

## **Summary of the report: Assessment of intelligent specialisation impact on Małopolska economy development – 2020 edition.**

Report elaborated in 2020 and contracted by Department of Proprietor Supervision and Economy, Małopolskie Voivodship Marshal Office. Report was elaborated by LB&E's research team.

### OBJECTIVE OF THE STUDY

Confirmation, whether - and if so to what extent - the Małopolska voivodship smart specialisation policy, through the development of smart specialisations, has contributed to the region's economic development.

### METHODOLOGY

The analysis was based on econometric modelling utilising:

- data from public statistics,
- international publications database Scopus,
- data on grants awarded by the National Science Centre (NSC) under the OPUS call for proposals,
- data on the value of Małopolska voivodship Regional Operational Programme and Smart Growth Operational Programme projects.

Following analytical methods were used:

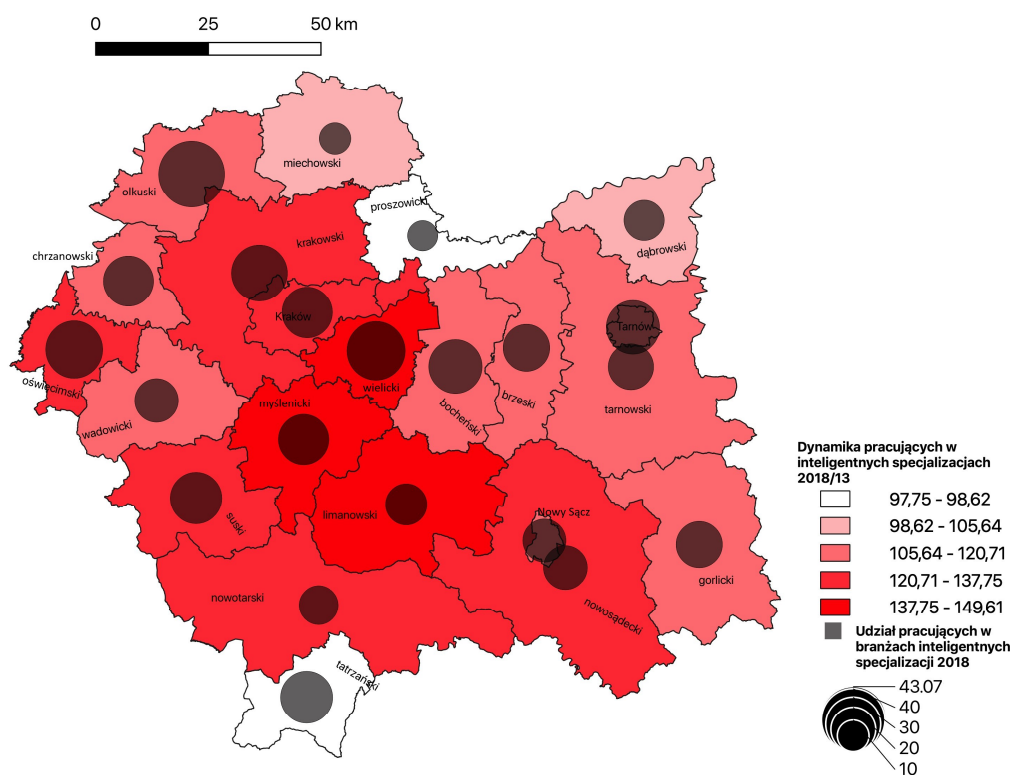
- regression analysis,
- location quotients,
- panel models (including spatial models),
- fixed effects and random effects models.

The so-called counterfactual situation has also undergone interpretation - an assessment has been made of how the development of smart specialisations would have taken place if financial resources not been disbursed under the smart specialisation support policy.

### CHARACTERISTICS OF THE POTENTIAL OF SMART SPECIALISATIONS BY NUMBERS OF EMPLOYED

- 208 thousand – this is the number of people employed in businesses employing more than 9 employees and operating in sectors considered to be included in the Małopolska voivodship smart specialisations. It constituted  $\frac{1}{4}$  of the total of people employed in the region.
- Between 2013 and 2018 the number of people employed in smart specialisation sectors grew by as much as 38.8%, compared to a growth in the same period of 15.2% in the total number of people employed in the voivodship.
- The highest share among total employed held in 2018 by smart specialisation sectors was noted in the Olkusz powiat - 43.1%, as well as in the Wieliczka, Oświęcim and Kraków powiats - from 33.6% to 31%. In nominal terms the largest number of people employed in smart specialisation sectors is noted in Kraków (almost 90 thousand).
- In most poviats the share of employed in IS rised in 2018 comparing to 2013. Also the dynamis of employed in IS was higher than subregion average.

