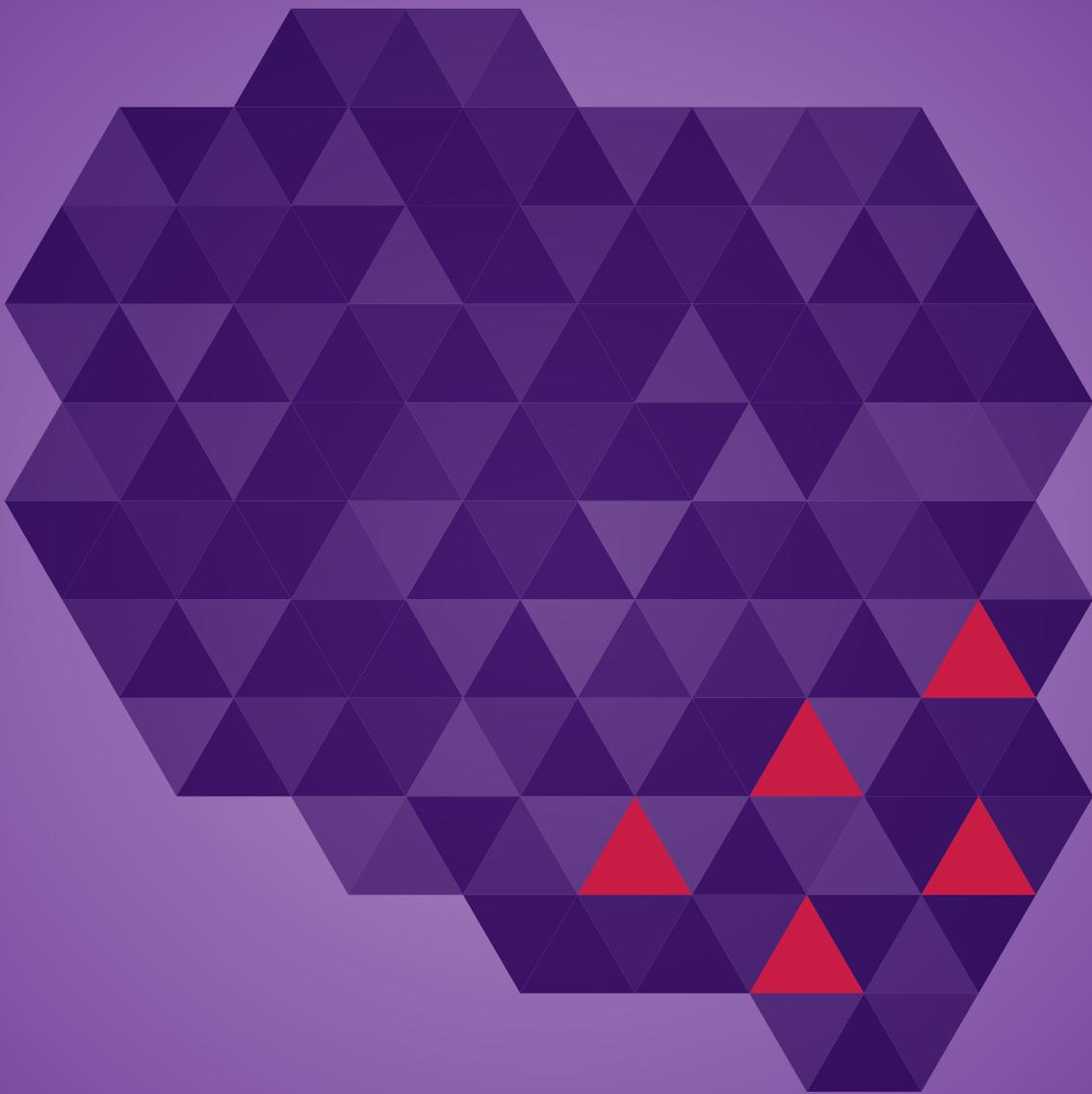


# POLAND CATCHING-UP REGIONS

# 2

OVERVIEW REPORT



# POLAND CATCHING-UP REGIONS

# 2

## OVERVIEW REPORT

Administration Agreement between the European Commission and the International Bank  
for Reconstruction and Development concerning the Part II Europe 2020 Programmatic  
Single-Donor Trust Fund

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The report was completed in May 2018.



**OVERVIEW  
OF THE POLAND  
CATCHING-UP REGIONS  
INITIATIVE**

## BACKGROUND

The mandate of the European Commission Cohesion's Policy is to narrow development gaps and reduce disparities between member countries and regions. Around EUR 454 billion of European Structural and Investment (ESI) Funds have been allocated to help European Union (EU) regions become more competitive in the 2014-2020 Programming Period, with a focus on less developed regions (with a GDP per capita (PPS) of less than 75 percent of the EU average) and transitions regions (with a GDP per capita (PPS) between 75 and 90 percent of the EU average). However, not all EU regions have been able to fully take advantage of the benefits, due inter alia to the effects of the 2008 economic crisis and structural problems.

Consequently, Corina Crețu, the Commissioner for Regional Policy, with the Task Force for Better Implementation, initiated **the Lagging Regions Initiative** to identify growth constraints in less developed regions, and provide targeted assistance and programs to foster growth. Thus, lagging regions development support is offered to a broad range of stakeholders (regional and local administrations, educational institutions, business support institutions, small-and medium-sized enterprises (SMEs), entrepreneurs, investors, non-governmental organizations, international financing institutions). It is meant to maximize the impact of regional investments. Two types of lagging regions were identified in the EU:

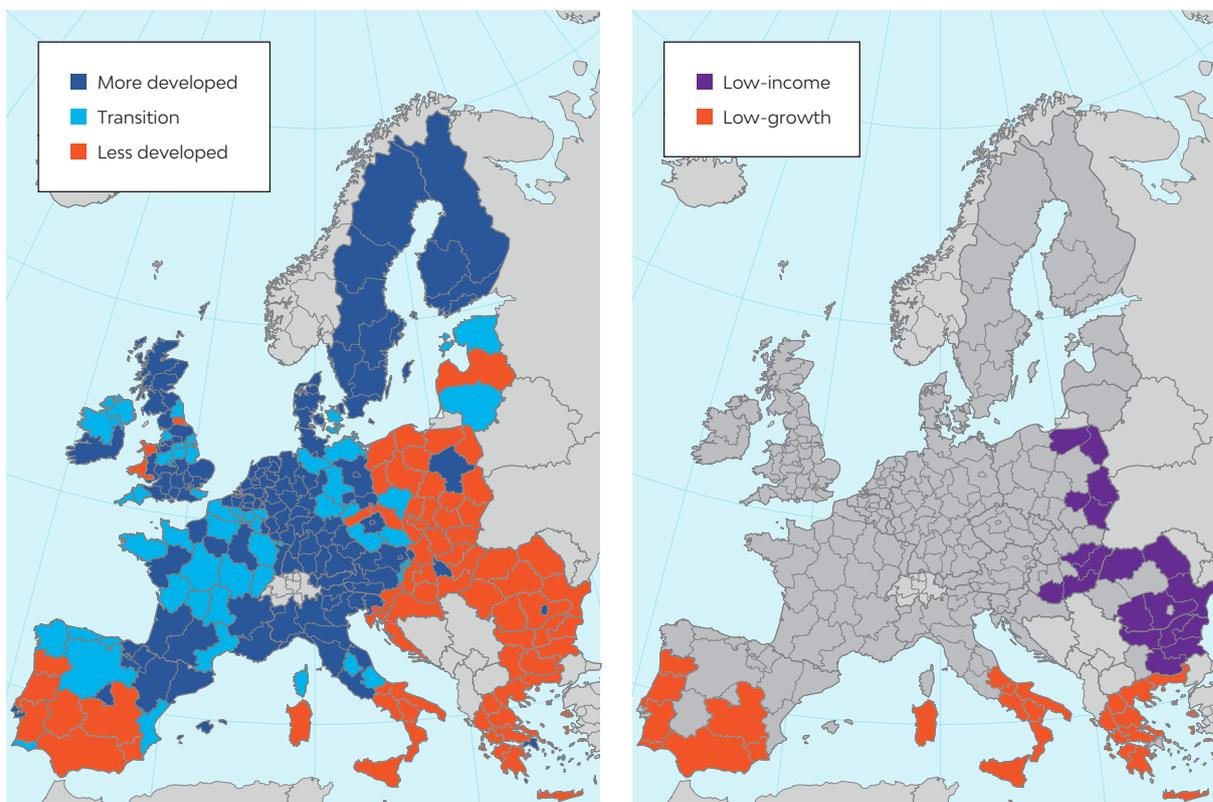
- **LOW-GROWTH REGIONS:** cover less developed and transition regions that did not converge to the EU average between the years 2000 and 2013 in member states with a GDP per capita (PPS) below the EU average in 2013. These include almost all the less developed and transition regions of Greece, Italy, Spain, and Portugal.
- **LOW-INCOME REGIONS:** cover all the regions with a GDP per capita (PPS) below 50 percent of the EU average in 2013. This group covers the less developed regions of Bulgaria, Hungary, Poland and Romania.

Poland and Romania were the first countries to pilot this initiative, with two regions each – Świętokrzyskie and Podkarpackie in Poland, and northwest and northeast in Romania. In Poland, the initiative (subsequently renamed the Poland Catching-up Regions Initiative) was undertaken with the World Bank (WB) as a partner. The good results of the work undertaken for the first phase of the Poland Catching-up Regions Initiative (2016-2017) has prompted an extension of the collaboration in Poland, to a second (2017-2018), and by May 2018, a third phase (2018-2019). In addition, similar engagements with the Bank have commenced in Slovakia, Romania, and Croatia. Moreover, the World Bank is using the “catching-up regions” approach in its work throughout the world. The second phase of Poland Catching-up Regions Initiative continued some activities from the first phase, and implemented a number of new activities, including:

1. Enhance technology transfer in the Podkarpackie region by establishing the Podkarpackie Center for Innovation.
2. Identify conditions required to improve spatial planning in the Podkarpackie and the Świętokrzyskie regions.

**FIGURE O.1.**

NUTS 2 regions classified by Cohesion Policy category (left) and Lagging Region category (right)



3. Design financing instruments and mechanisms to improve energy efficiency in single family buildings in the Małopolskie and Śląskie regions to improve the air quality.
4. Improve inspection practices related to food safety and food quality in the Lubelskie and Podkarpackie regions.

## WHY WAS POLAND CHOSEN AS ONE OF THE PILOTS?

The choice to focus on Poland was quite purposeful, both because of Poland's size and the wide-ranging challenges its regions face, and because of its remarkable development story. Poland's economy took off in early 1990s and continued its growth into the new millennium. In 2004, Poland joined the EU and in 2008, it officially became a High-Income Country, according to the GNI per Capita Atlas method of the World Bank. As such, Poland is one of the few countries that managed to overcome the "middle-income trap" in recent decades, and one of the very few big countries (it had a population of around 38 million in 2014) that has well managed this transition<sup>1</sup>.

Poland is also a very good performer with regards to the absorption of EU funds. For the 2007-2013 and 2014-2020 Programming Periods, it has had the largest allocations of structural funds in the EU (respectively

<sup>1</sup> A majority of countries that have overcome the middle-income trap are city states (e.g. Singapore, Hong Kong, Taiwan) or relatively small countries (e.g. Israel, Lithuania, Latvia, Estonia, Slovenia).

72 and 82 billion Euro). While Poland's performance over the last years is remarkable, its continuous concern in the context of the EC's cohesion policy is the impact of EU funds. Over the 2007-2013 Programming Period, Poland absorbed most of the EU funds allocated through various operational programs. A large percentage of 2007-2013 funds was directed to bridging the infrastructure gap and constructing transport, urban, water and wastewater, environmental, educational, sanitary, and other infrastructure assets.

