

CASE STUDY

PARANÁ (BR) – SILESIA (PL)

IURC - LA



JUNE 2023

Thematic Networks: Innovative, Sustainable & Carbon Neutral Ecosystems & Strategic Sectors, Digital Transition and Smart Region

Thematic Cluster: Smart Specialization Strategies for Sustainable Regional Development (RIS4)

Cross-cutting challenge: Climate Change & Energy Transition

Topic keywords: Energy Transition, Climate Adaptation, Circular Economy

SILESIA – PARANÁ

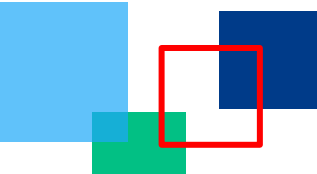
IURC – CASE STUDY

Parana's agricultural industry is facing rising costs of fertilizers. Silesia's Central Mining Institute (GIG) and Parana's water and sanitation company (SANEPAR) are looking to test GIG's technology to transform sludge into fertilizers, thus reducing production costs for Parana's agricultural sector. Furthermore, the regions signed on April 17th, 2023, a new Cooperation Agreement, renewing their long-term commitment to implement projects in areas of regional specialization and economic development through multistakeholder collaboration.

EXECUTIVE SUMMARY

The Silesian Voivodeship is a region located in the southern part of Poland. It is characterized by a favourable geographic location, strong infrastructure, and connectivity to the rest of the country and some of Europe's biggest cities. It is the most urbanized area in Poland covering 3.9% of the country's area. The region is heavily industrialized and thus is the second largest economy in terms of creating Gross Value Added. The region also has a strong tradition of coal mining and thus, it possesses a large concentration of companies and institutions with extensive experience and projects aimed at modernizing work in mines and revitalizing post-mining areas.

Parana has a large territory with agrobusiness as main sector, although the automotive industry, technology, IT, and services have increased their economic importance every year. The work via associations is a regional strength which is materialized in Cooperatives, mostly representing the agroindustry and food sectors. These sectors account for most of regional exports. Nonetheless, the state also has a wide range of industries distributed around its vast territory, producing consumer goods like taps, caps, clothes, cassava's products and increasingly more services in the information and technology sectors (second largest Brazilian exporter).



MAIN CHALLENGE AND SOLUTION

The rising prices of fertilizers and transportation costs due to the war in Ukraine and inflation are increasing production costs and reducing profits for Brazilian agricultural producers. In Paraná, it is estimated that the price of fertilizers used in farms has **gone up 33%** between October 2021 and June 2022. Given the importance of the agricultural sector in Parana, the State is looking at ways of increasing the production of fertilizers locally while reducing transportation costs.

Silesia's Główny Instytut Górnictwa (GIG) or Central Mining Institute, is a research institute established in 1925. GIG possess extensive experience in environmental assessment, water management, land revitalization, air protection and eco-innovative solutions. The institute have developed a cost-effective **technology** to produce organic fertilizers from sewage sludge. Their fertilizer shows an increased biomass of 60% when compared to other control samples.



Fertilizers produced at GIG. Source: GIG.



Delegations of Silesia and Parana at GIG facilities in June 2022.

The technology received the attention of **SANEPAR**, Parana's water and waste management company, which already possess experience in thermal treatment of sludge for agricultural purposes. SANEPAR is interested in GIG's technology to produce biofertilizers and improving the production of sugar cane by **reducing production costs and the carbon footprint** of current technologies. The first approach between the companies took place during the study visit of a delegation from Silesia to Curitiba, Paraná in March 2022 as part of IURC Latin America activities. Both entities also held a technical session on May 2022, presenting their

experience on re-using sludge for commercial purposes. Furthermore, a delegation of Paraná had the opportunity to visit GIG's facilities in Katowice in June 2022.

"Innovation for sustainability and value generation for society based on water initiatives are the baselines of Sanepar's partnerships with EU institutions. We collaborate with GIG to transform sewage through advanced methods for sludge nutrient valuation, promoting both low-carbon technologies and circular economy strategies."

- Gustavo Possetti, R&I Manager of Sanepar

RESULTS AND IMPACT

As a result of the mutual interest, SANEPAR and GIG signed a Memo of Understanding on September 29th, 2022. SANEPAR wishes to test GIG's technology to prove if it can be scaled up to all its facilities.

