EUROPEAN EVALUATION HELPDESK FOR RURAL DEVELOPMENT

European Commission

EXAMPLE

'USING IMAJINE OUTPUTS FOR EVALUATING LOCAL DEVELOPMENT IN SPAIN'

WP 2 'KNOWLEDGE TRANSFER'

THEMATIC WORKING GROUP NO 9

'RESEARCH PROJECTS TO SUPPORT BETTER DATA FOR EVALUATING THE CAP'

DECEMBER 2021

***Disclaimer**: This document has been prepared by evaluation experts based on outputs published in the Evaluation Knowledge Bank. This document is non-binding and it serves as knowledge transfer tool which facilitates the transfer of the Evaluation Knowledge Bank content into practice.*

Recommended citation:

EUROPEAN COMMISSION – Directorate-General for Agriculture and Rural Development – Unit C.4 (2021): Example 'Using IMAJINE outputs for evaluating local development in Spain – Working Package 2 'Transferring knowledge for better use of data for evaluating the CAP' - Thematic Working Group no 9 'Research projects to support better data for evaluating the CAP'. Brussels.

The Evaluation Helpdesk is responsible for the evaluation function within the European Network for Rural Development (ENRD) by providing guidance on the evaluation of RDPs and policies falling under the remit and guidance of DG AGRI's Unit C.4 'Monitoring and Evaluation' of the European Commission (EC). In order to improve the evaluation of EU rural development policy the Evaluation Helpdesk supports all evaluation stakeholders, in particular DG AGRI, national authorities, RDP managing authorities and evaluators, through the development and dissemination of appropriate methodologies and tools; the collection and exchange of good practices; capacity building, and communicating with network members on evaluation related topics.

Additional information about the activities of European Evaluation Helpdesk for Rural Development is available on the Internet through the Europa server (http://enrd.ec.europa.eu).

CONTENT

Introduction

This document is one of the outcomes of the Working Package 2 'Transferring knowledge for better use of data for evaluating the CAP' which aims to support the transfer of various solutions included in the Evaluation Knowledge Bank to the CAP evaluation context.

This document provides an example of using local level database for socio-economic indicators and a proposal for a composite indicator for local development of the Horizon 2020 project 'IMAJINE: Integrative Mechanisms for Addressing Spatial Justice and Territorial Inequalities in Europe' in the evaluation of local development.

This is a **non-binding document**, which serves as a knowledge transfer tool which will facilitate the transfer of the Evaluation Knowledge Bank content into practice.

The drafting of this document has been carried out by evaluation experts in the context of the Evaluation Helpdesk's Thematic Working Group (TWG) on the 'Research projects to support better data for evaluating the CAP'.

This document has been developed by Marili Parissaki and Maria Coto Sauras, with input from project documentation and project partners (notably, Michael Woods, Ana Vinuela and Alfredo Cartone).

Example 'Using IMAJINE outputs for evaluating local development in Spain'

Background

The EU embodies vast cultural diversity combined with significant disparities in the living conditions and material resources available for the inhabitants of the different European countries and regions. Territorial inequalities are persistent between European regions[1], especially between urban and rural regions and European policies aim, amongst others, to decrease inequalities between regions, including between rural and urban regions.

Territorial inequalities take several forms and reflect socio-economic disparities. The most common indicator used to analyse inequalities is income, as a good proxy for living standards and wellbeing. However, socio-economic disparities are evident in other indicators like poverty, level of education, material deprivation, employment opportunities, etc.

Rural development policy, through LEADER, can contribute to the improvement of these indicators, i.e. improve incomes, reduce poverty and material deprivation, increase employment in rural areas and thus to contribute to the improvement of local development and to reduce rural-urban inequalities. It does so through local development strategies which are integrated and multi-sectoral, reflecting the multi-dimensional nature of local development. To evaluate local development strategies, Local Action Groups (LAGs) usually use single indicators (like 'jobs created in supported projects' (CMES result/ target indicator R24/T23), '% of rural population benefiting from improved services/infrastructures' (CMES result/target indicator R23/T22)) to capture the effects of LEADER on local development, but these are not sufficient to capture the multi-faceted nature of local development. In addition, data for these indicators are currently available at NUTS2 level, which is not the level at which local development strategies are implemented.

In summary, there are two key issues for the evaluation of local development strategies in the context of LEADER: the lack of data at the local level where LAGs operate and the need to capture the multiple dimensions of local development.

The IMAJINE project and its relevance for LEADER evaluations

IMAJINE is a Horizon 2020 Research and Innovation Action focused on understanding territorial inequalities in Europe and investigating actions to promote spatial justice. Its objectives include the analysis of territorial inequalities in Europe, the appraisal of the appropriateness and efficacy of existing policy instruments for tackling such inequalities and the identification of new data and indicators for analysing territorial inequalities.