During the 2014-2020 programming period, there was a shift in focus, away from hard infrastructure assets towards addressing systemic aspects of competitiveness, innovation, and entrepreneurship. This shift acknowledges that while it is critical to consolidate the progress made, it is equally important to ensure that the Cohesion Policy achieve a better leverage effect than in other EU Member Countries (e.g. Greece, Portugal, Spain, or Italy). These countries invested heavily in connective and other infrastructure yet did not significantly improve the quality of their human capital resources and business environment. The objective of the policy change is also to identify ways in which Poland could soon compete with the top performing economies in the world.

The Polish Government and the European Commission (EC) were particularly interested to find ways to improve the performance of lagging regions, and identify ways to spur growth and innovation in their economies. Consequently, in April 2016, Commissioner Corina Crețu, officially launched the Lagging Regions Initiative together with Minister Jerzy Kwieciński, Marshal Adam Jarubas in Świętokrzyskie and Marshal Władysław Ortyl in Podkarpackie.

## HOW WERE THE REGIONS FOR POLAND CATCHING-UP REGIONS 2 CHOSEN?

According to the DG REGIO definition of lagging regions, in 2016, five NUTS 2 regions (voivodships) in Poland were considered to be lagging (i.e. they had a GDP per Capita (PPS) below 50 percent of the EU average): Warmińsko-Mazurskie, Podlaskie, Lubelskie, Świętokrzyskie and Podkarpackie. To better address the challenges they faced, the Government of Poland (GoP) set up a separate national operational program – the OP Eastern Poland, with a total allocation of two billion Euro for the 2014-2020 Programming Period. In addition, the European Commission was interested to identify ways these funds can achieve the highest potential impact, by honing on specific bottlenecks and challenges, and identifying ways in which the bottlenecks could be removed and the challenges addressed.

The DG Regio Poland Desk team prepared detailed analytical sheets on all five lagging regions in Poland. Podkarpackie and Świętokrzyskie were chosen for the first phase of the Catching-up Regions Initiative. They were identified as pilots because of the relatively different challenges they faced despite their geographical proximity, and because of the potential of scaling up the relevant lessons learnt from the initiative to other lagging regions. For the second phase of the Catching-up Regions Initiative, the work in Podkarpackie and Świętokrzyskie was extended, with a focus on spatial planning issues in both regions, and a continuation of the work on the Podkarpackie Center for Innovation, as well as a continuation of the work on the ease of doing business in Świętokrzyskie. In addition, the Małopolskie and Śląskie regions were chosen for targeted work in the field of energy efficiency, with a focus on the thermal retrofitting of and replacement of boilers in single family buildings. While Małopolskie and Śląskie are not lagging regions per se, the environmental challenges they face are quite significant and require targeted and hands-on approaches of the type implemented through the Catching-up Regions Initiative. Finally, comprehensive work in the field of food inspections was undertaken in the Lubelskie and Podkarpackie regions

The willingness of the identified regional governments to actively participate in the implementation of the initiative, was another factor that helped inform the final choice. Last, the Ministry of Investment and Economic Development was consulted throughout the selection process, to ensure seamless coordination between the government's planning and operational work.

## WHY WAS THE WORLD BANK SELECTED TO PROVIDE TECHNICAL ASSISTANCE?

The European Commission and the World Bank share a long-standing partnership for development, ranging from the joint financing of infrastructure projects to the provision of technical assistance to EU and non-EU countries. The EC considered the World Bank to be capable of bringing its technical and operational expertise, as well as its convening power and role as an honest broker to address some of the constraints facing the lagging regions. It was assumed that by combining its operational expertise with its global knowledge, the World Bank would support the achievement of strategic development outcomes and help respond to key development challenges.

In turn, the World Bank sees the European Commission not only as a strategic development partner, but also as an invaluable source of knowledge for properly tailoring development solutions. The European Commission is arguably one of the most efficient development institutions in the world, and is to a large extent, responsible for helping several of its Member Countries overcome the middle-income trap and become high-income economies (see Table O.1). This is one of the reasons the World Bank has dubbed the EU the “Convergence Machine”<sup>2</sup>. It is looking to learn relevant and applicable lessons, from the EC’s activities, to its other client countries.

**TABLE O.1.**  
Development performance of a selection of EU countries

	Year EU candidacy negotiation was started	Year the country became a EU member	Year the country became a high-income country
Croatia	2003	2013	2007
Czech Republic	1995	2004	2004
Estonia	1995	2004	2006
Greece	1975	1981	1987
Hungary	1994	2004	2006
Ireland	1968	1973	1986
Latvia	1995	2004	2008
Lithuania	1995	2004	2008
Poland	1994	2004	2008
Portugal	1977	1986	1994
Slovak Republic	1995	2004	2005
Spain	1977	1986	1987

For the Poland Catching-up Regions Initiative, both the first and the second phase, the teams working together mobilized both international and local experts, to properly respond to the variety and complexity of the issues to be addressed. A core coordination team has been set-up in the Bank’s Warsaw office, to ensure efficient and expedient communication between the teams on the ground, the regional and national stakeholders, the project leadership, and the European Commission’s team.

<sup>2</sup>World Bank. 2012. *Golden Growth: Restoring the lustre of the European development model*.

## HOW WAS THE SCOPE OF WORK DEFINED?

If for the first phase of the Catching-up Regions Initiative, the activities were selected using action plans prepared by the regions themselves, for the second phase of the Poland Catching-up Regions Initiative, the focus was partially on the continuation of work already undertaken (e.g. the Podkarpackie Center for Innovation, the ease of doing business) and partially on targeting big themes identified in the *Poland Country Report* and the *Poland Country Specific Recommendations* – namely energy efficiency and air pollution, spatial planning, and business inspections.

The regions were engaged early on, to determine what concrete actions to focus on. It was important to identify activities with potential tangible impact, which could be realistically implemented within the one-year project duration. After the list of actions was completed, a number of meetings were organized with all relevant stakeholders (the regional governments, the Ministry of Investment and Economic Development, the European Commission, and the World Bank) to prioritize the action list and identify the distinct actions the Poland Catching-up Regions 2 Initiative would focus on. Once these key actions were identified, further discussions helped identify detailed sub-actions and the final scope of work. The World Bank organized and helped facilitate these discussions in its Warsaw Office. Enabling all the stakeholders to meet on “neutral ground” made for a much smoother discussion and a more expeditious decision-making process.

## PROJECT IMPLEMENTATION

As was the case with the first phase of the Poland Catching-up Regions work, activities and work teams were multi-disciplinary. From spatial planning, to financial instruments for the energy efficiency, and food inspections, the Poland Catching-up Regions 2 Initiative covered a wide gamut of development areas. Building upon experience from the Catching-up Regions 1 Initiative, it was determined that without strong coordination, both on the ground and overall technical coordination, it would be difficult to bring such a diverse developmental program to a successful finish. For that reason a strong coordination team on the WB side was maintained to ensure delivery of technical outputs, management of communication with stakeholders, and administrative support for the program. Arrangements were made for frequent interactions with local and regional stakeholders on the ground. Autonomous teams were established for each defined activity, with the technical work coordinated by an activity leader and a team of experts. Each activity team was present in the field on a regular basis with frequent (often weekly) communication with key stakeholders to ensure the efficient and two-way information flow, stakeholders' engagement, and to properly respond to the needs and requests of stakeholders. Thanks to this hands-on approach, progress was steadily made on the defined actions.

Steering Committee meetings were organized with all stakeholders present to: 1) assess progress of the work to date (Bank shared short presentations with the Steering Committee participants prior to each meeting); 2) discuss problems/issues encountered along the way and take decisions how to solve them; 3) propose next steps to be taken with clear deadlines and responsibility for delivery; and 4) agree on a change of an approach or additional/different work to be completed. While for the first phase of the Poland Catching-up Regions Initiative, Steering Committee meetings were organized on a monthly basis, for the second phase, these were organized at longer bimonthly intervals, to allow more significant progress to happen between meetings, and to reduce the reporting burden on the technical teams. The frequency of the Steering Committee meetings ensured that all problems/issues identified were addressed in a timely manner, which helped save time and resources needed later in the process to achieve agreed upon results. Bimonthly meetings proved more efficient, while being equally effective for the project management.

## KEY SUCCESS FACTORS

The Poland Catching-up Regions Initiative work has been appreciated by all parties involved. The fact that the third phase of the Poland Catching-up Regions Initiative is underway, and that the initiative has been expanded to Slovakia, Romania, and Croatia (as of the writing of this report), is a testament to its success. Some of the factors that have made the Poland Catching-up Regions Initiative a success, are listed below:

- **Buy-in and involvement of regional stakeholders.** Development is all about people. The best ideas, tools, and policies cannot achieve the proper development impact if they are not adopted by the right people. The fact that the regional stakeholders in the targeted regions were fully involved in the project, from the definition of its activities to the implementation of the recommendations, made the difference.
- **Integration with existing operational programs and strategies.** While the actions that were targeted under the Poland Catching-up Regions Initiative are distinct and well-defined, it was important that they were not designed independently of existing strategies and programs, and were perceived rather in a complementary fashion – i.e. they helped achieve some of the key issues proposed in the existing national and regional strategies and programs.
- **Mobilization of additional resources.** There is only so much that can be achieved within the time-span of a one-year project, but the opportunity of accessing additional EU and national funds, was a key incentive in the implementation of the proposed recommendations.
- **Dedication, commitment, and leverage of the European Commission's team.** The European Commission team did not only finance the initiative. It was actively involved throughout. The EC team did not only review all outputs produced; it monitored the activities on the ground and worked as a mediator when difficult decisions had to be taken. The involvement of the EC in every step of the process, ensured smooth progress of the work and an efficient and effective response to the challenges and bottlenecks that appeared along the way.
- **Periodic Steering Committee meetings.** While preparing frequent progress reports and meeting at short time intervals can be quite demanding for all involved, it turned out that these frequent meetings and discussions were a key ingredient to the success of the initiative. Without the meetings, it would have been possible for small problems to turn into big problems, which in the end would have been much more difficult to overcome.
- **Local coordination.** While international experts helped provide key technical knowledge, it would have been very difficult to keep the initiative together and running smoothly without the proper coordination of efforts on the ground; and without a strong coordination team, it would have been difficult to deliver all the required results in the allotted time-frame, given the big teams and the diverse sectors covered.
- **World Bank expertise.** The World Bank combines operational expertise with sectoral know-how, and has unique advantage in dealing with technical assistance projects focused on development issues; particularly projects that have a strong operational/implementation focus. In addition, the World Bank acts as an honest broker, focused on achieving concrete development results (rather than generating a profit), and has the convening power required to bring different stakeholders around the table and help discuss and take actions on complex and difficult matters.
- **Hands-on approach.** The European Commission has designed the Catching-up Regions Initiative Poland as a hands-on activity, with the purposeful direct involvement of all relevant stakeholders. This approach was geared towards achieving concrete results rather than just a proposal of recommendations. As such, concrete results were achieved throughout the implementation of the project, with different stakeholders responsible for achieving these results.

- **Ambitious but pragmatic objectives.** The EC team has decided at the outset that each Catching-up Regions Initiative component is to achieve ambitious, yet feasible objectives, which could realistically be achieved within the allotted time-line (i.e. 12 months) and which are defined by all participating stakeholders.

## NEXT STEPS

The Catching-up Regions Initiative, after only two years of implementation in Poland, has become a stand-alone, recognizable approach and tool used in other EU countries, e.g. Slovakia, Croatia, Romania. The Poland experience now serves as an example for the elaboration of similar approaches in other World Bank client countries.

The implementation of the third phase of the Poland Catching-up Regions Initiative is being currently initiated. The focus of the third phase of the Poland Catching-up Regions Initiative will be on: 1) rolling out the results of the work already undertaken, in other regions in Poland (in the first and second phase of Catching-up Regions Initiative); 2) extending the work on the financial instruments for enhanced energy efficiency in single family buildings; 3) commencement of new work strands in the Kujawsko-Pomorskie and Zachodniopomorskie regions. The Bank's "Rethinking Lagging Regions" report may prove to be one of the critical works in the rethinking of the EU regional development policy for the 2021-2027 Programming Period.



