the efficiency of the skills response. Moreover, a study carried out by the Navarra Employment Service on the skills needs of the renewable energy sector⁶⁷, shows that most companies do not have problems finding installers or maintenance managers.

Reasons for success

Navarra's particular geographical location and climatic conditions, together with a clear corporate and public strategy, have been key factors for the fast and successful development of wind power in the region. One key reason for the success is that the skills response provided has had a large effect on SMEs, which extended its scope, providing training to companies that cannot afford to provide in-house training in many cases. Moreover, the training delivered takes into account practical training needs, as it has been developed by CENIFER experts, in collaboration with professionals, enterprises and corporations, in accordance with their own evaluation of skills training needs in the renewable energy sector. Short courses like these are not offered widely in Spain, especially for wind power maintenance staff; indeed similar courses, such as formal training courses, use to have a longer duration and did not focus on the specific skills needed for one certain occupation. In contrast, the CENIFER courses focus on more detailed skills needs and are suitable both for employed and unemployed workers who cannot afford to spend the time or money on long-term training in renewable energy.

Obstacles faced and response taken

The Navarra region's ambitious environmental policy objectives, in terms of renewable energy, faced the obstacle of the lack of a skilled workforce. The skills for the wind power maintenance occupation require mechanical or electrical training or an engineering background, which usually involves technical skills such as electric and mechanic connections, electric controls, use of tools, and plan interpreting. At the very beginning, the training was only offered to wind power maintenance staff and only addressed the technical skills gap for the performance of the occupation. However, the skills needed also included some administrative and bureaucratic skills, like writing and reading administrative reports and documents. To face all these skills gaps, the training programme of CENIFER was set up.

Considerations for adoption in Pomorskie/Podlaskie

The initiative was promoted by public regional authorities, with strong collaboration with private partners, including enterprises and trade unions. In Podlaskie and Pomorskie, adequate cooperation between the regional Marshall and employment offices could lead to the successful implementation of a similar initiative. This initial cooperation could then be opened to members of the social dialogue in Pomorskie and Podlaskie, to also include an analysis of current and future skills demands. The alternative of short, agile and flexible courses implemented by CENIFER could be useful for the two regions. The participation of experienced NGOs has already proven to be a success factor in both regions and could be further developed within this initiative. The ESF could contribute to building a partnership with the capacity to organise the identification of the current and future skills needs of enterprises and to provide adequate training to workers. ESF could also fund international activities to identify good practices in the identification of skills needs and in green training in other regions (the Navarra region, for example).

Further information

Contact: info@cenifer.com

Website: www.cenifer.com

FONAMA training programme, Extremadura, Spain*Description of the model*

Solar photovoltaic energy was planned to increase in the region of Extremadura from 0.54 MW to 13.39 MW between 2004 and 2010. In order to respond to the training demands resulting from this policy, the regional government in Extremadura has led the skills training for solar energy installations. The programme has been managed by the Extremadura Regional Employment Office (SEXPE) together with a public regional enterprise, Promotion of Nature and Environment, FONAMA (Fomento de la Naturaleza y el Medio Ambiente, in its Spanish acronym) and in close cooperation with enterprises. Its success lies in the coordination efforts made so that the labour market is able to anticipate future skills demands with accuracy. The employment agency takes on the responsibility of accompanying the public regional energy strategy and providing it with the human resources it needs for successful implementation.

Relevance to Podlaskie/Pomorskie

Despite the fact that the region of Extremadura differs substantially from the regions of Pomorskie and Podlaskie, particularly concerning photovoltaic energy production, the model of training adapted to arising skills needs is valuable for both regions. It is a publicly driven initiative that merges the efforts of the environmental public agency (FONAMA) and the regional public employment services (SEXPE), and

in close cooperation with private energy enterprises. This approach is very interesting to support and enhance the limited capacity of the regional labour market institutions.

Results of the approach

The objectives for solar energy involved the creation of 1 069 jobs in solar photovoltaic energy and almost 2 000 jobs in solar thermal energy during 2005-2010 in the field of solar energy installation project designers. FONAMA's renewable energy training programme has answered the rising demand for renewable energy specialists in the region, forecast to be 3 000 by 2012.

Reasons for success

One key reason for success is the coordination between greening and training policies. In other words, both the demand and the supply of skills training has been planned by the same public agent.

Another important point is that the construction sector is becoming more closely related with the new green sector of solar energy, so there exists a wide provision of education for the new occupation, easing the training process. Occupations in the construction sector, e.g. plumbers, electric and heating installers, are related with solar energy installation project designers. Some basic skills are similar between these occupations and those for solar thermal energy projects. This link has been enhanced since the introduction of the new Technical Building Code, which established, in 2006, an obligation to incorporate energy efficiency criteria and the use of solar, thermal and photovoltaic energy in certain new and existing buildings. There is, therefore, a large potential for workers in the construction sector to learn additional skills and find employment in the solar energy sector.

Obstacles faced and response taken

Solar energy installation project designer can be considered a new occupation, as solar panels are a new renewable energy source in Spain. Nevertheless, for electricians and plumbers the skills gap is not so wide. In the beginning, many of the courses were limited to covering technical skills gaps. However, in Spain, one key reason for the development of renewable energies is the policy of incentives, which requires undertaking several bureaucratic procedures. Thus, the lack of knowledge on the changing regulatory framework in Spain and lack of administrative skills became an obstacle for the development of this occupation.

The response taken was the introduction of these components into the new training organised by FONAMA, which also included skills for viability studies and administrative procedures such as subsidies applications.

Considerations for adoption in Pomorskie/Podlaskie

As with the previous initiative, this initiative was also promoted by public regional authorities, namely by environment and employment authorities. The first step could be the creation of a task force in each region, composed of representatives of environment and employment departments, to exchange information on their short, medium and longer-term strategies and jointly analyse their impact on employment and skills needs. The impact exercise should particularly focus on foreseeable regulatory changes in agriculture, energy, construction, etc. Certainly, the task force could also be opened to the energy, economic, and industrial departments to identify strategies and forthcoming (regulatory) changes and to analyse the technical, administrative and economic knowledge that workers will have to acquire to adapt to these changes.

The task force could include (permanently or only temporarily for certain questions) enterprises potentially affected by the strategies and changes. The collaboration of some business schools would also seem to be a good point in the provision of specific training in changeable regulatory issues.

