Infrastructure mapping in education, health, housing, childcare and social care

Recommendations for desk officers to review infrastructure mapping for the 2021-2027 programming period

Executive summary

Strategic documents (e.g. national or regional strategies, masterplans, etc) presented by Member States for investments in infrastructure have used various forms of methodologies to map infrastructure facilities in education, health, housing, childcare and social care. Currently there is no common understanding on the methodologies to map infrastructure facilities, including data collection, indicators and gap analysis.

This document provides general recommendations related to the process of reviewing mappings of infrastructure needs. It should help desk officers in DG REGIO to review infrastructure mapping methodologies in the context of the negotiations of the corresponding enabling conditions under policy objective 4[1] (policy framework for poverty reduction, gender equality, policy framework for education, national or regional health policy framework) and the intervention logic in all relevant thematic areas.

The document looks at the mapping process (governance mechanism, data collection, thematic and cross-cutting indicators, gap analyses), and also includes prioritisation criteria for EU funds investments and monitoring process. It ends with a checklist that should be used for reviewing country-specific mapping of infrastructure needs.

[1] Enabling condition on Nataional Roma Integration Strategy is not linked to any ERDF specific objective, however infrastructure maping might be also relevant in this strategy.

Table of contents

1. Introduction

In the current programming period 2014-2020, coherence of EU investments to respond to the identified needs, turned out to be a challenge in several Member States. In order to better understand the methodologies for mapping the needs and corresponding responses, a targeted exercise was launched. It includes an overview of infrastructure mapping methodologies[2] and recommendations for infrastructure mapping in education, housing, health, childcare and social care for the 2021-2027 programming period. The latter is summarised in this document.

The overview was based on country examples from Hungary, Slovakia, Czechia, Spain, Poland, Portugal and Romania. It has identified several challenges which should be addressed in the next programming period, namely:

- The level of details varies across countries and methodologies, some of the information is very detailed, but some infrastructure mapping methodologies use very general information.
- There are common challenges across education, healthcare, housing, childcare and social care infrastructure, such as the lack of comprehensive assessment of the thematic sector, lack of gap analysis, lack of addressing territorial specificities, outdated data sources.
- The infrastructure mapping often:
    - does not identify gaps in access, availability of services on different territorial levels;
    - has a weak link between territorial indicators and thematic indicators;
    - does not consider demographic challenges such as ageing, declining/increasing number of children.
- The selected thematic areas for mapping the infrastructure (and for EU investments) represent in some cases the political prioritisation (e.g. assessment of the hospital sector, limited information about the gaps in primary care etc.).

2. Objective, scope and structure

The objective of the recommendations is to assist desk officers to review infrastructure mapping in the fields of education, housing, health, childcare and social care. In the scope of programming, Member States are responsible for the development of infrastructure mapping, so the recommendations should not be considered as guidance for developing infrastructure mapping. Instead, the recommendations provide a short overview of the essential elements of mapping, followed by a step-by-step approach and checklist for review. Infrastructure mapping is an important element of enabling conditions under policy objective 4 and the intervention logic in all relevant thematic areas.

The territorial scope of infrastructure mapping depends on the regulatory frameworks for service provisions. As services can be coordinated and regulated at national, regional or local level, mappings may refer to different territorial levels. Enabling conditions under PO4 requests for national and/or regional strategic frameworks, so mapping should primarily focus on these territorial levels. At the same time, since operational programmes and measures may focus on a specific territorial level or functional areas (e.g. cross-border, urban areas, etc.), these should be also considered for infrastructure mapping.

It is important to mention that mapping of infrastructure needs, together with assessment of human capital needs in services and individual/community needs are all essential parts of policy making in all thematic areas. In other words, infrastructure mapping should always be accompanied by human capital, individual and community needs assessment. This document is not intended to

[2] Florin Botonogu (2020) Overview of mapping social infrastructure

provide recommendations for human capital, individual/community needs assessment methodologies.

The recommendations refer to the requirements of the proposed 2021-2027 Cohesion Policy regulations, in particular the criteria of enabling conditions under policy objective 4. They might be also relevant for the implementation of the intervention logic in the field of mapping of needs.