# **OVERVIEW OF INITIATIVE RESULTS**

ACTIVITY 1

**MAŁOPOLSKIE AND ŚLĄSKIE:  
FINANCIAL INSTRUMENTS  
TO SUPPORT ENERGY  
EFFICIENCY MEASURES IN  
SINGLE FAMILY BUILDINGS**

**To reduce low-stack air pollution and improve energy efficiency, the Bank team recommends the creation of a National Anti-Smog and Energy Efficiency Fund to ensure necessary coordination of support programs at the national, regional and local levels,** and to channel subsidies to finance replacement of non-compliant boilers and thermal retrofits in poor single family buildings (SFBs) and incentivize non-poor SFBs. Commercial lines of credit coupled with tax incentives and targeted subsidies are proposed to support non-poor SFBs in Poland.

## WHY?

**Low-stack air pollution from the combustion of poor quality solid fuels used for heating SFBs is a leading cause of air pollution in Poland.** Many SFBs reportedly use a mix of poor quality coal, firewood, and trash in inefficient manually-fed coal boilers which, while cheap to operate, results in significant particulate matter (PM) emissions which is a major hazard to human health. The problem is exacerbated by poor insulation of SFBs which increases the heat demand and leads to inefficient use of heating fuels.

**About 50 percent of Poles (or some 19 million people) live in SFBs, and Poland has about 5.4 million SFBs.** Addressing air pollution from heating systems in SFBs thus requires urgent action to improve air quality in Poland and in the EU. Regional governments, in some of the most polluted regions of Poland, such as Małopolskie and Śląskie have introduced anti-smog resolutions to phase out the use of poor quality solid fuel boilers over time, and mandate the use of compliant heating systems. The enforcement of these resolutions will significantly lower PM emissions. Insulation of SFBs, however, is not mandated by regulations.

The World Bank (WB) was commissioned by the European Commission (EC) to support the Government of Poland (GoP) design financial support mechanisms and financial instruments to support the replacement of non-compliant solid fuel boilers and undertake thermal retrofits of SFBs.

## HOW?

**Poland can significantly reduce air pollution and improve energy efficiency in SFBs through replacement of non-compliant solid-fuel boilers with coal and gas boilers, heat pumps, and other heating technologies such as renewable energy (biomass), etc. that meet regulatory mandates coupled with thermal retrofits of SFBs.** The WB team analyzed the characteristics of heating systems used in SFBs in Małopolskie and Śląskie, which were selected as pilot regions by the EC and the GoP, and examined options to reduce air pollution. The replacement of old solid fuel boilers, which is mandated in some regions of Poland, has a very significant impact on reducing air pollution. Thermal retrofits of SFBs, which is very expensive, has limited impact on reducing air

pollution but results in substantial fuel cost savings and lowering of CO<sub>2</sub> emissions. It is thus critical to be clear on the objectives to be met to develop optimal solutions to address air pollution from SFBs. The GoP wishes to both reduce air pollution and improve energy efficiency of SFBs and wishes to support poor SFBs undertake boiler replacement and thermal retrofits.

**The WB team consulted with a broad range of stakeholders in the public and private sectors to understand the SFB heating market, and the complex social, financial and policy and regulatory issues that define it.** With the support of team member IEE (Institute for Environmental Economics)<sup>3</sup> and information from Małopolskie and Śląskie, the WB analyzed the options for poor and non-poor SFBs, recognizing that poor SFBs (estimated by the Institute for Structural Research, IBS, to be 10 percent of SFBs) may require substantial support through state subsidies to make investments. The WB has estimated the investment needs and impacts of programs targeting poor and non-poor SFBs in the two regions of Małopolskie and Śląskie, the 33 most polluted cities in Poland, and across the entire country. To finance the investment required, the WB has developed a financing support mechanism to support poor SFBs through subsidies and to incentivize non-poor SFBs, and a commercial financing instrument to support non-poor SFBs finance measure to improve heating systems (thermal insulation and boiler replacement).

## WHAT?

### RECOMMENDATIONS FOR REDUCING AIR POLLUTION AND IMPROVING ENERGY EFFICIENCY

**Based on the analysis of the SFB heating market and consultations with stakeholders, the WB team recommends that poor and non-poor SFBs switch from non-compliant solid fuel boilers to compliant gas boilers, heat pumps, renewable energy technologies (such as biomass), and coal boilers that meet regulatory requirements.** The replacement of boilers should be coupled with full thermal retrofits of the SFB to improve energy efficiency, reduce expenditure on fuel, and lower CO<sub>2</sub> emissions. The savings in fuel cost resulting from improved boiler performance and insulated SFBs is estimated to be adequate to obviate the need for fuel purchase subsidies for poor SFBs that will switch from combusting poor-grade coal, firewood and trash to higher-quality fuels that are more expensive. An option for partial thermal retrofits of SFBs, which would lower the investment and subsidy needed to implement the program, was also analyzed<sup>4</sup>. Partial thermal retrofit costs less in upfront investment, but requires larger new boilers that will last for decades to come, and may increase the fuel bills which would require fuel subsidies for the poor. Seven Polish regions, including Małopolskie and Śląskie, implemented anti-smog resolutions that mandate boiler replacement.

## INVESTMENTS NEEDED

**The investments needed to support poor and non-poor SFBs in Małopolskie and Śląskie, the 33 most polluted cities, and across Poland to replace non-compliant solid fuel boilers with alternative home heating systems that meet regulatory standards and undertake thermal retrofits of SFBs are provided in Table 1.1.**

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<sup>3</sup> Instytut Ekonomii Środowiska, Krakow

<sup>4</sup> Full thermal retrofitting of an SFB includes insulation of walls, roof, floor and modernization of the heating systems including piping, radiators, thermostats/regulators all done to code specifications. The cost of thermal retrofitting also varies significantly. While the IEE has estimated cost of full thermal retrofitting to be about PLN 81,703, anecdotal information from equipment installers indicates that the cost of thermal retrofit of an SFB could vary from PLN 25,000 to PLN 50,000 since many SFBs have some insulation. The WB analysis assumes that the average cost of a full thermal retrofit of an SFB is PLN 50,000. A partial retrofit includes insulation of walls and modernization of the heating systems and is estimated to cost PLN 25,000.

The total investment needed to replace non-compliant solid fuel boilers and undertake full thermal retrofits for SFBs is estimated to be around PLN 30.1 billion (EUR 7.1 billion) in Małopolskie and Śląskie, and PLN 154.1 billion (EUR 36.3 billion) across the country. The total investment needed to replace non-compliant solid fuel boilers and undertake partial thermal retrofit for the SFBs is estimated to be around PLN 20.1 billion (EUR 4.7 billion) in Małopolskie and Śląskie, and PLN 104.5 billion (EUR 24.6 billion) across the country.

**TABLE 1.1.**  
Investment needed for Boiler Replacement and Thermal Retrofits of SFBs

	Investment needed for boiler replacement and thermal retrofits of SFBs (PLN/EUR, billions)					
	Małopolskie and Śląskie		33 most Polluted Cities		Poland	
	Poor SFBs	Non-poor SFBs	Poor SFBs	Non-poor SFBs	Poor SFBs	Non-poor SFBs
Boiler replacement and partial thermal retrofits of SFBs	PLN 2.9/ EUR 0.7	PLN 17.2/ EUR 4.0	PLN 1.5/ EUR 0.3	PLN 9.1/ EUR 2.1	PLN 14.5/ EUR 3.4	PLN 90/ EUR 21.2
Boiler replacement and full thermal retrofits of SFBs	PLN 4.7/ EUR 1.1	PLN 25.4/ EUR 6.0	PLN 2.4/ EUR 0.56	PLN 13.2/ EUR 3.1	PLN 23.5/ EUR 5.5	PLN 130.5/ EUR 30.7

## NEED FOR SUBSIDIES

**Given the high investment needs, poor SFBs are estimated to need between 90 to 100 percent subsidies to replace old solid fuel boilers and undertake partial or full thermal retrofits.** The poor SFBs are encouraged to pay at least 10 percent of the investments to ensure ownership and sustainability. The local governments could also consider fuel subsidies for an initial two to three years to help poor SFBs transition to improved fuels, even though fuel subsidies are not necessary nor sustainable in the long run, since full thermal retrofit reduces fuel bills. Even non-poor SFBs would need subsidies to incentivize them to improve heating systems. However, given the very substantial investment needs for non-poor SFBs, the WB recommends that a 20 percent subsidy be provided only to non-poor SFBs with income in the bottom three quintiles (60 percent), and be further limited to investments made for switching from coal to gas and renewable energy<sup>5</sup> and for thermal retrofits. Furthermore, tax incentives (tax credits or tax deductions) for fuel switching and thermal retrofit, are recommended for all SFBs, though it is likely that SFBs in the top 40 percent of income would benefit the most from it. The subsidy needed to support poor and non-poor SFBs in Małopolskie and Śląskie, the 33 most polluted cities, and across Poland are provided in Table 1.2.

**TABLE 1.2.**  
Subsidy needed for Boiler Replacement and Thermal Retrofits of SFBs

	Subsidies needed for boiler replacements and thermal retrofits of SFBs (PLN/EUR, billions)					
	Małopolskie and Śląskie		33 most Polluted Cities		Poland	
	Poor SFBs	Non-poor SFBs	Poor SFBs	Non-poor SFBs	Poor SFBs	Non-poor SFBs
Boiler replacements and full thermal retrofits of SFBs	PLN 4.2/ EUR 1.0	PLN 2.4/ EUR 0.6	PLN 2.1/ EUR 0.5	PLN 1.1/ EUR 0.3	PLN 21.2/ EUR 5.0	PLN 11.3/ EUR 2.7

<sup>5</sup>This would exclude replacement of outdated coal boilers with eligible coal boilers of a new type.

**Given the large scale public funds needed, it is recommended that the government could prioritize providing subsidies first to SFBs in the most polluted 33 cities.** The subsidies required for the most polluted 33 cities are roughly estimated to be around PLN 3.3 billion (EUR 773 million), of which PLN 2.1 billion (EUR 503 million) would be for poor SFBs and PLN 1.1 billion (EUR 270 million) for the non-poor SFBs. This will provide a quick win and have a major impact on reducing air pollution in the country, with the minimum amount of required public funds. To this end, the national government is launching a pilot program that targets the 23 smaller cities among the 33 most polluted cities in Poland, to be implemented by Bank Gospodarstwa Krajowego (BGK), where the national government provides 70 percent, regional governments 20 percent, and municipal governments 10 percent of subsidies for poor SFBs.

**The anti-smog and energy efficiency programs are long-term efforts, and the required subsidies could be programmed over a 10-year time period.** Annual subsidies are estimated to be around PLN 667 million (EUR 157 million) in Małopolskie and Śląskie, and PLN 3.3 billion (EUR 765 million) across the country, of which annual subsidies for poor SFBs would be PLN 424 million (EUR 100 million) in Małopolskie and Śląskie, and PLN 2.1 billion (EUR 498 million) across the country; and for non-poor SFBs PLN 243 million (EUR 57 million) in Małopolskie and Śląskie, and PLN 1.1 billion (EUR 268 million) across the country.

## IMPACT ON ENERGY USE AND PARTICULATE AND CO<sub>2</sub> EMISSIONS

The estimated energy and cost savings, and reduction in particulate and CO<sub>2</sub> emissions from replacement of non-complaint solid fuel boilers and thermal retrofitting is shown in Table 1.3.