Further information

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Development of rural tourism, Castile and Leon, Spain

Description of the model

Rural tourism is a sound development strategy for agriculture-based regions in the EU, such as Castile and Leon. These regions often face problems of the destruction of jobs in agricultural activities and are therefore threatened by the decrease of population as younger generations migrate to large urban areas. The economy of Castile and Leon has been historically based on agriculture and some basic industrial production, such as mining and agro industry. As an inner region, it has not been able to benefit from the possibilities of commerce generated by sea for industrial development, nor from the growth of the “sun and beach” tourism sector in Spain, mainly developed around seaside areas. In addition, the small tourism sector in the region was limited to places with historical monuments of high artistic value, generally in urban areas. Within this context, the 1994 Regional Plan for Tourism Development provided the first general strategy to promote tourism in the region, and it included the first Programme for Rural Tourism, which set the main guidelines for the development of rural tourism⁶⁸.

Relevance to Podlaskie/Pomorskie

Both regions benefit from cultural and/or natural assets that make such an intense and integrated approach interesting for them. In the Pomorskie region, the interest would lie in developing cultural and natural tourism. In the Podlaskie region, this approach could be complemented with higher added value products in the agricultural sector, such as agri-food, agri-tourism, etc.

Results of the approach

Rural tourism in Castile and Leon has undergone intense development during the period between 1994 and 2010. The number of accommodation establishments has grown from 36 in 1994 to 3 631 in December 2010. In terms of number of beds, growth has been impressive; from 274 in 1994 to 32 573 in December 2010. Throughout the period, the development of rural tourism has been much faster than the development of the traditional tourism sector in the region. While in 1995 the rural tourism capacity in terms of number of beds was just 1% of total tourism, in 2010 it reached 22.6%. Moreover, in 2010, Castile and Leon welcomed 813 707 inbound tourists through rural tourism, which implied 1 736 713 nights spent (17% of total nights spent by tourist in the region, according to data by regional government).

Reasons for success

One reason for success has been making the most of a changing context in tourism preferences. Tourism preferences have evolved from simply mass tourism in the coastal areas, to also take into account tourist activities linked to cultural and artistic heritage and, more recently, to nature and sports. Rural areas

of Castile and Leon have competitive elements for this kind of tourism, topped off with high quality gastronomy, including the region's high quality wine.

Another reason for success has been the region's proximity to areas of demand, especially to Madrid, the origin of 26.7% of Spanish tourists to the region. Moreover, this proximity has been enhanced through the constant improvement of the infrastructure network, which now includes several motorways and a growing high-speed rail network. Within a three-hour travel radius, weekend or short breaks have become very popular. However, the current challenge is to increase the duration of stay, to make it worthwhile for people from further away regions to visit.

Obstacles faced and response taken

Considering the region's opportunities for rural tourism, there were still many obstacles to its development. In 1994 there was almost no accommodation certified as rural tourism in the region. As a response, the Programme for Rural Tourism increased investment in quality rural tourism accommodation establishments, supported by EU funding. With regard to the scarce certified accommodation in the region, another obstacle was the lack of specific regulation of rural tourism. This was addressed by initial regulation in 1993. Regulating rural tourism serves three purposes: firstly, it clarifies an important point of the regional tourism strategy to agrarian and natural enterprises, potential investors in rural tourism, so that they can properly make their investment decisions; secondly, it clarifies the subsidies or other types of help these initiatives could receive; finally, it sets a quality standard that guarantees the success of the strategy, because all potential tourists know exactly the quality standard they can expect to find (in places that were previously not very well known). The ESF can contribute to creating a certification procedure that sets standards and promotes training in service quality. It can also fund the creation of an on-line network of geographically dispersed rural/natural/cultural initiatives that helps them to maintain a certain quality standard, provides them with on-line training and information, and serves as a very interesting and powerful information and reservation tool for potential tourists.

Moreover, as described previously, tourism activities were new in the region and its geographical location isolated it from main trade networks. This implied a skills gap within the labour force regarding tourism activities. As a response, the regional government fostered skills training through programmes on tourism training. In addition, there was a need to improve signposting and information points and resources, as was highlighted by some regional government studies. To address this obstacle, the 1994 plan included a Programme on Tourism Signposting. A final obstacle was the lack of promotion of rural tourism, until the 1994 regional Programme for Promotion and Tourism Commercialisation supported the sector through campaigns, subsidies, and the creation of on-line networks for commercial activities. Through these networks information can be obtained and reservations made, often involving several initiatives and enterprises that can together offer a wider range of activities.

Considerations for adoption in Pomorskie/Podlaskie

Both regions can profit from a similar approach to promoting alternative green tourism in their territories. Although skills requirements may be easier to acquire in these activities, it is important that they are provided adequately to ensure the quality of the services. Moreover, a sound strategy is also needed, as proven by the case shown, to avoid the risks of disordered development, irreversible harm to the natural environment, and unsustainability of the strategy. A regional strategy should identify, firstly, the elements of natural, rural, and cultural touristic interest within its territory; secondly, its tourism offer, i.e. restoration, accommodation, culture, nature, or leisure activities, and assess the potential expansion of its number, scope and quality level. A tourism expansion strategy has to take proper account of the "tourism abilities" of the region's workforce and the potential enterprises, which will surely have to be ensured through training. The ESF could fund the elaboration of a tourism strategy, since it involves

entrepreneurship and employment creation for unemployed people in the region resulting from declining agricultural activities. It could also fund the identification of the skills and training needs of the local population, as well as research into existing good practices in other European regions and the exchange of information.

Further information

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<http://www.turismocastillayleon.com/cm/>

Shipbuilding to wind turbines, Belfast, UK

Description of the model

Harland & Wolff (H&W) is a long-standing heavy engineering company established in 1858 in Belfast. Its shipbuilding operations were large and varied and included the construction of HMS Titanic. As demand for ocean liners declined with the emergence of the aviation industry and as cheaper shipyards around the world reduced their competitiveness, the company diversified into offshore oil and gas markets (constructing offshore platforms, oil rigs, floating production storage and offloading equipment (FPSOs), and drill-ships). In 2002, using the skills and infrastructure from their ship building and offshore platform experience, H&W embarked on a further diversification strategy, changing their name to Harland & Wolff Heavy Industries. While they continue to retain a foothold in the shipbuilding and offshore oil and gas markets, they now also produce a range of renewable energy products, such as turbines for offshore wind farms, wave and tidal energy devices, as well as decommissioning ships at the end of their lives in an environmentally sustainable manner.