First, the document discusses the main steps of infrastructure mapping process and second, the prioritisation of investments. The document concludes with a step-by-step approach and checklist to review infrastructure mapping.

3. Recommendations for desk officers to review infrastructure mapping for the 2021-2027 programming period

The Commission proposal for Cohesion Policy in the 2021-2027 Multi-Annual Financial Framework[3] includes several provisions to better align the community and infrastructure needs with the corresponding investments. A key provision is the "enabling conditions", the successor of the ex-ante conditionalities.

Under Policy Objective 4, the enabling conditions require that strategic frameworks are in place in health, education and training, social inclusion and poverty reduction, Roma inclusion, gender equality and active labour market policy. In the case of the health enabling condition, the strategic framework explicitly requests a "mapping of health and long-term care needs, including in terms of medical staff, to ensure sustainable and coordinated measures". At the same time, all strategic frameworks should naturally be built on a thorough mapping of infrastructure and services at the national, regional and local levels. Furthermore, the mapping of infrastructure needs supports the implementation of the intervention logic, where investments should respond to the identified needs.

N°1 Governance mechanism

In the scope of the infrastructure mapping a governance mechanism should be established, if not yet in place. To increase efficiency and reduce administrative burden, the governance mechanism should clarify the procedures, including a clear division of responsibilities, competences, capacities, and timeline. The coordination between national authorities is the essence of the governance mechanism and may also include the nomination of the body (e.g. government agency), responsible for coordination.

A number of different government bodies with varied scope of competences play an important role in the mapping process. Depending on how the government is structured, different line ministries (education, health, social care) may be responsible for different thematic parts of the mapping. At the same time, managing authorities should be given clear roles and responsibilities in the mapping process, given the requirements of the EU funds programming (e.g. enabling conditions). Furthermore, government bodies responsible for data collection such as statistical institutions should be closely involved.

Member States may also involve external stakeholders, to benefit from extra capacity and expertise (e.g. World Bank, OECD, UNICEF etc.). Their role should be clarified in the governance mechanism since, as a general rule, they should not be leading the process, nor hold the ownership. Their contribution should be integrated into the government decision-making materials. As an example, a study on the identification of deprived urban neighbourhoods was conducted by the

[3] At the time of the finalisation of the document, the negotiations on the Cohesion Policy regulations in the 2021-2027 period were on-going.

World Bank in Romania[4]. This methodology should have been integrated in urban development policy and EU funds programming.

To avoid any potential inconsistencies between the gaps identified at local, regional and national level, governance mechanisms should coordinate and harmonise mapping processes (multi-level governance).This procedure should also support the infrastructure needs assessment at the local level in the scope of the sustainable urban development strategies.

N°2 Data availability and collection

Reviewing the current or past infrastructure mappings

Before launching a new infrastructure mapping exercise, it is important to check whether infrastructure mapping in one or several thematic areas has already been conducted in the past. The review should look at different aspects, including the methodology, governance mechanism, and the validity of the data[5]. Taking into account the strong correlation between data validity and the reliability of the mapping, a review should establish a mechanism to assess whether that data accurately reflects the gaps and challenges. For instance, some infrastructure mapping methodologies use 2011 census data, which should be assessed whether it reflects the current situation.

In the scope of the data validity review, the following non-exhaustive list should be considered:

- *Demography*: In some instances, demographic developments will have a strong impact on the outcomes of mappings (e.g. declining number of children, increasing share of people over 65 years old etc.).
- *Increasing social and territorial disparities*: Both national statistics and independent research may show that the social and territorial disparities are growing in recent years.
- *Mobility of people*: Mobility may take different forms at national, regional and local level, including out-migration (emigration, leaving) and in-migration (immigration, arrival). Both will impact the outcomes of the infrastructure mapping as it may lead to decreasing/increasing needs for services and infrastructure (e.g. depopulation).