**TABLE 1.3.**

Energy and Fuel Cost Savings and Reduction in Air Pollution and CO<sub>2</sub>

	Boiler replacements and full thermal retrofits of SFBs					
	Małopolskie and Śląskie		33 most Polluted Cities		Poland	
	Poor SFBs	Non-poor SFBs	Poor SFBs	Non-poor SFBs	Poor SFBs	Non-poor SFBs
Annual fuel savings (GJ and % savings compared to baseline, i.e. no changes)	7,718,299 (79%)	40,978,476 (79%)	3,840,158 (64%)	19,852,690 (64%)	37,988,345 (64%)	196,476,027 (51%)
Annual fuel cost savings (PLN, millions and % savings compared to baseline)	107 (47%)	210 (17%)	55 (39%)	154 (21%)	548 (39%)	1,519 (17%)
Annual reduction in particulate emissions (m kg, and % savings)	7,901 (121%)	51,655 (148%)	3,953 (99%)	25,724 (124%)	39,079 (99%)	254,331 (98%)
Annual reduction in CO <sub>2</sub> emissions (tons, and % savings)	451,884 (73%)	2,403,576 (73%)	219,974 (58%)	1,044,058 (53%)	2,175,696 (58%)	10,330,273 (42%)

## FINANCIAL SUPPORT MECHANISMS AND FINANCING INSTRUMENTS FOR SUPPORTING POOR AND NON-POOR SFBs

The consensus among stakeholders was to develop two categories of instruments:

- **Public financial support mechanisms to support poor SFBs**, providing subsidies of 90-100 percent, channeled through municipalities.
- **Commercial financial instruments to support non-poor SFBs in Poland** coupled with 20 percent of subsidies and fiscal incentive mechanisms. It is recommended that commercial lines of credit be provided to eligible participating financial institutions (PFIs) to finance homeowners for eligible EE projects. It is also recommended that financial incentives in the form of subsidies and tax credits/deductions be provided to incentivize the non-poor SFBs to switch from coal when replacing old solid fuel boilers and undertake thermal retrofits, channeled through PFIs.

**In the near term, Małopolskie and Śląskie regional and municipal governments could use the existing limited EU funds in the Regional Operating Program (ROP) to provide subsidies to the most polluted cities first.** In this regard, the regional and municipal governments could use the existing ROP funds to make the 30 percent contribution to the pilot national program that targets the 23 most polluted cities and to provide subsidies to other most polluted cities for boiler replacement, fuel switching, and thermal retrofit in SFBs.

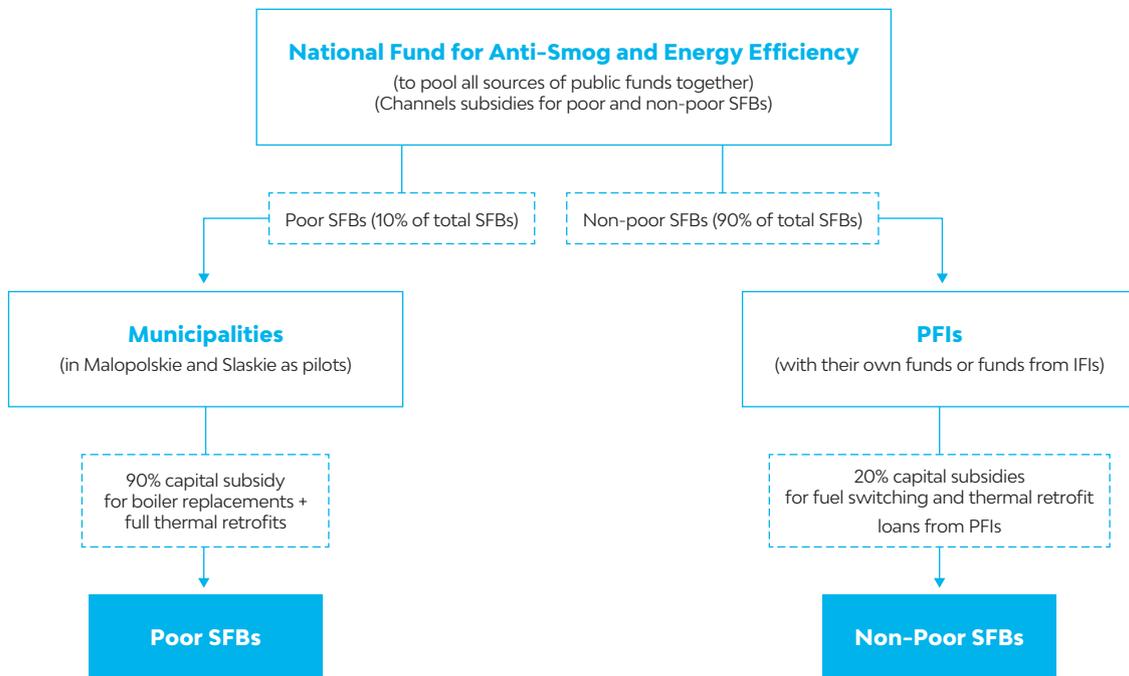
## A NATIONAL FUND FOR ANTI-SMOG AND ENERGY EFFICIENCY

**Given the huge needs for public funds, additional EU funds would be necessary to help Poland fight smog and improve energy efficiency (EE) in SFBs.** And concessional loans from multi-lateral development banks would be welcomed to provide credit lines through local participating banks to meet the huge financing needs for boiler replacement, fuel switching, and thermal retrofit.

**It is essential to coordinate the use of public funds from the government and EU at the national, regional and local levels, and it is recommended that a National Fund for Anti-Smog and Energy Efficiency be established** to pool various funding resources, and channel all public finance support mechanisms to poor and non-poor SFB, as eligible under the program. The National Fund would also support technical assistance and capacity building of stakeholders involved in program implementation, and the administrative costs of managing the National Fund. To supplement the National Fund, the regional and municipal governments could provide additional financing to support programs in their jurisdictions. The National Fund would channel subsidies to poor SFBs through municipalities, and for eligible non-poor SFBs through PFIs.

**The entity/-ies who will manage the financial support and financing mechanisms for anti-smog and energy efficiency in SFBs should meet the following criteria:** (a) proven track record of experience to disburse public funds effectively, efficiently, and quickly; (b) wide network with local commercial banks to channel funds through participating banks who have country wide retail operations and banking ongoing relationships with non-poor SFBs; (c) ability to work with regional and municipal governments to channel funds through them for poor SFBs; and (d) simple application and approval procedures, and streamlined process. Such a National Fund could have different implementing agencies, with commonly defined eligibility criteria and procedures and close coordination, and their roles and responsibilities could be split by market segments, for example, poor vs non-poor SFBs. Figure 1.1 illustrates the flow of funds from the National Fund to poor and non-poor SFBs.

**FIGURE 1.1.**  
National Fund for Anti-Smog and EE to Support SFBs in Poland



## LESSONS LEARNED

- The most cost-effective way to reduce both particulate and CO<sub>2</sub> emissions is to couple switching from non-compliant solid fuel boilers to gas boilers, heat pumps, renewable energy heating systems such as biomass, wherever possible, and compliant solid fuel boilers, as mandated in the anti-smog resolutions, with thermal retrofits of the SFB.** These options will also lead to fuel cost savings compared to the current polluting solid fuel boilers and will not require fuel purchase subsidies for poor SFBs in the long run. Boiler replacement and fuel switching must go hand in hand with thermal retrofit, since boiler replacement alone will increase fuel costs and CO<sub>2</sub> emissions, and thermal retrofit alone will have limited impacts on reducing air pollution. Full thermal retrofit of the SFB is recommended, because it will substantially reduce the size of new boilers and result in significant fuel savings and CO<sub>2</sub> emissions reductions. Partial thermal retrofit costs less in upfront investment but requires larger-than-necessary new boilers that will last for decades to come and may increase the fuel bills which would require fuel subsidies for the poor.
- Anti-smog resolutions and enforcement are key to create market demand for boiler replacement and fuel switching, and solid fuel quality standards are essential to reduce air pollution.** Low market uptake of boiler replacement, fuel switching, and thermal retrofit would be the single biggest risk for the financial mechanisms of energy efficiency in SFBs. In the absence of government mandates for thermal retrofit, financial incentives in the form of upfront subsidies and tax breaks would be critical to increase market demand and penetration.
- To achieve quick wins in the GoP's effort to reduce air pollution, it is recommended that the program start with heavily polluting regions, particularly those that have adopted anti-smog resolutions to demonstrate their political commitment in an enabling regulatory environment.** For instance, the National Fund for Anti-Smog and EE could prioritize subsidies to the 33 most polluted cities in Poland. This will reduce the need for public funds to initiate the program and make it easier to roll out the anti-smog and EE program nationwide.

- **For the eligible poor SFBs, the government could provide 90-100 percent of subsidies for boiler replacement, fuel switching, and thermal retrofits, channeled through municipalities.** The poor SFBs are encouraged to pay at least 10 percent of the investments to ensure ownership and sustainability. The local governments could also consider fuel subsidies for an initial 2-3 years to help poor SFBs transition to improved fuels, even though fuel subsidies are not necessary nor sustainable in the long run, since full thermal retrofit reduces fuel bills.
- **For the non-poor SFBs, the government could provide 20 percent subsidy for fuel switching to gas, heat pumps, and renewable energy systems and thermal retrofit, together with tax incentives, channeled through participating financial institutions who would provide loans for the remaining investment.** The proposed upfront subsidies are intended to increase market uptake of fuel switching and thermal retrofit for non-poor SFBs and could be limited to the 60 percent of the lower income SFBs among non-poor SFBs. Additional subsidies could be considered to reward those non-poor SFBs for installing higher-than-standard efficient boilers and switching to renewable energy. Furthermore, tax incentives for fuel switching and thermal retrofit, are recommended for all SFBs, though it is likely that SFBs in the top 40 percent of income would benefit the most from it.
- **The anti-smog and energy efficiency are long-term efforts, and the required subsidies could be programmed over a 10-year time period.**
- **In the near term, Małopolskie and Śląskie regional and municipal governments could use the existing limited EU funds in the ROP to provide subsidies to the most polluted cities first.** In this regard, the regional and municipal governments could use the existing ROP funds to make the 30 percent contribution to the pilot national program that targets the 23 most polluted cities and to provide subsidies to other most polluted cities for boiler replacement, fuel switching, and thermal retrofit in SFBs.
- **Given the huge needs for public funds, additional EU funds would be necessary to help Poland fight smog and improve energy efficiency in SFBs.** And concessional loans from multi-lateral development banks would be welcomed to provide credit lines through local participating banks to meet the huge financing needs for boiler replacement, fuel switching, and thermal retrofit.
- **Technical assistance, capacity building, and public education and awareness campaigns are critical to the success of the anti-smog and energy efficiency program.** In particular, the municipal governments would require substantial technical support from energy advisors to undertake walk-in energy audits, prioritize SFBs, and conduct monitoring and reporting. In addition, standardized IT systems, agreement for procurement, etc. for all the municipalities would simplify the procedures and greatly help the municipalities to manage such programs. Furthermore, public education campaigns to raise awareness, inform about benefits coming from investments into the energy efficiency, and change people's behavior towards clean energy are equally important and should be an integral part of such programs.
- **The World Bank team will discuss with the EC and the national/regional governments to define the scope of work for the next phase of this study from July 2018 to June 2019.** The next phase of this study could (a) help develop detailed program design and operationalize the financial support and financing mechanisms for anti-smog and energy efficiency in SFBs; and (b) undertake a market analysis of the demand from SFBs to better understand the market uptake for these investments.