Relevance to Pomorskie

The recent closure of two major production shipyards, Gdynia and Szczecin, has had a massive social cost, with the closure of the Gdynia shipyard alone estimated at having doubled unemployment in the area. The two shipyards provided almost 12 000 jobs in 2007 and were among the region's largest employers. Understanding how best to utilise the skills of the now redundant shipbuilders is extremely important to ensuring the region is able to adapt to structural change. The learning model has direct relevance to Pomorskie as it demonstrates how the existing skills sets of shipbuilders were transferred to other emerging, low-carbon sectors.

Results of the approach

The diversification strategy has secured the future of H&W. The company is profitable and stable, despite the difficulties which were apparent at the start of the 2000s. More recently, many heavy engineering companies have struggled because of the global economic downturn. This has impacted upon Harland and Wolff's traditional markets as well and they have had a number of orders for ships delayed. However the company has remained stable enough to retain a sizeable core staff.

The company continues to evolve and has developed expertise in the wind energy sector. It has managed this through transferring skills derived from shipbuilding and manufacturing offshore oil and gas equipment and adapting the workforce and their supply chain to produce wind turbines. In addition, they are at the prototype stage of two wave power generators. The market for such products is at a more immature stage than that of wind power. But by being at the forefront of the technology's development, H&W will be in a strong position to succeed once the product reaches market.

Reasons for success

The first notable aspect of H&W's strategy for adapting their workforce to a more diverse business strategy was to cut numbers while developing options for expanding the workforce when a project requires extra skills and labour. H&W employed three responses to ensure their workforce had the required skills for the new business strategy:

- **Training / reskilling workers:** in terms of the labour and skills required at the lower end of the workforce, H&W fostered the required flexibility by "recruiting the very best labourers, foremen and fitters available, both in our core staff and the trade union pool over a long period of time". However, reskilling was required. Initially, they used the same equipment for the turbines as they did for building ships; however, this was inefficient and impacted upon their tendering success. New equipment was purchased as a result. Labourers and fitters had to learn how to use new equipment; this training was provided and certified by the equipment's manufacturers. The main mechanism for the delivery and organisation of this training is the company-wide training programme. Every employee at H&W has a training plan reviewed annually and training was allocated through this. This is also the mechanism used for allowing their engineers and designers to update their knowledge of the new DNV classifications. It is an on-going process.
- **Ensuring the supply chain is sufficiently skilled:** when a larger project is being carried out, H&W need to bring in extra skills and labour. They have a strong relationship with their trade union which acts as an employment agency with a pool of temporary workers who can often provide the craft skills required. The agreement with the trade union requires the labour to come from the local area in the first instance. Only if they cannot provide the required skills from the Belfast area, will the trade union provide labour from elsewhere. H&W ensure that the labour provided by the union is of a sufficient quality, requesting only workers who have been certified to the required standards (H&W work in a heavily regulated sector, mainly due to the safety implications; a great deal of importance is placed on individuals holding the required certification). On rare occasions, H&W know of a worker in the trade union with a required skill who has not got the relevant certification. When this happens, they will fund a training course for the worker.
- **Recruiting new skills:** for some projects, these measures might not be sufficient. In such cases, H&W have strong and long-standing links with a number of other engineering companies with greater experience in the renewables sector. They can sub-contract the required skills from these companies for the duration of the project. These relationships are managed through supplier agreements, which state the number of workers and level of certification H&W require from their sub-contractors.

Obstacles faced and response taken

One of the major changes necessitated by diversification was "The workforce has had to become considerably more flexible ... the renewables projects have considerably fewer man hour requirements than ship building". Their supervisors, labourers and fitters have to be able to move from a shipbuilding project to a renewables project. This is not a major workforce challenge though; the tasks required from these workers, such as welding, are fairly generic and adaptable to different projects.

Considerations for adoption in Pomorskie

The diversification strategy that H&W undertook had to address skills needs. Viewed broadly, the skills needed to construct the products required for the renewables market are not enormously different

from the skills and experience they have accrued for the construction of ships and offshore platforms for the oil and gas industries: “It [became] obvious that the core skills of a ship/rig builder are applicable to the renewables sector. Indeed, many of the same problems that arose, and were resolved, sometimes expensively, in the Oil and Gas sector as it moved offshore, are directly applicable to the renewables sector as it moved offshore”. This suggests that an initiative in Pomorskie to address the existing skills of its shipbuilders and how they could be applied to developing sectors would be worthwhile.

Further information

www.harland-wolff.com

Promoting energy efficiency in agriculture, Spain

Description of the model

The Institute for the Diversification and Energy Saving (IDAE) is a public body under the Spanish Ministry of Industry, Commerce and Tourism. It was founded in 1974, with the objectives of promoting renewable energy and energy saving. IDAE carries out studies on the use of energy in the industrial sector and has extended its scope to all economic sectors. IDAE manages a set of measures for reducing energy consumption and increasing efficiency in agriculture, and developing skills for farmers, ranchers and fishermen.

IDAE organises free training courses for trainers in energy saving and efficiency in agriculture, stockbreeding, and fisheries management. The courses are aimed at regional representatives who are responsible for developing projects relating to the promotion of energy efficiency in agriculture and fisheries.

Each course follows a methodology for energy efficiency in agriculture or fishery which is published prior to the training course. The programme of training for trainers is designed to reach a geographically dispersed community of around 100 000 farmers across Spain. Around 70-80 regional trainers attend the IDAE courses every year, representing the different autonomous communities and disseminating their knowledge through other courses to local farmers.

Relevance to Podlaskie

The learning model has enormous relevance to Podlaskie for a number of reasons. Firstly, there is a lack of appropriate training for the trainers themselves, which is affecting the quality of 'green skills' provision across Poland. In Podlaskie, this is likely to be exacerbated by the relatively low base of suitably qualified staff to teach workers how to make their working practices more environmentally-friendly.

Secondly, Podlaskie is a region which remains highly dependent on agriculture in terms of employment and income generation. The region has a large pool of farmers who could be trained to improve energy efficiency, and reduce waste and water consumption, and there are significant opportunities to promote “large-scale greening” of these occupations through training on, for example, more sustainable farming practices and new technological innovations which have less negative impacts on both the natural environment and biodiversity.