IMAJINE offers an opportunity to overcome the above issues by providing new data at the local level and a new context indicator that captures the multiple dimensions of local development. This data can be available in the future and revised/updated if needed, if the IMAJINE project obtains an extension in the context of Horizon Europe, alternatively the same approach followed by IMAJINE can be used by other experts/researchers/evaluators to produce up to date data sets.

[1] Briefing Paper on Evidence from the IMAJINE Project for the EU Long Term Vision for Rural Areas, January 2021.

New data

The IMAJINE project has developed a database that includes socio-economic indicators (income, poverty, education, etc.) at the local level. (See 'Local level database for socio-economic indicators.') Currently such data is available from official statistical sources only at NUTS2 level. However, territorial inequalities are best measured at local level, while this is also the level at which local development strategies in the context of LEADER are implemented.

New context indicator

IMAJINE uses the local level data from the database to create a composite indicator for local development. (See 'Proposal for a composite indicator for local development.'). This composite indicator represents a preliminary attempt to aggregate data from several variables in order to capture the structure of local economic performance at a very refined scale.

What is a composite indicator? Why is it useful?

A composite indicator (or index) is a mathematical combination or aggregation of a set of indicators. Composite indicators offer the opportunity to come closer to a wider concept, such as the concept of local development. They can be of great help in the strengthening of policy instruments, like rural development policy and local development strategies.

On a more practical level, a multidimensional composite indicator that goes beyond the use of single indicators at low geographical scale (local level in this case) offers a different perspective for policy makers compared to the insight gained from examining for instance GDP per capita, and it may be useful for evaluating local development strategies.

Evidence from the IMAJINE case studies (in France, Spain and Italy) shows that the methodological approach for developing the composite indicator helps produce accurate results. The composite indicator helps to reduce complexity in analysing multi-dimensional economic phenomena such as local economic performance and development.

Qualitative assessment of LEADER effects

The composite indicator is a context indicator with a quantifiable value. It does not however show the attribution effect, i.e. the extent to which its value is influenced by the implementation of the local development strategy or by other factors or policies. Notwithstanding this, it can be used as a basis for qualitative analysis that allows to extract conclusions in relation to: the extent to which changes observed in the LAG territory are due to the LAG activities, therefore to the RDP and the extent to which the expected objectives of the LDS in terms of economic development have been achieved.

The following sections give an example of how these IMAJINE products (i.e. the local level data and the composite indicator) can be used in practice for evaluating local development strategies.

Evaluation elements: questions, judgement criteria and indicators

LAGs need to evaluate their local development strategies[2]. A question they often need to answer is:

To what extent has the local development strategy (LDS) supported local development in rural areas?

To further specify this question, some additional judgment criteria[3] may apply:

- rural incomes have improved due to LEADER action
- rural poverty has been reduced due to LEADER action

Additional indicator proposed to answer the evaluation question:

- composite indicator for local development (can be used as a context indicator)

The reason for proposing the composite indicator is that single indicators which are often used to interpret economic and social phenomena do not capture the reality, which is more complicated and is composed of interconnected, multidimensional aspects. The composite indicator can be an alternative way to represent the socio-economic problems at local level.

Additional information (e.g. menu of policies/actions implemented in the LAG territory, key development issues facing the territory) to better understand the LAG territory context and to triangulate the information provided by the indicator is also recommended.

Suggested approach for using the IMAJINE database and composite indicator for the evaluation of local development strategies under LEADER

Step 1: Identification of data for the composite indicator (what)

Five dimensions[4] are included in the IMAJINE composite indicator:

1. Wealth: economic wealth is considered as evidence of performance at a regional level, hence disposable income of households is included at the municipality level (*wealth*). Unit of measurement: disposable income per household.
2. Poverty: for this the people at risk of poverty and social exclusion rate (AROPE) is considered, before social transfers, calculated as the share of people having an equivalent disposable income before social transfers that is below the at-risk-of-poverty threshold (*aro).* Unit of measurement: share of people having an equivalent disposable income before social transfers that is below the at-risk-of-poverty threshold.
3. Education: this dimension is relevant in terms of local economic performance in order to consider lack of educational attainment at a local level, the rate of people (illiterate or not) who did not receive formal education is considered (*edu*). Unit of measurement: rate of people (illiterate or not) who did not receive formal education.

[2] The Common Provisions Regulation (1303/2013) mandates that each LAG will carry out specific monitoring and evaluation activities linked to the CLLD strategy Article 34.3 g) of Regulation (EU) No 1303/2013
[3] The Working Paper 'CEQs' proposes some judgement criteria. https://enrd.ec.europa.eu/evaluation/publications/working-document-common-evaluation-questions-rural-development-programmes_en. The ones proposed here are additional ones.
[4] These five dimensions are relevant but also possible to include due to data availability. In the future, other dimensions may be added depending on data. The number of dimensions is always a trade-off between data availability and the main aim of the composite indicator (here to assess the effects of LEADER on local development).