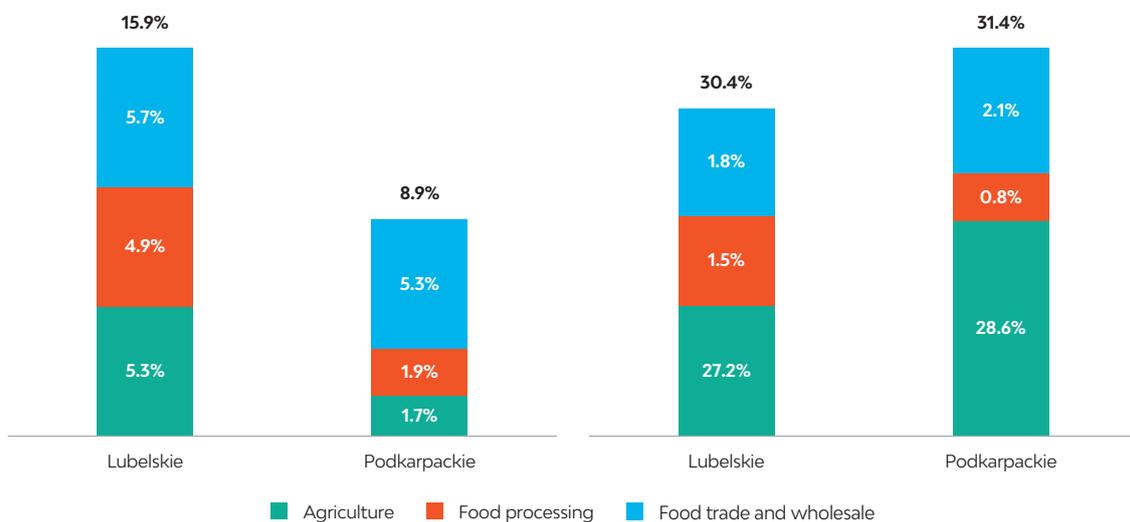
## ACTIVITY 2

# **LUBELSKIE AND PODKARPACKIE: RECOMMENDATIONS TO IMPROVE FOOD INSPECTION PRACTICES**

## WHY?

**The food sector is the largest employer and leading contributor to value added in Podkarpackie and Lubelskie.** In both regions, the food sector employs more than 600,000 people out of a total workforce of two million and generates over 15 billion PLN (EUR 3.5 billion) in gross value added (see Figures 2.1 and 2.2). It is undergoing structural transformation as labor gradually shifts from low-productivity agriculture to sectors that generate more added value, including food processing and food services. Yet, moving up the value chain requires firms to comply with some of the most demanding food regulations in the world, including the EU Hygiene Package and Poland's Food Safety Law.

**FIGURE 2.1.**  
Value added to GDP, 2016<sup>6</sup>



**FIGURE 2.2.**  
Employment share, 2016<sup>7</sup>

Source: World Bank staff calculations, based on data from the Central Statistical Office of Poland, Institute of Agricultural and Food Economics, and Emerging Markets Information System.

<sup>6</sup> Agriculture in Figure 2.1 encompasses value added created by agriculture, forestry, hunting, and fishing activities. Contribution of agriculture to value added was sourced from data published by the Central Statistical Office. Contribution of food processing to value added has been extrapolated by multiplying the share of the manufacturing sector in the regional GDP with the share of regional food manufacturing revenues. The latter ratio has been assumed to reflect the proportion of regional food manufacturing value added to regional manufacturing value added. Contribution of wholesale and retail to value added was estimated on the basis of the ratio of food processing revenues to food wholesale and retail revenues obtained from micro data representing the population of commercial code companies in these sectors in Podkarpackie and Lubelskie.

<sup>7</sup> Data on employment in agriculture was sourced from the Central Statistical Office. Employment in food processing and food trade/wholesale was estimated on the basis of micro data representing the population of commercial code companies in these sectors in Podkarpackie and Lubelskie.

**Podkarpackie and Lubelskie can support the growth of its food sector through inspection reforms.** While food safety and quality requirements are set at international and national levels, their enforcement is local. In 2016 there were more than 50,000 food inspections in Podkarpackie and Lubelskie.<sup>8</sup> Approximately three in five food business operators in the sector had one or more inspections. Firms in Podkarpackie and Lubelskie indicated consistently in interviews with World Bank (WB) staff that (i) food inspections are disproportionately burdensome, and (ii) they need more information on how to comply with requirements.<sup>9</sup>

## HOW?

**The WB's technical assistance to improve food inspections in Lubelskie and Podkarpackie was divided into two phases of five months each: the diagnostic phase (September 2017 – January 2018), and the implementation phase (February – June 2018).**

In the **diagnostic phase**, the WB interviewed food business operators and inspectors in the two regions and collected data on inspections from central, regional, and district offices of the State Sanitary Inspectorate, Veterinary Inspectorate, Trade Inspectorate, Agricultural and Food Quality Inspectorate, and State Plant and Seed Inspectorate. The WB deliberately focused its analysis on daily practices – how inspections are planned and carried out. Local practices were compared to international standards<sup>10</sup> in three areas – coordination, risk assessment, and compliance promotion. The WB provided practical examples of solutions to local problems from more than 10 EU countries, including the United Kingdom, the Netherlands, Denmark, Lithuania, and Slovenia. The results of the diagnostic phase were summarized in the report “Safer Food and Better Business in Podkarpackie and Lubelskie”.

The findings of the diagnostic phase highlight the need for Poland to transition to more integrated, proportional, and risk-based food control. The WB provided also directions for control authorities at national and regional levels to complete this transition. The WB's recommendations are summarized in Box 2.1.

### BOX 2.1.

WB recommendations on Safer Food, Better Business in Podkarpackie and Lubelskie

#### Strengthening coordination between inspectorates

- The Ministry of Agriculture and the Ministry of Entrepreneurship should develop in collaboration with the Ministry of Digital Affairs and the Ministry of Investments standard requirements for inspection software and an interoperability platform for inspections.
- On this basis, food inspectorates should standardize and upgrade their existing ICT solutions to support advanced functionalities such as mobile access, automated risk assessment, inspection planning, and information exchange with businesses.
- The Ministry of Agriculture and food control authorities in Poland should pay more attention to the alignment of processes and resources upon enactment and entry into force of the Law establishing the State Food Safety Inspectorate.
- The Ministry of Entrepreneurship and Technology should improve and strengthen its framework regulation of inspections, in particular Article 33 and 47 of the Entrepreneurs Act.

<sup>8</sup> These inspections were carried out by five institutions: the State Sanitary Inspectorate, Veterinary Inspectorate, Trade Inspectorate, Agricultural Quality and Trade Inspectorate, and State Plant and Seed Inspectorate. All of these institutions have offices at the regional level and two (the State Sanitary Inspectorate and the Veterinary Inspectorate) have offices at the district level.

<sup>9</sup> WB staff conducted face-to-face interviews with owners and managers of 46 food businesses in Podkarpackie and Lubelskie. Firms were sampled selectively based on geography, size, and subsector to capture a wide range of views on inspections. The sample was split equally between Podkarpackie and Lubelskie and in a 4:3:2:1 ratio between micro, small, medium, and large enterprises to capture a wide range of experiences. Firms located outside of the voivodships' capitals and those likely to interact with small inspection services were oversampled. One in six firms agreed to be interviewed. The respondents were located in 21 poviats and represented 19 different sectors. The interviews were in person at businesses and interviewees responded to a set of closed-ended and open-ended questions.

<sup>10</sup> OECD Best Practice Principles for Regulatory Enforcement and Inspections and the WB Food Safety Toolkit.

### Refining and fully implementing risk assessment

- Food inspectorates should refine and unify their risk assessment methodology; inspection frequencies should be reduced for low-risk establishments and more weight should be given to compliance records and internal food safety management systems implemented by food business operators.
- Food inspectorates should ensure that the risk assessment methodology is fully implemented in Podkarpackie and Lubelskie; more facilities should be covered by risk assessment and unplanned inspections limited; fewer facilities should be rated as high-risk; and risk assessment should be more consistent across regions (voivodships) and districts (poviats); the control of multisite businesses should be streamlined; and investments made into human and technical capacities.

### Scaling up compliance promotion

- Food inspectorates should scale up compliance promotion by developing and publishing more practical checklists and guidelines; publishing risk assessment methodologies; informing businesses about their risk rating; providing advice through hotlines and websites; limiting the number of inspections and overly punitive sanctions.

In the **implementation phase**, the WB piloted with the State Sanitary Inspectorate and the Veterinary Inspectorate, the two largest food control authorities in Podkarpackie and Lubelskie, interventions aimed to improve compliance and limit administrative burdens. Two subsectors were selected for pilots, based on client needs and their importance for regional economies: meat processing in Lubelskie and foodservice in Podkarpackie.<sup>11</sup> Both subsectors are large employers in the two regions but lag furthest behind the national average in labor productivity, thus offering a high pay-off to reforms. Both sectors can grow from trade (Poland is one of the main suppliers of meat to the EU and foodservice can be traded, if combined with tourism) and economies of scale (currently, shares of micro and small enterprises in the two regions are high).

The pilots were conducted in five steps: 1) review inspection tools considered international best practices; 2) prepare new tools and tailor them to the needs of local businesses and habits of inspectors; 3) test new tools together with WB experts in real-life inspections; 4) evaluate pilots and revise tools; and 5) recommend a rollout of new inspection tools.

In addition, the WB organized six workshops with inspectorates and businesses during the implementation phase: four in Rzeszów and Lublin on risk assessment, checklists, and guidance; and two in Warsaw on framework regulation of inspections and ICT solutions for inspections. The workshops featured WB experts and speakers from the Netherlands, the United Kingdom and Italy. In total, more than 100 inspectors and business representatives participated in the workshops. High-level officials, including the Deputy Minister of Entrepreneurship, the Deputy Head of the Veterinary Inspectorate, as well as regional heads of the Veterinary Inspectorates in Podkarpackie and Lubelskie and the Sanitary Inspectorate in Podkarpackie attended several workshops. Progress was regularly reviewed with stakeholders during Steering Committee meetings of the Catching-up Regions Initiative.

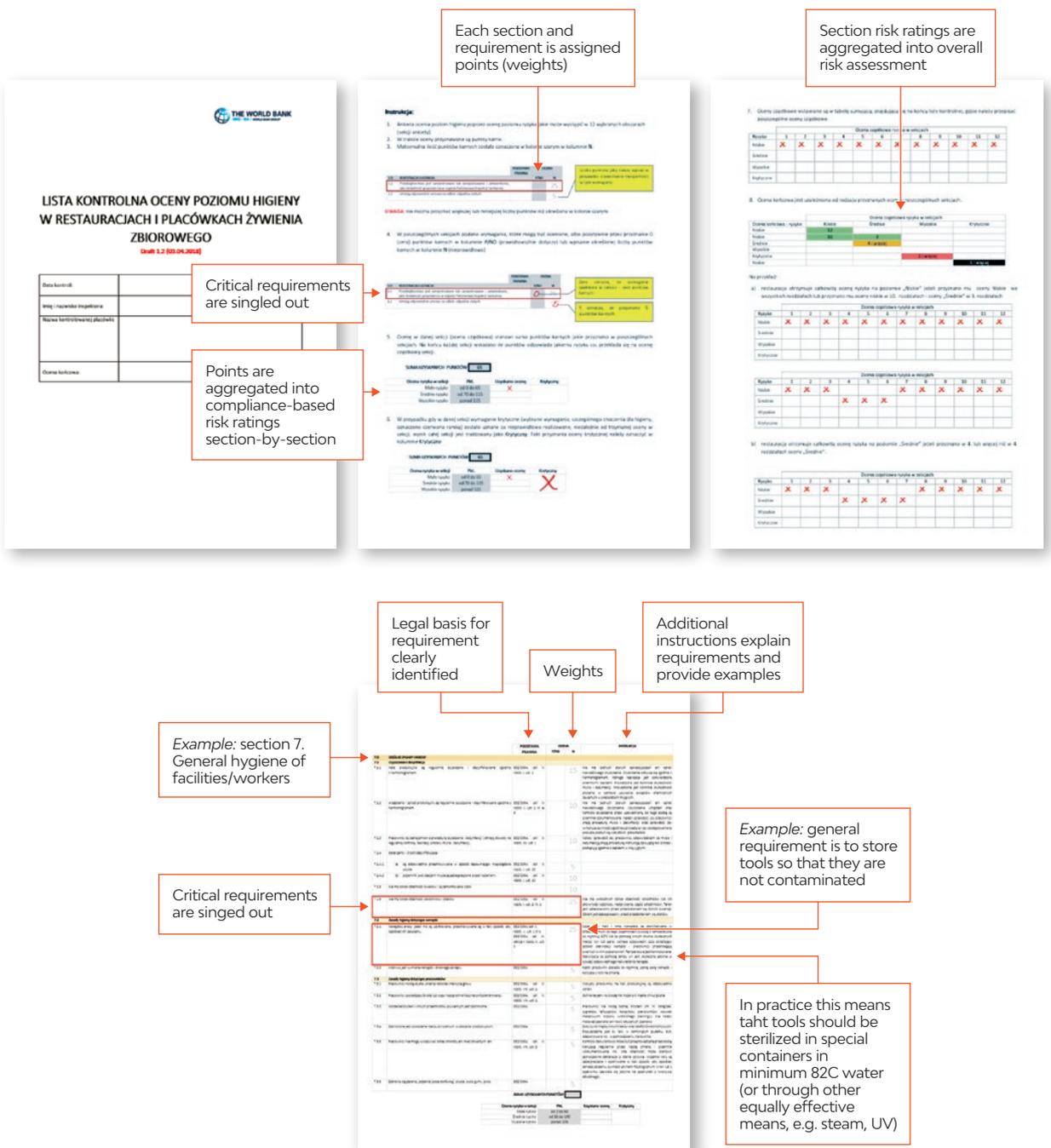
## WHAT?