## Picture Dynamics of employed in IS and their share in total number of employed in poviats



Source: Own elaboration in QGIS and Paint

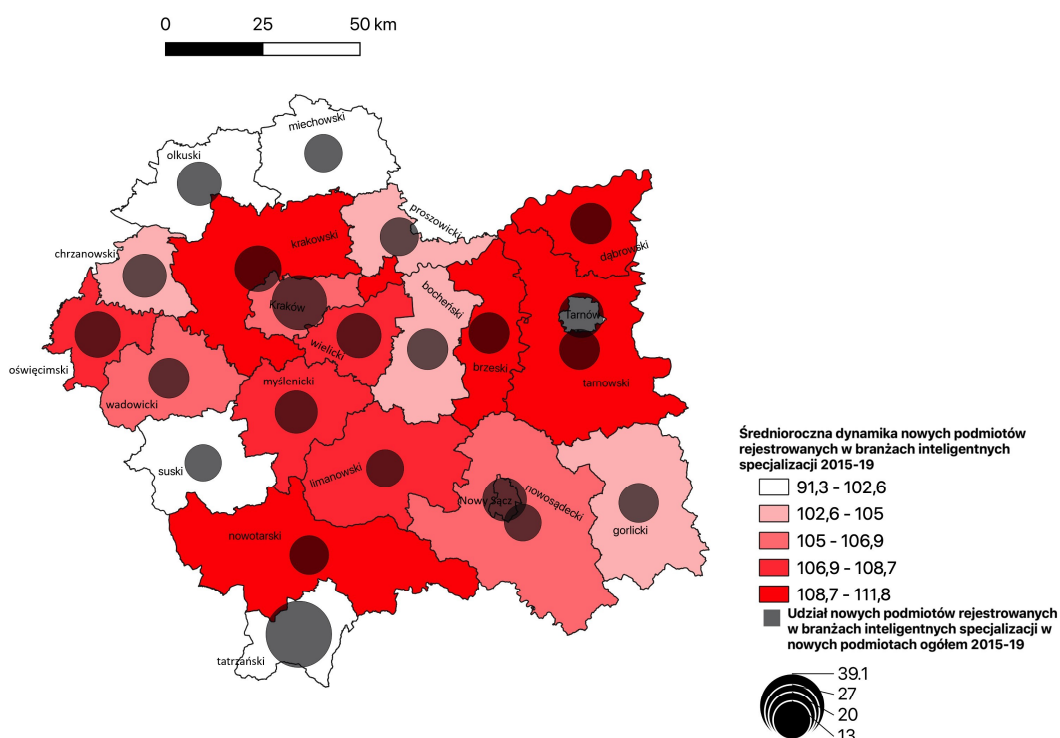
## CHARACTERISTICS OF THE POTENTIAL OF SMART SPECIALISATIONS BY NUMBERS OF NEW BUSINESS START-UPS

Data on the percentage of new business entities registered in REGON under Polish Classification of Economic Activities (PKD) categories aligned with the Regional Innovation Strategy (RIS) for the period 2013-2019 point to areas in which new business entities are mainly being established, and thus to where entrepreneurial discovery is taking place.

- In the period 2015-2019 on average every fifth registered new business entities' operating profile was aligned with the RIS. The largest share held by RIS sectors in the total number of newly established firms in the region was noted in the subregions of Kraków city (27%) and Nowy Targ (20.1%).
- In a number of subregions significant levels of sectoral concentration among newly established businesses was noted:
  - In Kraków city newly established companies were focussed around such sectors as "scientific research and development", "sustainable energy" and "information and communications technologies".
  - In the Oświęcim subregion a clear concentration of new businesses connected with the smart specialisation "chemicals" and "electrical engineering and mechanical engineering" is in evidence.

- In the Tarnów subregion new business entities were focussed around the specialisation "manufacture of basic metals and metal products and manufacture of non-metallic mineral products".
- Entrepreneurial discovery in fields connected with smart specialisations is also attested to by new business start-up growth rates. In the period 2013-2018 these were positive in all subregions and powiats (barring Tarnów city). The highest rates were noted in subregions Tarnów, Oświęcim and Kraków for the specialisation "scientific research and development".

Picture Average annual dynamics of new entities registered in IS and their share in all new entities in powiats in years 2015-2019



Source: Own elaboration in QGIS and Paint.