Results of the approach

A total of 1 320 courses were provided to 37 000 farmers over 5 years. In 2008 alone, 337 courses were provided to 9 700 farmers. Course attendance is set to a minimum of 30 farmers per course. The

profile of the workers involved in this skills training is mixed between businessmen and labourers, and due to the characteristics of the sector, the gender composition is mainly male. The courses are delivered through presentations, which are complemented by guides and written documents, and further training is offered according to needs. Courses inform farmers about the economic advantages of increasing energy efficiency, highlighting the possibilities for technological innovations to reduce energy costs. Courses also provide comprehensive information about how to implement the suggested changes, including information on subsidies for the purchase of more energy efficient capital, such as new tractors or harvesters. Examples of topics that have been covered by the energy efficiency courses for farmers within the programme include fuel efficiency during the use of tractors, energy savings in irrigated agriculture, and energy efficiency from agrarian works. In 2009, course content was widened to include conservation and sustainable agriculture, energy crops and biomass production, and energy efficiency in fishing.

Reasons for success

The IDAE programme is a large scale and coherent measure for achieving the objectives of Spanish environmental policy. Although no evaluation studies of the programme have been undertaken to date, the course was in demand by autonomous community representatives every year, suggesting that the skills training programme was well-received. The programme's success could, in part, be due to its practical nature – for example, training was provided on driving new kinds of agrarian vehicles, using new machinery that allows a deeper processing of raw materials in the workplace, and alternative fertilisers. Having a more applied way of teaching is likely to be perceived by farmers as more “useful”. The IDAE programme is also an example of training for the greening of farmers, which should be studied in more detail in order to create a future network of regional training centres for the greening of agriculture.

Considerations for adoption in Podlaskie

A programme such as IDAE's has the potential to vastly improve the environmental awareness of farmers, and given the importance of the sector to the regional economy, a similar initiative should be undertaken in Podlaskie. The training institution is also a public one, which is of particular interest, as it presents the possibility to use European Structural Funds to set up a similar establishment in the region, where current absorption of funds is low and appropriate channelling of funds into relevant and targeted training appears to be lacking.

Further information

www.idae.es

Siemens Wind Power Training Centre, Bremen, Germany

Description of the model

In 2009, Siemens established a new wind power training centre, as an important part of the Siemens European Service Headquarters for Wind Power in the city of Bremen. Sitting alongside three other training facilities in Europe and the USA, the centre helps Siemens to meet training needs for wind power services and the company now offers a broad-based qualification programme for customer personnel and service technicians.

Training is targeted at electronic technicians or mechatronics technicians. Between August and December 2009, around 180 technicians participated in the training. All participants were personnel of Siemens and its subcontractors. Around 800-1000 training participants are expected per year.

The training centre was implemented by the Siemens European Service Headquarters for Wind Power. The Service Headquarters has 550 employees (260 in Germany), of which 390 (160 in Germany) are service technicians who work in services at Siemens wind turbines and the remaining 160 (100 in Germany) work in the office in Bremen. The training centre was built in Bremen because the city has good structural conditions and forms a structural competency network for onshore and offshore wind power in the region. Bremen also supported the realisation of the training centre.

The training programme comprises technical and safety trainings such as construction, service and maintenance of Siemens turbines or specific offshore safety training modules. Training courses provide wide theoretical and practical knowledge on a number of topics, including basic and advanced safety training, evacuation of wind turbines, and the basics of construction of a turbine. Experienced trainers conduct the courses. The training measures are for service personnel of Siemens and its customers, operators of singular facilities or whole wind parks, and technical works managers. Siemens employees are still provided with product trainings and moreover, eight additional trainings are offered by the training centre.

Relevance to Podlaskie and Pomorskie

Wind power is the only renewable energy technology in Poland ready to attract significant investment, and there is a substantial pipeline of large wind farms spread evenly over the area of the entire country. A number of new wind farms were installed in 2009 in Western Pomorskie (e.g. a 32 MW wind farm in Śniatowo, a 69 MW wind farm in Karścino, and a 50 MW wind farm in Tychowo) and other large wind farms became operational in Podlaskie in the north east of Poland (e.g. 41.4 MW wind farm in Suwałki and a 20 MW wind farm in Margonin).⁶⁹ These projects will make an important contribution to meeting Poland's target mandated by the new EU Renewable Energy Directive. Developing up-to-date and appropriate training for employees within the wind power sector is crucial for ensuring that the potential for wind power to be a significant energy source in Poland is fully met.

Results of the approach

The training comprises practical and theoretical modules with effectiveness measured by staff feedback. Overall, the organisation of continual training at Siemens Wind Power has improved, and the new training courses have enhanced employees' qualifications. This is also visible in product trainings which employees still receive. Appreciation for training has improved and has led to increased effectiveness and efficiency of both product training and services.

The large amount of training Siemens has provided in comparison to other turbine manufacturers has both improved the product image and demand for Siemens wind turbines. The additional training also ensures the efficiency, quality and availability of facilities, since well qualified service technicians now have detailed technical knowledge of wind turbines and can more easily detect faults.

Reasons for success

Before the training centre was established, Siemens employees only received product trainings on small simulators at the Danish headquarters. Training included features and the functionality of the turbines. As technologies of wind turbines and their modules became more and more specific and complex in recent years, special training for adapting qualifications was required.

The training centre was established due to the massive training needs of both experienced workers and new recruits. Part of the centre's success is down to the fact that the training modules have been developed within Siemens and there is no dependency on external suppliers for the training. This makes the training

programme both cost-effective and directly relevant, as the content is developed directly by those who “know most about it”.

Considerations for adoption in Podlaskie and Pomorskie

Based on the number of applications received by the Polish Energy Regulatory Office for issuing licenses for wind farms, a big increase in wind generating capacity is expected in the near future. In the period up to 2013, support schemes currently available to investors, including EU Cohesion Funds (Operational Programme Infrastructure and Environment) and Structural Funds (Regional Operational Programmes) will help drive wind power growth. However, the most rapid increase in wind generating capacity is predicted to take place between 2014-2020, when even more significant financing will become available from the EU funds, in particular from the Structural Funds⁷⁰. Given that both Pomorskie and Podlaskie appear to be areas of significant investment in wind energy infrastructure, ensuring that appropriate training and the capacity to effectively operate such infrastructure is in place will be crucial to driving forward Poland both in terms of economic growth and in fulfilling its commitments to generate 15% of its final energy consumption from renewable energy by 2020.

Feedback from interviewees on the study visit appeared to suggest that Germany would provide useful learning models to the renewable energy sector in Poland, and although this model is industry-based, it provides a very useful insight into the type of training content that will be fundamental to the re-skilling and up-skilling of those wanting to work in this sector.