**For the first time in Poland, a systematic assessment of inspection practices was conducted.** Inspection reforms have been planned in the Strategy for Responsible Development, Poland's blueprint for economic reforms up to 2020. However, despite widespread complaints about onerous and overly punitive regulatory enforcement, limited evidence was available about actual inspection burdens and day-to-day practices. The Catching-up Regions Initiative provided a unique platform to explore and operationalize inspection reforms in one of the most important sectors for Poland's less developed regions.

<sup>11</sup>Based on interest from the Veterinary Inspectorate and the importance of meat processing for the regional economy, the implementation phase also included.

**New checklists for inspections of slaughterhouses and caterers were developed and tested.** The WB drafted checklists together with representatives from central, regional, and district offices of the Veterinary Inspectorate and the State Sanitary Inspectorate, and in consultation with businesses. The checklists are based on international best practices but tailored to local needs. They allow to harmonize inspections and remind inspectors about what needs to be checked. The checklists make inspections also more transparent as they include practical guidance for firms on food safety and food quality requirements. Figure 2.3 presents the highlights of the model checklists. They were distributed by regional authorities to encourage voluntary compliance through self-checks.

**FIGURE 2.3.**  
Main features of new inspection checklists



## LESSONS LEARNED

**Business environment reforms in less developed regions should entail both economy-wide and sector-specific reforms.** The WB's 2015 *Doing Business in Poland*<sup>12</sup> study found that the business environment in Podkarpackie and Lubelskie lags behind other regions in Poland. These gaps affect firms across sectors and efforts have been undertaken to address them.<sup>13</sup> However, there are also industry-specific business challenges in sectors of importance to the economies of less developed regions, such as food in Podkarpackie and Lubelskie.

**Regionally focused business environment reforms require coordinated action at central, regional, and local levels.** Lowering burdens on firms in less developed regions is a multi-level governance challenge. Food regulations and other horizontal provisions are set at the international and national level. ICT systems are also designed and implemented centrally. However, food inspections are carried out by regional and district inspectors who report simultaneously to regional governors (voivodes) and head inspectors in Warsaw. While it is possible to design and pilot new approaches to inspections at the regional or district level, these pilots need to be complemented with action and support at central level.

**New inspection checklists are ready for use by food control authorities in southeastern Poland and the rest of the country.** The checklists for slaughterhouses and caterers, developed as part of the Catching-up Regions Initiative, can be adopted nationwide by the State Sanitary Inspectorate and the Veterinary Inspectorate. In addition, these checklists demonstrate that international best practices in the field of regulatory enforcement are adaptable to circumstances in Poland and its less developed regions. The State Sanitary Inspectorate, the Veterinary Inspectorate, and other food control authorities in Poland should build on the experiences acquired in Podkarpackie and Lubelskie to design, implement, and publish practical checklists covering other sectors.

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<sup>12</sup> World Bank. 2015. *Doing Business in Poland 2015*. Washington, DC: World Bank. <http://www.doingbusiness.org/-/media/WBG/DoingBusiness/Documents/Subnational-Reports/DB15-Poland.pdf>

<sup>13</sup> See World Bank. 2017. *Poland Catching-up Regions: Overview Report*. Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/693011496056300360/Poland-catching-up-regions-overview-report>. Drozd, Maciej Adam; Sacha, Wojciech Tomasz; Kałużny, Tomasz. 2017. *Poland Catching-up Regions: recommendations for easier business registration*. Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/781281496227137184/Poland-catching-up-regions-recommendations-for-easier-business-registration>.

ACTIVITY 3

**PODKARPACKIE  
AND ŚWIĘTOKRZYSKIE:  
IMPROVED SPATIAL  
PLANNING**

## WHY?

**Poland has excelled in many fields, however, spatial planning is an area where Poland still has space for improvement.** Only around 30 percent of Poland is covered by spatial plans, which means that individual administrative decisions, the so called “building conditions” (Polish: decyzja o warunkach zabudowy) need to be issued for every new development in an area without a spatial plan. These building conditions are issued in an ad-hoc manner, requiring a significant bureaucratic effort, with a significant public cost in resources and time wasted. Moreover, development by individual building conditions leads to unsustainable patterns, rendering useless the planning documents that are in place, such as the studiums, which are studies on directions and conditions for spatial development. The Figure 3.1, with the map of the developed land plots in the Rzeszów Functional Urban Area (FUA), highlights the shortcomings of the Polish spatial planning system.

Some of the negative effects of inefficient spatial planning in the Rzeszów FUA include:

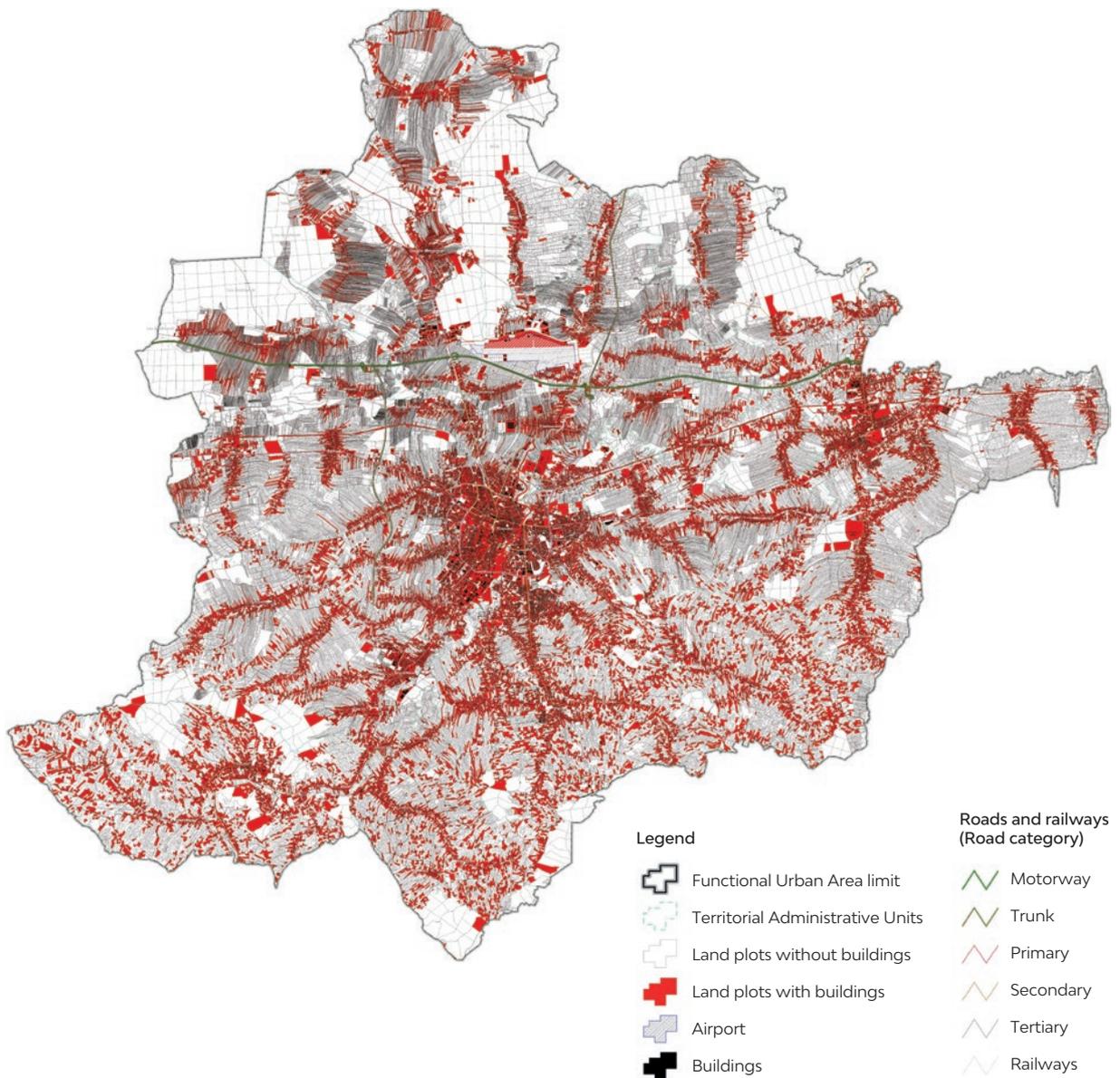
1. **Around 56,000 people commute to Rzeszów every day, primarily from suburban and peri-urban areas.** On average, they travel 31 kilometers roundtrip, use 112,000 liters of gasoline, and generate 248 tons of CO<sub>2</sub>. If Rzeszów FUA had developed a more compact urban area, many of these negative externalities could have been avoided.
2. **In 2016, 907 building permits were issued by the City of Rzeszow, and the average time to issue such a building condition was 148 days.** Overall, these building conditions consumed total around 135,000 days or 367 years) on a bureaucratic process that could have been significantly shortened if proper spatial plans had been in place. The average yearly salary in Poland was around EUR 5,500 in 2016. This means that approximately EUR 2 million are spent to issue building conditions annually in Rzeszow alone.
3. **Suburban sprawl around Rzeszow has led to the uncontrolled development of individual housing estates along the existent road infrastructure.** Overall, these new, and older housing developments stretch along approximately 500 kilometers of road. Servicing these individual homes with water, street lighting, gas, electricity, and public transportation, is costlier compared to the more compact development pattern in the urban core of Rzeszow.

## HOW?

To identify appropriate solutions to address spatial planning challenges in Poland, a three-pronged approach was taken, focused on the following activities:

1. **Planning for Functional Urban Areas.** Large and dynamic urban areas most need and benefit from sound spatial planning tools. As the hub of new housing developments and investments, they also require

**FIGURE 3.1.**  
Developed land plots in the Rzeszów Functional Urban Area



new public infrastructure. Consequently, the project focused on the Rzeszów FUA (Podkarpackie region), with the hope that the outcome of the project will be useful to other functional urban areas in Poland, and beyond.

2. **Planning for a small locality.** Though a majority of localities in Poland are relatively small, with modest planning challenges, spatial planning is useful and relevant to all of them. The work in the Staszow Municipality (Świętokrzyskie region) shows how spatial planning can help address distinct development challenges of smaller localities – such as converting a former mine into a new industrial park, as is happening in Staszow.
3. **Easing the issuance of construction permits.** This work builds on the Poland Sub-national Doing Business report, and the implementation of the Sub-national Doing Business recommendations in Kielce, stemming from the first phase of the Poland Catching-up Regions program. The focus was to implement proposed improvements to ease the issuance of building conditions and construction permits.