## RESEARCH POTENTIAL OF MAŁOPOLSKA VOIVODSHIP SMART SPECIALISATIONS - SCOPUS

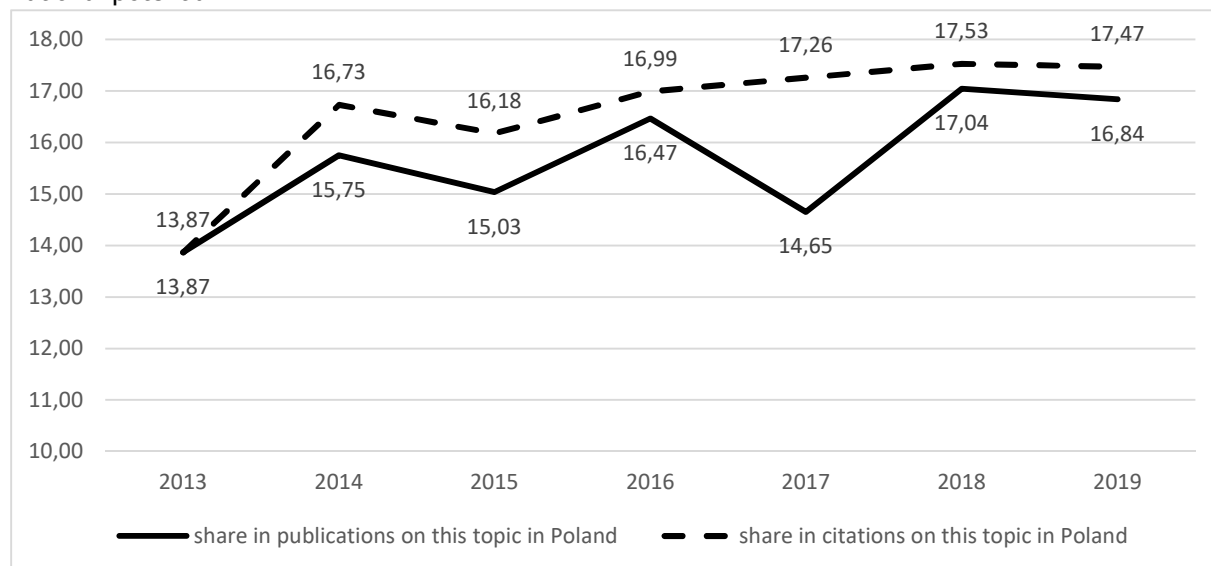
Scopus database – scientific database managed by Elsevier publishing company. It covers information about published scientific work such as articles in scientific journals, books, conference materials and patents.

For the period 2013-2019 a total of

- 2411 publications of Małopolska research institutions connected with smart specialisation fields have been indexed in Scopus for the period 2013-2019
- 95% of these publications were developed in Kraków
- 16,84% - that was the share that these publications held among the total number of Małopolska voivodship publications in Scopus in 2019 (3 percentage points increase in comparison with 2013).
- 3,6 percentage points – that was the increase in the total number of citations attained by Małopolska researchers connected with smart specialisation – comparing to 2013. At the same

time the share held by Małopolska in citations connected with smart specialisations is higher than among publications in the same fields in total for Poland, which means that they are met with a higher resonance and note than are attained on average by Polish publications in this field.

Chart Publications and citations aligned with IS – the share of Malopolska research institutions in national potential



Source: Own elaboration based on Scopus database

- 72% - this is the share of aligned with the smart specialisation "life sciences" Among the smart specialisation related publications indexed in Scopus. For Poland this share stood at 29.6%. As a result the degree of concentration for this type of publications in Małopolska voivodship is 143% higher than the average for Poland. This points to a real regional specialisation in the area of life sciences
- The regional research potential in sustainable energy is growing - the growth rate of numbers of publications in this specialisation indexed in Scopus was for 2013-2019 in Małopolska voivodship 30 percentage points higher than for the whole country
- Specialisation "chemicals" - scientific publications indexed in Scopus and originating in Malopolska in the period 2013-2019 constituted more than 47% of all publications in this thematic field from Poland.

#### RESEARCH POTENTIAL OF MAŁOPOLSKA VOIVODSHIP SMART SPECIALISATIONS - OPUS

OPUS is the NSC's largest call for proposals, under which about 60% of the NSC's allocation for basic research is awarded.

- In the period 2017-2019 from about 41% up to 52% of the total OPUS programme financing awarded to Małopolska research institutions reached projects aligned with smart specialisations.
- At the same time compared to the period 2015-2016 the share of projects aligned with smart specialisations among the total co-financed projects grew by about 34%. This confirms that the research potential of Małopolska institutions in smart specialisation fields is growing.
- During the years 2013-2019 the largest sum of financing reached project promoters planning research connected with the specialisation "life sciences". This constituted 58.8% of the total financing awarded for projects aligned with Małopolska smart specialisations.