Further information

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www.siemens.com

www.bmu.de/files/english/pdf/application/pdf/greentech2009_en.pdf

Biogas in Kristianstad, Sweden

Description of the Model

The city of Kristianstad, and surrounding area, essentially uses no fossil fuels to heat its homes and businesses, and many cars and all municipal vehicles are powered by biofuel. This is a complete reversal from 20 years ago, when all of the city’s heat came from fossil fuels. During that time, the city of 80 000 inhabitants invested in facilities to produce biogas from landfill, the waste water treatment plant, and the biogas plant, totalling more than 65 000 MW per year. The landfill gas is used for fuel in the district heating plant, together with a part of the biogas from the biogas plant. The rest of the gas from the biogas plant is sent to an upgrading plant to be converted to vehicle fuel. The biomass used by the biogas plant consists of 50% manure from nearby farmers, 45% organic waste from the food industry, and 5% organic waste from households. The vehicle fuel produced by the process corresponds to about 4.4 million litres of gasoline a year, which powers 24 buses and 250 lighter vehicles. The waste that is not turned into biogas constitutes a certified biological fertiliser, which is spread on nearby fields.

Relevance to Podlaskie/Pomorskie

The two regions, particularly Podlaskie, have strong agricultural and food sectors, which could be a rich source of biomass for agricultural based biogas power stations. Pomorskie already has four

agricultural biogas stations. Podlaskie, though rich in agricultural production and endowed with vast areas of grasslands, has no such plants. The opportunity to develop such plants in Podlaskie, in particular, seems highly favourable. Financing and other assistance is available from the National Fund for Environmental Protection and Water Management and the Rural Development Fund.

Results of the approach

Since 1995, the Kristianstad region has invested in a biogas facility and in converting landfill and waste water treatment facilities to biogas production. In addition, the city constructed a centralised biomass heating system, which included the construction of a new incineration plant, laying networks of pipes, replacing furnaces, and installing generators. The start-up cost of USD 144 million was covered by the city and through Swedish government grants. The result of this investment has been to completely eliminate the use of fossil fuel to heat the homes and buildings within and immediately surrounding the city of Kristianstad. According to city officials, this has resulted in substantial savings. Kristianstad now spends only half of what it would cost to heat its municipal buildings with fossil fuels.

Reasons for success

Kristianstad is located in a rich agricultural and food processing area, which provides considerable biomass for the generation of biomass fuel and energy. Perhaps equally important was the strong leadership that orchestrated an innovative response to a common crisis. The oil shock of 1980 placed the city in dire financial crisis, as the cost of heating homes and buildings soared. Instead of the city simply raising taxes to finance higher energy costs, or households sacrificing other expenditures for higher heating costs, the city decided to take a bold step and rid themselves of the vicissitudes of fossil fuel dependency. Their success can also be traced to the Swedish government's financial assistance in covering part of the start-up costs and the municipal government's willingness to take a long-term view of the benefits of the programme over several decades. It was also prompted by the Sweden government imposing a tax on carbon dioxide emissions from fossil fuels in 1991. Finally, the discipline and persistence to continue on the path of ridding the area of fossil fuel dependency, and the ability to engrain the use of alternative energy into the daily lives of the area's citizens, is critical for sustaining this effort.

Obstacles faced and response taken

The major initial obstacle appeared to be the start-up costs. The state helped finance the USD 144 million costs of constructing an underground heating grid (so-called heating district) and the incineration plant. Another obstacle was the change in community culture from relying on fossil fuel to embracing alternative energy. Strong leadership, particularly the municipal government leading by example with the installation of the heating grid and the conversion to bio-fuels for its fleet of vehicles, helped to overcome this obstacle. Once residents saw the benefits of harnessing power locally, they saw bio-fuel everywhere: Kristianstad now burns gas emanating from an old landfill site and sewage ponds, as well as wood waste from flooring factories and tree pruning. A third obstacle was to establish a supply network to transport biomass to the biogas facilities. The region surrounding Kristianstad has a well-developed agriculture and food-processing sector, which was used to sending waste to landfills. However, the greater demand for biomass, because of the fuel conversion, prompted farmers to focus their supply chain to include the biogas facilities.

Considerations for adoption in Pomorskie/Podlaskie

Both Pomorskie, which already has four agriculture bio-gas plants, and Podlaskie, which has none, have considerable potential to expand their capabilities. Podlaskie, in particular, has rich agriculture and food processing sectors. However, there are a few obstacles. One is that the farmers are not well organised

to collect and transport the biomass to facilities, even if they existed. This could be accomplished through education and technical assistance through extension services. Another obstacle is a few legal issues, which are being addressed by the Ministry of Economy in its document 'Directions of development for the agricultural biogas plants in Poland between 2010-2020', July 2010. The third obstacle is financing. There are several options, which are outlined in the document. These include support of bio-gas plants as part of the infrastructure and energy efficiency, the National Fund for Environmental Protection and Water Management, and support of bio-gas plants as part of the Rural Development Programme.

Further information

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Green Entrepreneurship Network, Spain

Description of the Model

The *Red Empreverde* (Green Entrepreneurship Network) is the first platform created to support business creation in green sectors or green-related activities. This Network was created by the *Fundación Biodiversidad* (Biodiversity Foundation), a public foundation of the Spanish government, under the National Ministry of Environment and Rural and Marine Development. The Foundation aims at preserving natural heritage and biodiversity, while creating employment, wealth and well-being in society. The Foundation collaborates with entities and institutions in the public sector, civil society, and the business environment.

The Biodiversity Foundation has five strategic lines of action:

1. The conservation of natural heritage and biodiversity
2. The sustainable development of the rural environment
3. The fight against climate change
4. The conservation of the marine environment
5. International cooperation.

The Green Entrepreneurship Network seeks to foster entrepreneurship and business growth in sectors or activities related to environmental protection. The Network provides support to entrepreneurs and business owners through: (1) drafting or redefining business plans, (2) bringing investors and entrepreneurs together, and (3) providing training and technical assistance. The Network also organises contests to encourage quality projects, while financially supporting some of the most promising initiatives.

Members of the Network include entrepreneurs, investors, or any other actor interested in seizing the economic opportunities arising from the green economy. The Network is co-financed by ESF. The Network benefits from collaborations with the Spanish Network of Business angels, the Triodos Bank, and the National Innovation Enterprise (ENISA), which is a publicly-financed entity of the National Ministry of Industry, Commerce and Tourism.