## WHAT?

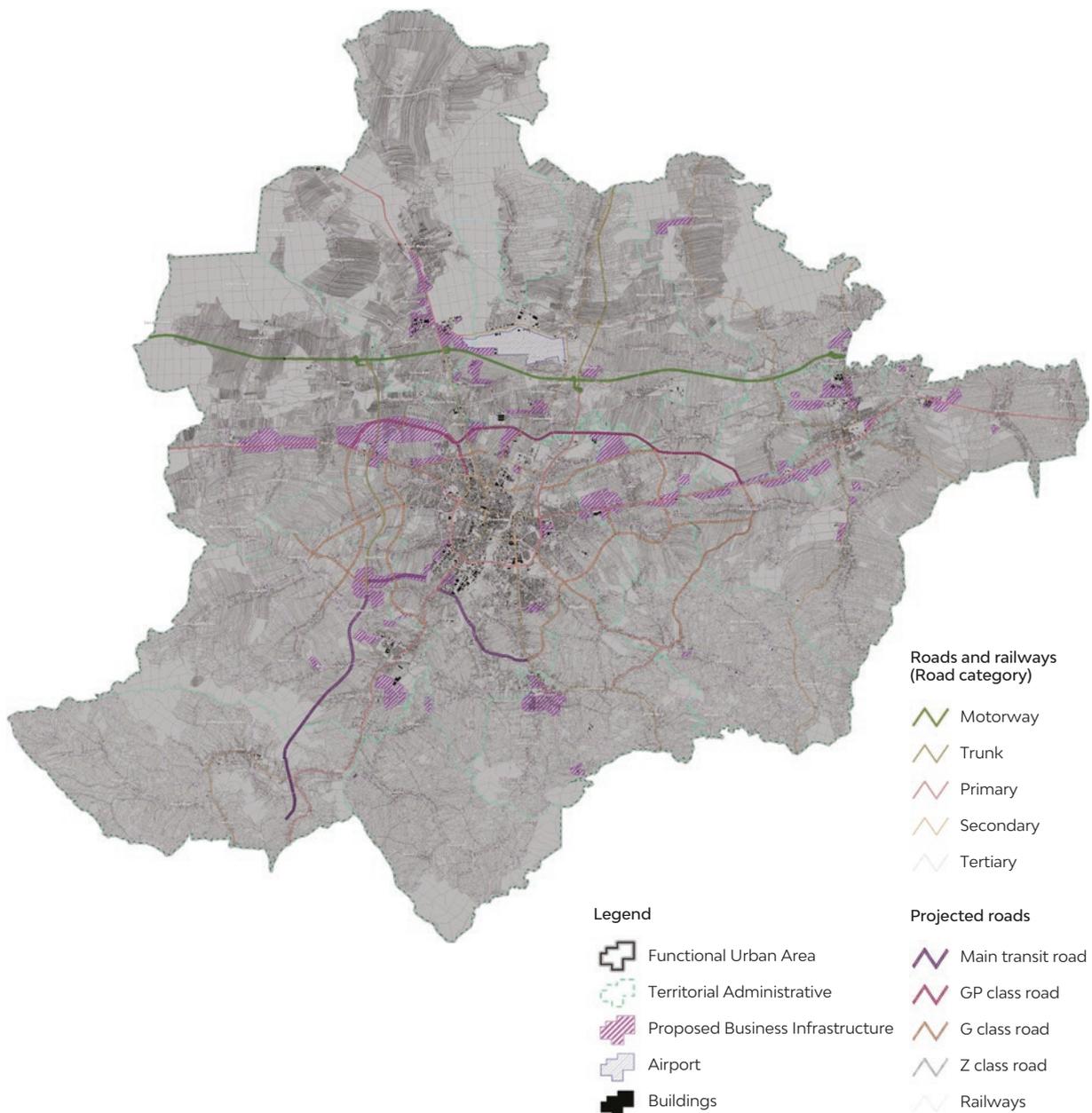
The key results achieved for the three activities include:

### 1. Planning for Functional Urban Areas

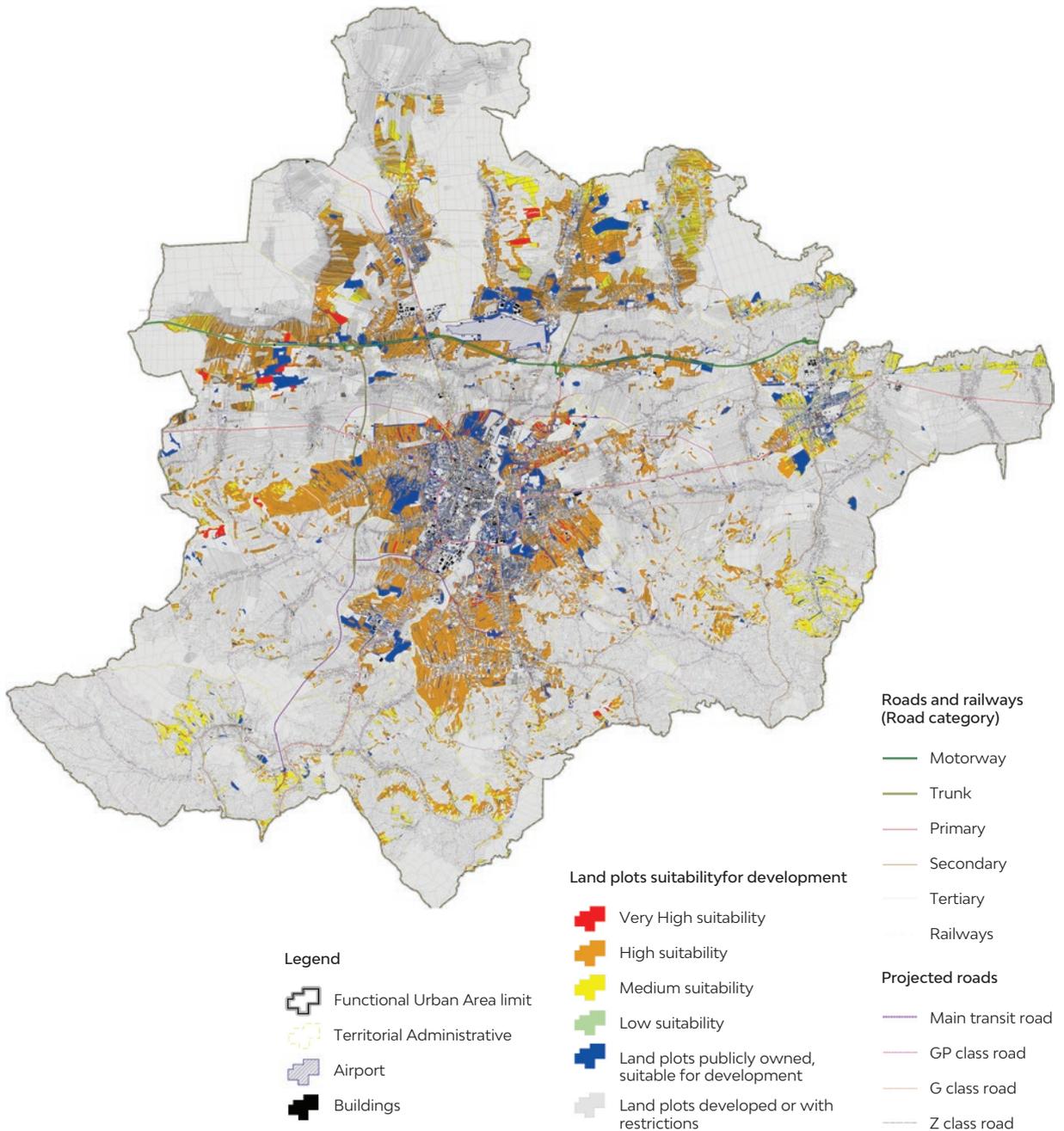
- 1.1. **Spatial Instruments for Spatial Planning Activities.** The World Bank (WB) team assembled a vast Geographic Information System (GIS) database, which can serve as a foundation for more in-depth planning activities. Two of the most important maps are Figure 3.2 and Figure 3.3. They show the proposed major interventions in the Rzeszów FUA (primarily connective infrastructure and business infrastructure) and a suitability analysis for the land plots that can be easily developed (i.e. land plots that are not part of areas that are protected or with development restrictions).

**FIGURE 3.2.**

The transport and business infrastructure proposed for the Rzeszów FUA



**FIGURE 3.3.**  
The areas in the Rzeszów FUA most suitable for development



1.2. **Terms of Reference for Spatial Planning Interventions.** Three draft terms of reference were prepared to help stakeholders in the Rzeszów FUA undertake better spatial planning work. These include: 1) Terms of reference for the elaboration of a masterplan for the Rzeszów FUA; 2) Terms of reference for the update of “studiums” for the 13 municipalities that are part of the Rzeszów FUA; 3) Terms of reference for the elaboration of spatial plans for the 13 municipalities that are part of the Rzeszów FUA.

1.3. **Financing Application for Spatial Planning Activities in the Rzeszów FUA.** The Podkarpackie Marshal Office applied to the Operational Programme Knowledge Education Growth 2014-2020, to provide around PLN 55 million for spatial planning activities in the Rzeszów FUA.

## 2. Planning for a Small Locality

- 2.1. **Suggestions to Improve the “Studium”.** The team provided a series of comments and advice on the “studium” that was under elaboration during project implementation. The WB team recommended the use of “active” zoning codes, which identify the areas that will be converted or urbanized (the areas where spatial planning tools are most needed).
- 2.2. **Terms of Reference.** Terms of reference for the elaboration of a spatial plan for the Staszów municipality.

## 3. Easing the issuance of construction permits

- 3.1. **Checklist to Improve the Issuance of Building Conditions.** A checklist was prepared to help the Municipality of Kielce issue building conditions in an accelerated fashion.
- 3.2. **Checklist to Improve the Issuance of Construction Permits.** A checklist was prepared to help the Municipality of Kielce issue construction permits in an accelerated fashion.
- 3.3. **IT Interface for Construction Permits Management.** The WB team proposed the elaboration of an IT interface for the management of the process to issue building conditions and construction permits.

# LESSONS LEARNED

Some of the key takeaways of this exercise include:

- **In spatial planning 20% is a plan and 80% is planning.** Poland has an abundance of data and high administrative capacity, which would make spatial planning relatively easy, but it has to continue to work on planning tools, such as coordination with a multitude of stakeholders, comprehensive public consultations, and cross-jurisdictional agreements. The work in the Rzeszow FUA indicates that all the necessary ingredients for efficient spatial planning are there – one only needs the right recipe.
- **The spatial planning legislation has a major flaw:** the elaboration of “studiums” (which are non-normative) are obligatory, but the elaboration of spatial plans (which are normative) are optional. Thus, in practice, it is the worst of both worlds – “studiums” that are not followed, and spatial plans that are done in a piecemeal fashion.
- **The option for land owners to sue a municipality when spatial plans restrict the use of their land (e.g. through zoning regulations or urbanism regulations), leads to the slow adoption of spatial plans.** But, there are examples of localities that have elaborated spatial plans for their entire territory. To enable more efficient spatial planning tools, the legislations needs to differentiate between the right to property and the right to develop one’s property.
- **Significant improvements are possible in administrative processes, such as the issuance of construction permits,** if the focus is on concrete administrative steps and feasible solutions are proposed to improve the process. The experience in Kielce indicated that important results can be achieved with relatively little effort.

ACTIVITY 4

**PODKARPACIE:  
PODKARPACIE CENTER  
FOR INNOVATION**

## WHY?

**This overview summarizes the activities, achievements and lessons learned from the World Bank (WB) project to design and support the establishment of the Podkarpackie Center for Innovation (PCI) as a regional innovation and entrepreneurship support institution.** As a part of the Catching-up Regions initiative of the European Commission, this project targeted lagging Polish regions to help accelerate their economic development. The project partners, the European Commission (EC), the Podkarpackie Marshal Office (MO), the Ministry of Economic Development (MoED) and the World Bank, identified the low level of intensity of business–university collaboration and specifically research commercialization as priority problem to be addressed by the initiative. The project team designed and implemented a single regional innovation and entrepreneurship support institution, the PCI, to tackle this key challenge. The main goal of this summary is to present the activities, outcomes and lessons learned from designing and implementing the PCI through the joint efforts of key local stakeholders: MO, universities, local enterprises and clusters, and intermediaries.