4. Unemployment: local labour is also considered in the unemployment rate and is included in the composite indicator as a key input *(lab)*. Unit of measurement: number of unemployed people as a percentage of the labour force.
5. The share of agriculture is also an important indicator of the sectorial mix at the local level (*agr*). Hence, the share of the agricultural sector, calculated as the ratio of agricultural employees to total employees within a municipality, is considered in the development of the composite measure.

Data for the above five dimensions is collected from the following sources:

- EU-SILC (Statistics on Income and Living Conditions), Eurostat
- Population census, Spanish National Statistical Office

Step 2: Timing of data collection (when)

For assessing the effects of the local development strategy, a comparison between two points in time is needed, preferably at the beginning and upon completion (or after completion) of operations, in order to observe the change.

The IMAJINE dataset is based on the 2011 population census which is available at local (municipal) level. Then, the IMAJINE project uses econometric methods and manages to obtain data that are not available at the local level, such as income, through the extrapolation of data that are available, such as those present in the census (see below step 3 for the methods).

To collect data for the second point in time (i.e. upon completion or after completion of operations), evaluators would have to wait for the next census in 2021 and renew the dataset for 2022-2023. It can therefore be relevant for conducting the ex post evaluation (2014-2020 plus the transition period) of the local development strategy. The IMAJINE project team in the case study countries could support evaluators in providing the required dataset, if there is continuation of IMAJINE under the new Horizon programme. Otherwise, data collection to create the local level database is possible provided there is cooperation with national institutes of statistics as well as the involvement of experts with knowledge of econometrics in order to use the GCE method and transform any regional level data into local one.

Step 3: Method for disaggregation of the data at local level (how)

This step concerns the disaggregation of regional (NUTS3) level data to local (municipal) level. The IMAJINE project uses econometric methods and manages to obtain data that are not available at the local level, such as income, through the extrapolation of data that are available, such as those present in the census.

More specifically, there are the two data sources (Eurostat and National Statistical Office), which provide data at different levels of aggregation:

- Eurostat provides the data at NUTS3 level, while
- the national census provides the data by municipality, which is lower than NUTS3 level.

In order to obtain all the data at local (municipal) level, the Generalised Cross Entropy (GCE) method can be applied to the dataset.

The basic idea of the GCE method is to obtain the estimation with the highest degree of uncertainty that at the same time is able to fulfil the conditions from observable data. The Generalised Maximum Entropy (GME) estimator has been applied to the estimation of linear regression equations. The GME estimator will choose the distribution of probabilities that deviate least from a situation of maximum uncertainty as the optimal solution. By applying this novel methodology, it is possible to obtain consistent estimates of average household income at the local level and by natural intervals[5].

Based on the above data sources and the application of the GCE method, IMAJINE has created a database with data for the above five dimensions per municipality. Below is an extract from the database in Spain:

Municipality	AROPE_households_2011_gce	Income_per_household_gce	Autonomous Community
1059	0,2155176	32877,2	ES21
1991	0,2217509	32690,82	ES21
1992	0,2231979	35181,83	ES21
1994	0,2234032	33646,22	ES21
2003	0,2605469	28246,79	ES42
2009	0,3108891	24077,96	ES42
2037	0,3916559	23034,14	ES42
2081	0,3591407	22008,03	ES42

Source: IMAJINE data set for Spain (AROPE: share of population (%); income: euro per household)

Step 4: Calculating the data for the LAG territory (where)

A LAG territory is composed of various municipalities. Therefore, the next step is to use the data from the above table and to aggregate this data for each of the five dimensions (i.e. wealth, poverty, unemployment, education, share of agriculture) at LAG territory level. The approach for doing this is to select the municipalities that compose the LAG territory and use the weighted average.

Step 5: Calculate the composite indicator for 2011

The composite indicator can be calculated using the dataset from 2011 for the group of municipalities of the selected LAG territory[6]. The calculation is described below.

Principal Component Analysis (PCA) is used to define weights and synthesise the composite indicator. Moreover, particular attention is paid to the spatial characteristics of the given data, and a spatial extension of PCA, namely Geographical Weighted Principal Component Analysis

[5] An interval is a range of values for a statistic. It is defined as the difference between the upper-class limit and the lower-class limit. In statistics, the data is arranged into different classes and the width of such classes is called interval.

[6] The IMAJINE project calculated the composite indicator for Spain, France and Italy, at municipality, not at LAG level. The approach used to calculate the composite indicator can be used for any municipality or group of municipalities using the IMAJINE dataset for these countries. For applying it to other countries, the dataset needs to be created following the same approach that was followed by IMAJINE.