Relevance to Podlaskie/Pomorskie

The two regions lack the critical mass needed to support the emergence of a green economy, to attract investment (directly or through large businesses), and to offer a supply chain appealing for businesses to grow and remain locally. Entrepreneurship promotion in green-related activities and sectors is therefore important to build that critical mass and to create jobs. A network of this kind would facilitate the communication of business opportunities in the green economy to a larger audience, while ensuring that potential entrepreneurs and business owners willing to integrate the green economy benefit of technical assistance, monitoring, training and other useful tools adapted to the specific needs required to enter this new market.

Results of the approach

The Network has only been created recently, but it has already made an important contribution to launching enterprise creation in green economic sectors, in line with the national programme *Emplea Verde* and the *Fundación Biodiversidad*. The Network brings together over 400 investors and several hundred potential entrepreneurs. It has also stimulated the exchange of ideas, creating synergies between some of these ideas, and also adding value to some other projects. The contest has also permitted the identification of some of the most promising projects, and has supported their development indirectly (through courses, technical assistance, etc.) and directly (through grants). Finally, the platform for and communication around this project have contributed to raising awareness of the opportunities emerging from the green economy and encouraging potential entrepreneurs to further develop their ideas in a more structured way.

Reasons for success

The first reason for the Network's success is the clear definition of concepts to target the right audience. Indeed, the government defined terms such as green enterprise, green entrepreneur, eco-investor and other stakeholders in green activities. Another reason for the success of the Network is its on-line platform (www.redemprenderverde.es), which facilitates the dissemination of good ideas to a wider market. The platform also brings investors (venture capitalists, business angels, banks) closer to the ideas (entrepreneurs, businesses), which makes it easier for investors to join-up with businesses in a sector of common interest. The platform serves as social network for entrepreneurs, investors and other actors to exchange and consolidate ideas. It also centralises the services offered by the Network (monitoring, technical assistance, training courses, etc.) in an easily accessible one-stop-shop.

Obstacles faced and response taken

The obstacles faced were mainly linked to the difficulty in attracting potential entrepreneurs to this specialised network in times of economic crisis. However, with such a variety of services, an on-line platform, and a good branding of the project (*Red Emprenderverde*), it has attracted various members and has activated exchanges in this sector.

Considerations for adoption in Pomorskie/Podlaskie

Both Podlaskie and Pomorskie could create similar regional platforms making use of ESF Funds (as the Spanish network does) and building on their own capacities within the Marshall Offices. These networks could work in close collaboration with other relevant organisations, NGOs, and clusters (such as the Green Technology Cluster) to create synergies and identify a maximum number of opportunities in key economic sectors. For instance, in Podlaskie, the network could work with the Faculty of Agro-industry and Engineering to support the development of higher value-added products in agri-industries. In Pomorskie, the network could work closely with the University of Gdansk and the Chamber of Commerce

to identify market niches in existing industries (such as the sanitary engineering industry) to support the development of a supply chain locally. It is important to note that the institutional capacity to provide technical assistance, monitoring and training adapted to the members of the network will need to be strengthened. The national government should define the green sectors targeted by the initiative and should put in place schemes to allow regional partners to increase their knowledge on the green economy.

Further information

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Programma Operativo Interregionale, Puglia, Italy

Description of the Model

Puglia is the first region in Italy concerning the production of renewable energy (255 kilo-tonnes of oil equivalent out of a total of 689, in 2005), and has the natural resources and technical know-how needed to support a vibrant RE sector. The regional government promoted a deregulation in 2005 (to ease the installation of small scale RE facilities), and a produced a regional energy strategy for RE in 2007. However, there is a need to improve the coordination and stability of policies and subsidies, both within the European Agricultural Fund for Rural Development (EAFRD) and within the European Regional Development Fund (ERDF) focus on renewable energy. The EAFRD supports plants of up to 1 MW of production, and the ERDF targets plants under 1 MW. This “specialisation” of subsidies can hinder the integration of rural and regional development, as well as the efficient use of these funds. There is also uncertainty surrounding the level of national incentives. For example, the funding period for solar power incentives originally established for 2007-2013 will now end in May 2011. New rules will be established in April 2011 for the future. In Puglia, this has led to a virtual standstill in applications for solar installations.

To overcome the issue of lack of coordination between different policies, Puglia is involved in the Inter-regional Operative Programme (Programma Operativo Interregionale, POI) a thematic project that supports the link between renewable energy deployment and regional development. POI also involves Sicily, Calabria, and Campania, which are all Objective 1 regions. POI is funded through the European cohesion fund and national funds (including EUR 700 million from the national programme for under-utilised areas) totalling EUR 1.6 billion. It is not a fully launched programme, but should soon become operational (although there is the possibility of a change in the governance of the process, with a more central role for the national government).

POI does not finance energy production, rather actions to create the framework conditions for its development. The aim is to maximise the local impact that renewable energy production may have, with the on-site development of local skills, for instance.

POI is organised along three main axes.

- Axis 1, which aims to: 1) support the creation of clusters of firms active in the sector of renewable energy; 2) promote entrepreneurship; 3) improve energy efficiency in public

buildings; 4) promote geothermal energy; and 5) support small-scale plants in protected areas and islands.

- Axis 2, which aims to: 1) promote energy efficiency, also by supporting business opportunities in the field of energy efficiency; 2) improve the grid; 3) develop heating from renewable sources of energy; and 4) undertake actions at the local level to inform communities about the advantages of renewable energy.
- Axis 3, which deals with technical assistance to the projects.

POI has already funded companies working in the regional supply-chain related to renewable energy (through a call for tender for SMEs). POI is also supporting (small scale) biomass projects that enjoy great interest from social and environmental groups. POI has also funded research in the field of geothermal potential for low-enthalpy. Puglia, in particular, is trying to replicate initiatives that have already been pursued in Umbria and Tuscany. This approach would be particularly suitable for protected areas in rural regions, due to its low natural/landscape impact.

Further information

Website: www.poienergia.it

Converting the Rust Belt to the Wind Belt, Lackawanna, USA

Description of the Model

The City of Lackawanna, New York partnered with a private wind farm developer to build one of the first urban wind farms in the country. During and after the Second World War, Lackawanna was a bustling steel-producing hub, employing more than 25 000 workers in the large blast furnaces and finishing mills owned and operated by Bethlehem Steel. As lower-priced imported steel began to dominate the market in the 1970s, steel production gradually declined until Bethlehem Steel closed its last operations in 2001. Today, all that is left of the steel operation is a small plant employing only 250 workers and extensive brownfields contaminated with nearly a decade of accumulated industrial waste. During this time, the population of the city fell by nearly half, from 30 000 to 17 000. In an attempt to stem the decline and decay, the City decided to explore the possibility of transforming the area into a generator of cutting-edge alternative energy. It acquired USD 300 000 in state and federal assistance to research wind patterns and evaluate environmental impact. The City worked with the federal government and state government to transform the highly contaminated Superfund sites into useable brownfields (low-toxic waste sites concentrated around abandoned factories). It then worked with private-sector firms to develop a wind farm that produces enough electricity for about 7 000 homes and provides the private companies with an opportunity to pilot a new 2.5 megawatt turbine, which is almost twice as large as a typical turbine. While the wind farm, referred to as Steel Winds, is relatively small, both in output and employment, the greater effect may have been a change in attitude to accepting a new technology that leapfrogs other forms of energy generation.