**The Podkarpackie region is performing comparatively well on key innovation inputs indicators.** R&D expenditures per capita were on a par with the national level in 2016 (EUR 84), and more than four times higher than in 2007 (EUR 20). On this measure the region ranks sixth among the 16 Polish regions. In terms of private R&D expenses, the Podkarpackie regions ranks fourth. Despite negative national trends, the number of students (and in particular, students of technical universities) in Podkarpackie grew significantly over the last years, making Rzeszów the top European city in terms of the number of students per 1000 inhabitants (almost 50 thousand students in a city of nearly 190 thousand citizens).

**The intensity of business industry collaborations and research commercialization has been gradually increasing but still fall short of realizing the region's potentials.** The technology transfer agenda has been identified as a key weakness within the regional innovation ecosystem. Under this project, five specific opportunities for accelerating technology transfer were identified:

- the rate of creation of technology and university based start-ups is below the region's potential and could be improved;
- the levels of licensing revenues generated by the region's universities could be improved;
- the level of utilization of the local universities R&D equipment for commercial purposes is low and could be increased;
- the involvement of the local corporations in the joint university-business collaboration falls short of its potential;
- local student successes in national and international level competitions could be more systematically translated into local entrepreneurial success.

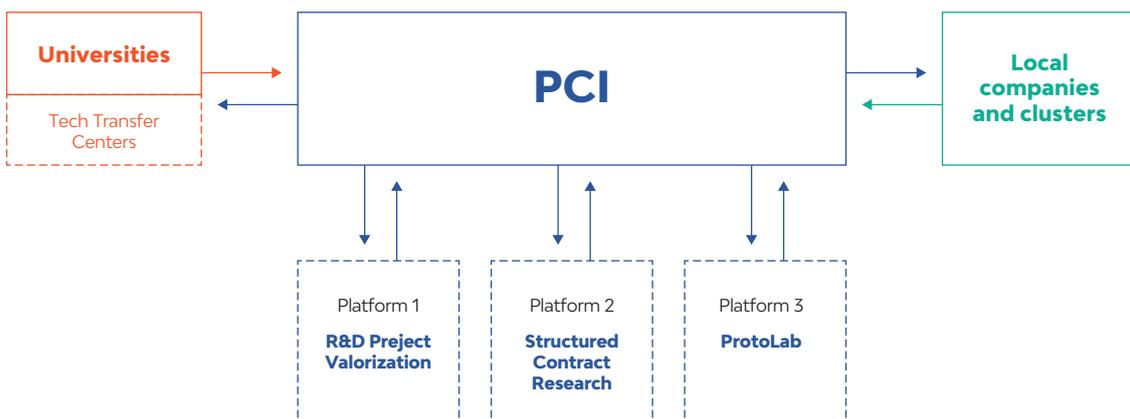
**The root causes behind the unexploited potential of the Podkarpackie innovation system lie first in the limited local competencies, technical, and financial resources needed to deliver technology transfer results, and in the still nascent entrepreneurial ecosystem.** While the local universities have begun efforts to strengthen their commercialization capacity, few success stories have been achieved to demonstrate results. Universities and technology transfer offices still lack the concentrated critical mass of skills and resources necessary for successful commercialization of university-based R&D activities through licensing and spin outs. This stems in part from their overall shortage of such specialized skills in Podkarpackie and partly from the dispersion of these skills across multiple actors in the regional innovation ecosystem (such as universities, regional development agencies, technology parks, clusters, incubators, accelerators, etc.).

## HOW?

**The project was delivered in two phases between May 2016 and May 2018.** In Phase 1 (May 2016 through May 2017), the WB team conducted a diagnosis of the local Research and Development and Innovation (R&D&I) ecosystem and facilitated the design of the PCI in collaboration with the main stakeholders, primarily the Podkarpackie MO, the three Rzeszów universities (Rzeszów University of Technology, University of Rzeszów and University of Information Technology and Management), local businesses and clusters. Phase 1 was concluded with a summary report: “Designing the Regional Technology Transfer Office: Podkarpackie Center for Innovation”. Phase 2, (June 2017 - May 2018), focused on implementing the design and building local competencies. Implementation activities included launching PCI as a publicly owned company, structuring its corporate bylaws, securing the PCI operational funding, selecting the best available PCI management team, and identifying possible facilities to house it. Competence-building activities focused on developing the skills necessary to effectively monitor model, and target the PCI mission and operations.

**The PCI, as a regional innovation support agency, encompasses three interconnected “platforms” for supporting: R&D valorization, structured contract research, and prototyping and entrepreneurial activities (see Figure 4.1).** Phase 1 of the project defined the objectives, targets, and scope of each platform, outlined key success factors and requirements, and assessed financial requirements for each of the platforms. The valorization platform aims at selecting and preparing promising university R&D projects for future commercialization through licensing and start-ups by increasing their technology readiness levels (TRL) to the point where they can attract commercial interest. The structured contract research platform establishes a mechanism for supporting and marketing contract research collaboration between university research labs and private firms. Finally, the ProtoLab is a prototyping facility with entrepreneurship support program, which aims at stimulating local students’ entrepreneurial endeavours, improve the investment readiness of their projects, and allows them to experiment and build prototypes for their business ideas. The three platforms will be housed under the PCI organizational “roof” and leverage a complementary set of skills and resources.

**FIGURE 4.1.**  
The transport and business infrastructure proposed for the Rzeszów FUA



**PCI represents a novel approach to assisting regional universities in realizing their “third mission” through leveraging their economic contributions and transferring their knowledge and technologies to local private sector and entrepreneurs.** PCI’s philosophy is based on pooling key resources and competencies at the regional level, and supporting individual universities and their technology transfer centers (TTCs) with additional resources and skills in order to raise the level of technology licensing from universities and public research institutions, contract research with private sector enterprises and technology and innovative start-up formation.

## WHAT?

**In Phase 2 of the project, the WB team assisted the MO and the universities in implementing the concepts proposed in Phase 1.** In December 2017, the MO established the PCI as a limited liability company, 100 percent publicly owned and obtained its operational funding from the Regional Operational Program (ROP) with the help of the European Commission. The WB team helped develop a formula for selecting the PCI management team (MT) and further designed detailed selection criteria and other materials enabling the supervisory board of PCI to select the best candidates. The selection process was preceded by intensive consultations and informational meetings (a “road-show”) with potential candidates. The MO, through the temporary management of the PCI, launched a call for proposals for management teams in early May 2018. The final selection of the MT is scheduled for June 2018, coinciding with the conclusion of the WB project. Several competence-building events and activities were also undertaken during Phase 2. This included workshops on developing methodologies for monitoring use of research equipment at universities (in accordance with State Aid provisions) and on best practices in managing, monitoring, and implementing innovation and technology transfer programs.

**Implementing the project has resulted in a number of achievement and outcomes.** In particular, it has identified a critical mass of technology projects for the 3 Platforms, promoted the potential of the universities’ “Third Mission” and gained a better understanding of how they can implement activities in-line with Polish State Aid law and EU Good Practice. As result of the various project activities, there is an increased awareness of the role that universities can play in regional economic development and a strong signal that the region is committed to economic development through technology transfer and innovative business. Finally, the PCI now has a functioning legal structure and procedures that have enabled it to identify and secure project funding from the Regional Operational Program and allowed it to recruit the needed talent.

## LESSONS LEARNED

**The lengthy process of designing and establishing the PCI over the 2016-2018 period produced several key lessons and practices that could guide similar regional initiatives in Poland and elsewhere.** Given the novelty of the concept and the design, the initiative had to overcome several legal, structural, and operational barriers some of which are bureaucratic while others relate to garnering ownership and support from local stakeholders. The accompanying report details some of these barriers and includes materials and appendices that highlight some the practices, tactics, and risks mitigation measures adopted. In particular, the project design process could have been better anchored through (i) a more focused stakeholder engagement strategy, especially with local universities and TTC; (ii) more rigorous analytical research into local firm-level innovation potentials and constraints; (iii) and an upfront investment in the development of the pilot platforms’ operational manuals and monitoring and evaluation frameworks. While some of the critical issues could have been better embedded in the design process, other legal and competence-related barriers were unavoidable and are indeed time consuming.

**A critical factor enabling the ultimate success of the project was the commitment of the MO and its key personnel to overcoming obstacles and making the establishment of the PCI a reality.** As a result, solid foundations for the future success of PCI have already been put in place by the interim management team staffed by the

MO. In addition, the role of the Podkarpackie universities as key stakeholders has been critical in supporting the PCI concept as a complementary institution and in actively participating in its implementation and operations.

**Moving forward, the impact of the PCI and its programs on the Podkarpackie region innovation ecosystem will be determined by a set of internal and external factors.** International experiences and case studies on innovation agencies from different developed and developing economies could provide useful insights and lessons learnt on how to maximize impact of national and regional innovation and entrepreneurship support programs<sup>14</sup>. Based on these experiences, the incoming PCI management team and the leadership from the MO, universities, and private sector representatives should ensure that the following guiding principles are upheld:

- The need for **long-term commitment from the local authorities** is critical to ensure the future of the PCI and protect it from political interference. Given that innovation at its core involves an element of risk and uncertainty, the political and budgetary commitments must be ring-fenced.
- **Securing diverse funding sources and leveraging private sector funds** can help the PCI stay in business in the face of political uncertainties. Building a reputation for excellence and cultivating diverse public and private funding sources can serve to protect the PCI against changing budget allocation on the long term.
- **Retaining capable staff and building competencies** is key for building institutional capabilities for the design and implementation of innovation support programs. Moving toward private sector hiring practices with flexibility to attract staff with relevant industry-facing skills can help build the PCI competence. Still, the PCI can bring in external experts on a need basis through short-term assignments or international partnerships, while building internal capabilities.
- **Effective governance and management structures** will ensure objective application of criteria and prudent use of resources that establish the credibility and reputation of the PCI as a modern and private sector oriented institution.
- As interventions and support programs are often imperfect and require constant improvement to respond to the needs of the evolving local ecosystem, an **adaptive mission** will allow the PCI to stay relevant and effective. By adopting a **diagnostic-based intervention** approach, the PCI will be able to sharpen its own knowledge of the innovation constraints of the private sector, needs of the entrepreneurs, and competence of the universities to tailor appropriate interventions that could increase private investment and innovation. Consequently, PCI platforms and programs might need to be retargeted, adjusted or added.
- **Incorporating monitoring and evaluation** across platforms and at the institutional level can make the PCI more effective and targeted, saving valuable budget resources from waste by focusing on programs that work and adjusting or discontinuing those that do not.
- **Through building local, national, and international partnerships**, the PCI can connect to resources beyond its internal capacity. Strategic partnerships can provide access to knowledge and skills and enable the delivery of high-quality services. Leveraging national and European programs for the benefit of local stakeholders is key for the PCI effectiveness and sustainability.

**The PCI could serve as model institution and inspire other Polish regions to introduce pilot programs that support the development their respective regional innovation ecosystems.** Several other regions have already expressed interest in designing and introducing pilots to support technology transfer, innovation adoption, and entrepreneurship and requested financial and technical support from the European Commission and the World Bank Group. It is important to highlight that the approach adopted in Podkarpackie does not necessarily apply in other regions as the local constraints, priorities, and competence levels of key actors differ despite

<sup>14</sup> For innovation agencies case studies from developed ecosystems see: NESTA, 2016. "How innovation agencies work?" available here: <http://www.nesta.org.uk/publications/how-innovation-agencies-work>  
For case studies from emerging ecosystems see: Aridi, A. & Kapil, N., 2018. "Innovation Agencies: Lessons from emerging ecosystems". World Bank, forthcoming 2018.

commonalities in the overall challenges. Hence, the *diagnostic-based intervention approach* stated above serves as a key guiding principle for anchoring any suggested program design. Rigorously defining and prioritizing the key problems precedes the program selection and design. Additionally, building the capacity of the key local stakeholders, especially the MOs and universities, on issues pertaining to technology transfer, innovation, and entrepreneurship appears to be a common thread overshadowing the heterogeneity of local challenges across regions.