“The common project will deliver both an evidence-based product and research results with long-term impacts on R&D and business activities between Poland and Brazil. IURC allowed to merge competences of a polish science institute and a brazilian water company to tackle an important issue, relevant for both sides.”.

- **Marcin Głodniok**, Head of Laboratory - GIG

For this purpose, both regions prepared and submitted, with GIG as leading partner, a joint application to [INNOGLOBO](#) at the end of 2022, with the goal of financing the implementation of a pilot to test and adapt GIG technology to the local context in Parana. INNOGLOBO is a polish programme aimed at providing funding to Polish entities wishing to establish industrial research and development cooperation with foreign partners. Once they secure funding, both regions wish to embark in the process of technology transfer and testing. And if SANEPAR scales up GIG's technology, not only is expected to generate revenue for GIG but also reduce the costs of fertilizers for Parana's agricultural producers.

KEY FIGURES

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Agreement signed

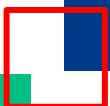
up to 1%

of total reduction of fertilizers used in Parana State

70%

reduction in carbon emissions por ton.

The technology also aims to achieve biomass production efficiency at least 20% higher than the control trial, increase the natural recycling of sewage sludge and enable the recovery and return to nature of phosphorus in the form of P2O5. Besides the environmental and production benefits, the project will also foster scientific cooperation and academic advancements between the regions. Thus, the project will promote the use of intellectual property and commercialization of GIG's technology, the scientific development of GIG team members, dissemination of common research and publications by both partners.



Signature of new agreement between Silesia and Parana on April 17th, 2023. Source: Parana State Government.



Besides the pilot, both regions are expected to continue their strong collaboration. On **April 17th, 2023** they signed an important cooperation agreement aimed at implementing joint projects in areas of regional specialisation and sustainable economic development. In this regard, following the signing of the agreement, a business forum was held on April 19th to identify commercial opportunities for both regions in the automotive, aeronautics, technology, metallurgy, and health sectors. In addition, with the support of the General Superintendence of Economic and Social

Development (SGDES), an agreement was signed at the end of March between Invest Paraná and the Katowice Special Economic Zone - KSSE, promoting the exchange of knowledge and technology between the partners.

"Paraná has a significant Polish community and is an important regional partner because of its geographical location, strong economy, advanced technologies and human capital, but especially because of the huge amount of green and self-sustainable energy it produces, which is of utmost importance in these times of energy crisis"

- Ms. Anna Jedynek, Vice-governor of Silesia.

Silesia's Vice Marshall, Anna Jedynek and Parana's Vice Governor, Darci Piana during signature of new agreement. Source: Parana State Government.



LESSONS LEARNED

Scaling up technologies require testing and financing. The collaboration between the public sector, research institutions and the private sector is important for testing new technologies while external financing reduces the risk of experimenting.

A new technology like GIG requires to be tested not only in terms of its efficiency when compared to similar products but also financially. Even the best technology requires to be commercially viable for scaling up.

Removing the label of waste and achieving a national certification was key to introduce the GIG fertilizer to the market as a new product.

The strong collaboration between Parana and Silesia highlights the importance of matching knowledge with mutual economic benefits. The potential gains have strengthened the commitment between the regions.

THE IURC PROGRAMME

The International Urban and Regional Cooperation (IURC) programme enables cities in different global regions to link up and share solutions to common problems. It is part of a long-term strategy by the European Union to foster sustainable urban development in cooperation with the public and private sectors, as well as representatives of research and innovation, community groups and citizens. Through engaging in IURC, cities will have the chance to share and exchange knowledge with their international counterparts, building a greener, more prosperous future.

The IURC programme is an opportunity for local governments to learn from each other, set ambitious targets, forge lasting partnerships, test new solutions, and boost their city's international profile. Its activities will support the achievement of policy objectives as well as major international agreements on urban development and climate change, such as the EU Urban Agenda, the UN Sustainable Development Goals, and the Paris Agreement.

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Links to related outputs:

Signature of agreement: <https://www.iurc.eu/es/2023/04/19/delegacion-de-silesia-firma-un-importante-acuerdo-con-parana/>

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