Relevance to Pomorskie

Similar to Lackawanna, the Pomorskie region has suffered from the loss of traditional industries, which in its case was shipbuilding and related manufacturing and construction activities. Wind power offers an opportunity to help place the region's economy on a more progressive, high-technology path. Poland already has several initiatives at the national and regional levels to promote the development of wind power. However, there is potential for considerably greater development of wind power, which could

also help to revitalise the region and bring it to the forefront of wind power generation. The National Action Plan, which is required by Directive 2009/28/EC, specifies the development path for Poland to meet its requirement that renewable energy should account for 15% of electric power generation by 2020. This provides a clear national mandate and an incentive for regions to pursue renewable energy as an economic development strategy. A study by the Polish Wind Energy Association projects that wind power could account for 24% of electricity generation, employing 66 000 people by 2020. The Pomorskie region is well-positioned to be a major player in this national initiative. Gdansk's strong scientific and technical base has fostered organisations that have the expertise to pursue innovative ventures. The region's location along the Baltic Sea is also an advantage for pursuing new approaches to wind power. For example, the Polish Wind Energy Society, headquartered in Gdansk, has launched initiatives to explore the installation of offshore wind farms in the south Baltic Sea region. Unlike other European countries, Poland has no offshore wind farms. With Pomorskie's expertise and locational advantage, it can help the country develop offshore installations, while transforming its own regional economy.

Results of the approach

The Lackawanna project produced one of the first urban wind farms located on a former Superfund site. The farm itself is relatively small, consisting of eight 2.4 megawatt turbines located on 30 acres of reclaimed land along the shore of Lake Erie. The USD 40 million project generates enough electricity to power 7 000 homes. The project has created about 35 jobs in construction, operations, and maintenance. The wind project earns the city about USD 100 000 a year for 15 years under a deal with developers. The electricity generated is integrated into the region's power grid. Furthermore, the brownfield sites, which had no economic use before the wind farm was constructed, are now being used to generate revenue for the city and jobs for its citizens. Perhaps even more importantly, according to the Mayor of Lackawanna, the development of wind farms on the city's brownfields is changing the image of the region and the attitudes of its citizens. It demonstrates that a city can transform itself by shedding the past and building for a more progressive future. The city now claims a leadership role in this key energy technology and in the past few years a dozen new businesses have opened, as well as the first new hotel in over a century.

Reasons for success

The reasons for success of the wind farm in Lackawanna were leadership, desperation, and creative use of abandoned space. Lackawanna had experienced years of decline and decay, and there was little hope of revitalising the area. The Mayor, a former steel worker who had lost his job when the steel operations closed, saw the potential of using the former steel production site along the lakeshore as the location for a wind farm. Federal and state government assistance was obtained to fund a feasibility study. The infrastructure left from the steel operations, such as power lines, paved roads, and an industrial park, was already in place and helped to reduce the cost of development. Also, the wind farm developer was attracted to the project because of the ability to install and pilot a new generation of wind turbines.

Obstacles faced and response taken

The initial obstacles to the project appeared to be image and attitude. Outside developers and even Lackawanna's own citizens had little confidence that the region had the capacity to start and sustain a new and innovative venture. For more than a century, the people of Lackawanna had depended upon the steel industry for their livelihood. Generation after generation worked in the steel operations and this was all they knew or cared to know while the jobs were there. But once the jobs disappeared, there was little vision of what a region dominated by steel production could become. A few local leaders, including the Mayor of Lackawanna, were able to see how the remains of the steel operations could be turned into a cutting-edge wind farm. They found government financial assistance to conduct a feasibility study, they worked with the state government to develop the brownfield site, and they partnered with a motivated private-sector

developer to build the wind farm. They used existing infrastructure left from the steel operations to reduce the cost of building the wind farms.

Considerations for adoption in Pomorskie

Pomorskie, in particular, is in a much better position than Lackawanna to revitalise its region. The region has universities and technical schools, as well as a qualified workforce. It is, however, in a period of transition as the traditional mainstays of the economy, such as shipbuilding, have left the area. Wind power will probably not employ the same number of workers as did shipbuilding at its height of production, but it can offer an opportunity to engage the region in cutting-edge renewable energy ventures. The interest and expertise in offshore wind power, as demonstrated by Gdansk's Polish Wind Energy Association, offers an opportunity for the region to become a national leader in this element of the national renewable energy initiative. It also provides an opportunity to link Pomorskie more closely with other regions of Europe that have already established offshore wind farms and that are contemplating such a venture. Several obstacles stand in the way of actually implementing offshore wind farms, including environmental and legal constraints as well as financing. However, as Lackawanna began its efforts with a feasibility study, Gdansk has also started exploring this possibility of expanding wind power in the region with its own studies, which could lay the groundwork for further developments.

Further information

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Seeding Innovation in Regional Green Manufacturing, New Mexico, USA

Description of the Model

A consortium of regional workforce development agencies and universities, spearheaded by the New Mexico's Department of Workforce Solutions, applied for and received designation by the U.S. Department of Labor as a WIRED region in central New Mexico. The overarching focus of the Central New Mexico WIRED initiative is to position central New Mexico as one of the nation's leading centres for green manufacturing. By receiving this designation, the consortium became one of 39 such regions in the country, but the only one to focus primarily on green manufacturing. The consortium coordinates a regional effort to stimulate entrepreneurship, advance the development of the technical workforce, and create a public policy environment that supports and rewards innovation. The Seeding Innovation initiative addresses the major challenges that impede the growth of New Mexico's green manufacturing regions. It brings together capital, corporate, R&D, educational, workforce, and government resources in a virtuous cycle of cluster business demand and workforce supply. Particularly noteworthy is the favourable policy and regulatory environment that the state of New Mexico has established for promoting renewable energy and green manufacturing in the state. Since 2008, the state legislature has passed eight renewable energy bills, including an agreement with neighbouring states to reduce greenhouse gas emissions, a bill to enable the state to export renewable energy, the requirement that utilities in the state generate at least 15% of power from renewable sources by 2015 and 20% by 2020, and various renewable energy tax credits. Complementing these legislative initiatives are public-private initiatives to develop the entrepreneurial and innovative capacity of the region around green technology and construct a training pipeline for green manufacturing occupations in the region. As a WIRED region, the consortium receives USD 4.3 million over three years from the U.S. Department of Labor and leverages another USD 9 million from private and other public sources.