(GWPCA), is used. GWPCA allows weights at the unit level to be defined, which can be used to tackle substantial heterogeneity[7].

As most of the variables have theoretically negative relationships with respect to local economic performance (e.g. poverty, low educational attainment or unemployment reflect inequalities and there is a negative relation between the level of inequality and the level of development), household income is reversed in sign. In this fashion, a lower value of the composite measure indicates a higher potential for local economic performance. Conversely, units characterised by a larger value of the composite indicator must be interpreted as being located in more-disadvantaged areas.

There are three ways in which the composite indicator may be calculated:

- First, the results of the indicator can be produced through a standard Principal Component Analysis, in which the weighting of the different components is assumed to be the same in all localities. This is the conventional approach to producing composite indicators. However, it has been criticised for not sufficiently taking local context into account.
- Second, the results of the indicator can be based on an analysis to find which variable is most important in explaining the relative position of a municipality in the composite indicator compared to other municipalities (winning variable). For instance, when applying this calculation in Spain, IMAJINE shows that unemployment characterises most Spanish municipalities, whereas household income *(wealth)* is found to be the leading variable in the Atlantic area, AROPE *(aro)* characterises municipalities in very clustered areas of Aragon and Andalusia and finally the lack of educational attainment (*edu*) appears very scattered throughout the country.
- Third, the composite indicator can be recalculated giving more weight to the most significant variable. This can give a more nuanced representation of inequality. In particular, it more clearly highlights local variations between municipalities within a region.

Step 6: Calculate the composite indicator for 2021

When the next census is available, evaluators can calculate a new dataset for the municipalities of the LAG territory. Based on this new dataset, the composite indicator can be calculated again using the above approach. If the IMAJINE project is still ongoing or has been awarded new funds, then its research team can contribute to this. Otherwise, as would be the case in other countries (non-IMAJINE cases), researchers/evaluators can apply the same approach as IMAJINE, first for collecting the data set and second for calculating the composite indicator. The only pre-prerequisites are knowledge of statistics/econometrics and cooperation with national statistical institutes.

Step 7: Compare the composite indicators between 2011 and 2021

Composite indicators can be used as absolute numbers but this is not a clear cut information. What the composite indicator shows is the relative performance of a municipality in terms of inequality, i.e. compared to others. Therefore, in order to compare the composite indicator of

[7] In fact, different synthesis may be used when constructing the composite indicator. For instance, PCA and GWPCA or plain sum of single indicators and eventually compare the different outcomes to check for robustness.

a LAG area between 2011 and 2021, it is recommended to also check the change in the ranking of the indicator between LAG areas. For instance, if a LAG area scored 1,4 in the composite indicator in 2011 and it was No 1 in the ranking compared to other LAG areas, and then will be scored the same 1,4 in 2021 but it became 5th in the ranking, its situation has deteriorated. Given that the dataset covers the whole of Spain, such comparisons to check the changes in the ranking are possible.

The comparison may also check the areas in which the composite indicator has improved, e.g., check if the winning variables have changed over time.

In this step, stakeholders might be questioned in relation to what they think about ranking shifts. This will allow triangulation and will offer new elements to explain local differences. The involvement of stakeholders can be pursued at different spatial scales, where the interventions are implemented.

Step 8: Conduct interviews and focus groups to assess the contribution of the LDS to local development (attribution)

Given that there may be several factors that explain both the absolute (change in value) and the relative (change of the ranking) change of the composite indicator, additional information is needed in order to assess the extent to which it was the local development strategy that contributed to this change or other factors or policies. For this reason, it is recommended to conduct interviews and focus groups with local stakeholders and LAG members. The values of the composite indicator will be presented and discussed as well as the evolution of the dataset between 2011 and 2021. For instance, changes in AROPE or in household income can be attributed to the LDS or to other factors and local stakeholders may be well positioned to assess the contribution of the LDS. Changes in the winning variables can also be discussed to assess the extent to which the LDS has contributed to this.

Further reading

IMAJINE Deliverable 2.1 Review of Official data: http://imajine-project.eu/wp-content/uploads/2019/02/Deliverable-2.1-Review-of-Official-Data.pdf

IMAJINE Deliverable 2.2 Literature Review on disaggregation methodologies: http://imajine-project.eu/wp-content/uploads/2019/02/Deliverable-2.2-Literature-Review-on-Disaggregation-methodologies.pdf

IMAJINE Deliverable 2.4: Report on inequality indices at local level: http://imajine-project.eu/wp-content/uploads/2019/02/Deliverable-2.4-Report-on-Inequality-Indices-at-Local-Level.pdf

IMAJINE Deliverable 3.3: Report on Economic Growth and Spatial Inequalities: http://imajine-project.eu/wp-content/uploads/2020/11/Deliverable-3.3-Report-on-Economic-Growth-and-Spatial-Inequalities.pdf