## STRENGTHS OF INDIVIDUAL SMART SPECIALISATIONS

- It is difficult to point any clear leader or straggler among the smart specialisations, as all of them have some strengths
- Smart specialisation - chemicals and smart specialisation - energy - both stand out from among the other specialisations in terms of their research and development potential given their success rates in applying for financing under Małopolska Voivodship Regional Operational Programme
- Smart specialisation life sciences - is a national leader both with respect to international publications and new entities

## MAŁOPOLSKA VOIVODSHIP SMART SPECIALISATIONS IN THE CONTEXT OF OTHER POLISH VOIVODSHIPS

- 16,6% - that was the share of Małopolska businesses, whose operating profiles were aligned with regional specialisations, in the total number of enterprises in the voivodship in 2017,
- 4 percentage points – that value shows how this share is higher than the national average.
- Businesses considered to be operating within smart specialisations employ 22.7% of the total regional workforce.

Above mentioned information attests to the fact, that in the Małopolska voivodship it is priority sectors that have been identified as specialisations, without any unnecessary dispersion among too many fields. The region in reality specialises in those sectors, which have been identified as smart specialisations.

- Close to 50% of businesses and close to 28% of employees in regional smart specialisation sectors in Małopolska are involved in knowledge-based services, while 4.32% of businesses and 14.61% of employees in high and medium-high technology industries. All these indicators are higher than the national average, which points to the regional specialisations' modernity.
- Małopolska is ranked second in Poland, following Mazowsze voivodship, with respect to the degree of specialisation in knowledge-based service sectors when measured through numbers of employees, and ranked fourth in the country when numbers of business entities are considered.

## IMPACT OF THE REGIONAL SMART SPECIALISATION SUPPORT POLICY ON THE POTENTIAL OF THE SMART SPECIALISATIONS

One of the objectives of the analysis performed was to confirm, whether the smart specialisation support policy had impacted on the potential of the smart specialisations within the individual administrative units of the Małopolska voivodship. In the first instance the investigation looked into how the potential of the smart specialisations depended on the value of projects and of supports provided through European funds.

- A positive impact of the value of projects connected with smart specialisations, on percentage of people employed in sectors identified in Małopolska as smart specialisations, has been confirmed. On average if the value of projects supporting smart specialisations was to increase by one percent, then the percentage of people employed in smart specialisation sectors would grow by approximately 0.53 of a percentage point, under the assumption that other factors remain constant.
- A positive impact of the total value of projects, as well as of the value of EU structural funds support, on the percentage of newly established smart specialisation entities among the total number of registered new entities in individual powiats, have been confirmed. A growth in

support by one percent equates with a growth in the share held by new smart specialisation entities by one percentage point.

- A positive impact of the total value of projects supporting smart specialisations on increased percentages of people employed in smart specialisation sectors in Małopolska powiats, has been confirmed. Such a result can be seen to confirm the effectiveness of the smart specialisation support policy in Małopolska.

#### IMPACT OF SMART SPECIALISATIONS ON THE DEVELOPMENT OF THE MAŁOPOLSKA VOIVODSHIP

- In 2018 the highest GDP per capita was in city Krakow whereas the lowest in miechowski, proszowicki and dabrowski powiats.

Picture Gross domestic product per capita in Małopolska powiats in 2018



Source: Own elaboration in Statistica.

Econometric modelling was used to determine the extent to which the development of sectors identified in Małopolska voivodship as smart specialisations impacted on the levels of development of Małopolska powiats, as measured by such an indicator as gross domestic product.

- The percentage of people employed in smart specialisation sectors significantly impacted on the value of GDP per capita in the powiats. A rise in the percentage of people employed in smart specialisation sectors by one percentage point leads to an average increase in per capita GDP by 1%. It has been identified, that the higher the percentage of people employed in smart specialisation sectors in the initial year, the higher the witnessed GDP per capita growth dynamic.
- The percentage of newly established businesses in smart specialisation sectors had a positive impact on the value of the GDP per capita in Małopolska powiats. It can be stated that a percentage of newly established businesses in smart specialisation sectors which is higher by 1 percentage point leads to an increase in GDP per capita by on average 0.4%.
- A statistically substantial positive impact of co-financing provided through EU projects supporting smart specialisation sectors on GDP per capita in Małopolska powiats has been

identified. Should this support had been lacking on average the value of GDP per capita in Małopolska powiats would be lower by 0.034%. These projects also had a statistically substantial positive impact on GDP per capita growth rates.

- A growth of EU structural funds co-financing by 1% calculated per one employee contributed to GDP per capita growth by on average 0.036%. Therefore it can be stated that EU funds allocated towards smart specialisations substantially improved the value of GDP per capita in Małopolska powiats.
- A statistically substantial positive impact on GDP dynamics had the share of newly established companies in powiats in such IS as sustainable energy and machine industry.