Relevance to Pomorskie

New Mexico has traditionally been a relatively poor state, dependent primarily upon agriculture and natural resource extraction. Located in the nation's southwest, it is dominated by mountains and deserts. However, since the Second World War, the state, particularly central New Mexico, has been the home of federal research installations, most notably Los Alamos National Laboratories and Sandia Proving Grounds, both instrumental in the early development of nuclear weapons and energy. While these installations continue to be involved in energy and related research and bring in sizeable federal dollars, they are relatively isolated from the rest of the region's economy, offering suboptimal opportunities for business spinoffs. Moreover, while the regional economy has grown in recent years at rates faster than the national average, the skills of the local workforce have diminished as evidenced by falling high school graduate rates. The region has a university and several community colleges and technical schools. However, despite these regional assets, stakeholders perceive that tighter relationships could be forged between the educational institutions, businesses, and the national research laboratories. Stakeholders in Pomorskie, in particular, hold a similar view with respect to its universities. Interviews revealed that the universities are not sufficiently engaged in promoting innovation, commercialising ideas, and training students to successfully foster the green economy in their area. Furthermore, the perception of those interviewed was that government could do more to provide a more nurturing environment for green businesses.

Results of the approach

The Central New Mexico initiative has mobilised resources in the region around promoting green manufacturing. Leadership from the national laboratories and the public universities and community colleges have stepped forward to help forge the requisite partnerships to promote more green innovation among businesses and to improve the quality of the workforce. The state legislature has passed several pieces of legislation that foster green business formation, including setting up a USD 500 million venture capital fund. The consortium has contracted with a private sector firm to provide business training for potential entrepreneurs. Community colleges have established several green programmes, including programmes for green construction, solar power, and biofuels. A community college has expanded the availability of a dual credit engineering programme so that third and fourth year high school students can receive community college credits and be ready for the workforce a year or two earlier than they otherwise would. A university received WIRED funding for scholarships and technology training to encourage curriculum and staff development. WIRED funding is also used for venture fairs and business plan competitions to encourage more entrepreneurs to pursue green business formation.

Reasons for success

The reasons for success of Central New Mexico's green manufacturing initiative start with the leadership from the Governor of the State and extend to the alignment of state and local government agencies around this common purpose. The region benefits from the national energy laboratories and educational institutions already in place and the green businesses that have recently moved to the area. However, there was concern that the lack of a qualified workforce and the lack of local investment funds would impede further growth. State leadership, starting with the Governor, has clearly articulated the goal of having New Mexico recognised as a national leader in green manufacturing. In addition, talent from the national laboratories helped to provide expertise and leadership to forge regional partnerships among the various institutions and businesses to develop essential linkages. The WIRED initiative was the catalyst for the preparation of the report to the Governor on green technology and economic development, which in turn led to an executive order by the Governor to establish a green technology cabinet in order to promote New Mexico's green economy. Finally, the state legislature provided the state funding and helped create the political environment conducive to the development of green businesses.

Obstacles faced and response taken

The initial obstacles to the WIRED initiative have been administrative. Combining funds from different governments can often cause confusion on how these funds should be spent and how reporting should be done. Also, change in personnel within the WIRED initiative, as well as within key partners, impeded progress. Partnerships are also tenuous regardless of how meaningful they are for their members, and Central New Mexico WIRED was no exception. Each partner has their “day job” and meeting the demands of collaboration competes at times for scarce time and dollar resources. The consortium found it difficult at times to bring and keep key leadership at the table. However, the strong support from state government agencies led by the Governor’s endorsement of green manufacturing has encouraged others to stay engaged. Sustainability of programmes after the WIRED funds from U.S. Department of Labor are expended is another challenge. Several organisations, primarily the community colleges and technical university, have pledged to support the programmes they are involved with, primarily green certification programmes, after the three-year WIRED initiative officially ends. The consortium is actively soliciting the financial assistance from businesses to help continue the entrepreneurial-related programmes.

Considerations for adoption in Pomorskie

As demonstrated with the Central New Mexico WIRED initiative, partnerships and collaboration are important for bringing together unconnected or loosely connected assets within a region. Pomorskie, in particular, has a rich tradition in manufacturing and construction (shipbuilding) and the presence of universities, technical schools, and government agencies and programmes offering some services related to the green economy. However, from the interviews conducted, it was clear that these entities could work much more closely together. The Central New Mexico WIRED initiative offers an example of what one region has done to better align its assets toward green manufacturing. Government played a key role at all levels, through its leadership and financial assistance. While the foundation was already present in New Mexico, the WIRED initiative, starting with its asset mapping and report to the Governor on the potential for green manufacturing, was a catalyst for further development. Government and non-government entities in Pomorskie could follow a similar role, and funding from the EU could offer the means to jump-start such an effort.

Further information

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ENDNOTES

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Climate Change, Employment and Local Development

POLAND

This report presents analysis on the cases of Podlaskie and Pomorskie in Poland in the context of a transition to the green economy. This study seeks to examine the current situation in these two regions in terms of labour market, economic development, and skills provision, with a specific focus on the green economy.

The report analyses the impacts of climate change (including its effects on policy and regulations) on the local labour markets in Podlaskie and Pomorskie and provides policy recommendations on how make the best use of the assets in place to boost green economic activities while creating greener jobs.

The report examines the role that the public sector and other key labour market institutions play in facilitating the transition to a green economy. Although it is certain that the impact of this transition on jobs, on the workforce and on businesses will vary from region to region, it is also certain that those regions investing in the right skills and removing barriers to green entrepreneurship and growth will gain from this new context.

This work draws on the various interviews and information gathered during the study visit to Poland carried out in March 2011. The project on Climate Change, Employment and Local Development is carried out by the Local Economic and Employment Development (LEED) Committee of the Organisation for Economic Co-operation and Development (OECD).



This report has been prepared with the support of the EC, DG Employment, Social Affairs and Equal Opportunity.