Data collection

The infrastructure mapping process should map out the data needed across all thematic areas. This data need should then be checked against the available data sets and sources (e.g. census, SILC etc.). In other words, it is important to clarify whether data is available in these data sources. Taking into account that needs might be identified at national, regional and local level, data collection mechanisms might be also organised at different territorial level.

As it was mentioned above, the governance mechanism should put a special emphasis on the involvement of statistical institutions, external research agencies, which might not be part of the national public administration structure.

Where data is identified as missing within some thematic areas, new data collection mechanisms should be considered (e.g. external research, introducing new questions in the census etc.) to produce new data sets. Although it might constitute an additional burden in data collection

4 http://documents.worldbank.org/curated/en/857001468293738087/pdf/882420WP0P1430085232B00OUO0900Atlas.pdf

5 In this chapter, the document does not reflect on the review of governance mechanism and infrastructure mapping methodologies used in the past.

(possible delays, need for more capacity), it will significantly improve the efficiency and validity of data sets.

Data sources

Member States may consider using European, national, regional and local data sources in the development of infrastructure mapping process. The following non-exhaustive list of data sources provides some examples:

1. European databases: Eurostat, Eurostat Social Scoreboard ESPON (European Spatial Planning Observation Network), EU-SILC (EU Statistics on Income and Living Conditions), European Observatory on Homelessness, Fundamental Rights Agency, Indicator framework and monitoring system of the 2030 Agenda for Sustainable Development, Degree of urbanisation (DEGURBA); Working Together for Local Integration of Migrants and Refugees; The State of Health in the EU; Companion Report, Gender Equality Index;
2. Country specific reports: Country reports (European Semester), State of Health - country reports, Country Health Profiles;
3. European and country specific reports by the World Bank (e.g. Poverty Mapping in the European Union), OECD, UNICEF, UN Committees;
4. National databases: Census, yearly report on socio-economic and territorial inequalities, national registry of educational, labour market, social and healthcare services;
5. Regional and local databases: regional or local database on educational, labour market, social and healthcare services, socio-economic background of the local population, identification of deprived localities, neighbourhoods, beneficiaries of social benefits and assistance etc;
6. Independent research on specific thematic areas and / or territorial units.
7. Non-official data collection and database, collected by non-governmental organisations, trade unions, private entities, etc.

N°3 Thematic and cross-cutting indicators

Thematic indicators

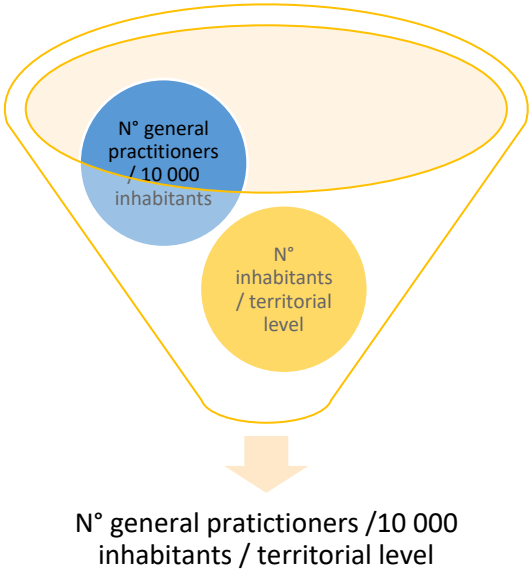
In order to understand the specific situation in thematic areas, the available data sets should be broken down into indicators. The formulation of indicators depends on the national/regional/local legal requirements. As an example, the identification of deprived neighbourhoods might require setting up a composite indicator at the neighbourhood level (see 'Overview of mapping social infrastructure'). The details of this composite indicator depend on the definition of deprived neighbourhoods, based on national legislation (e.g. long-term unemployment and low level of education).

In some cases, to formulate a new indicator, there is a need for further data collection. For example, the number of general practitioners might be available only at the regional level. In order to look at the number of general practitioners at neighbourhood level, further data collection/research might be necessary.

Several Member States have already identified thematic indicators in health, housing, education, childcare and social care[6] (see the annex for more information on thematic indicators). In light of the current challenges and developments in the country, it might be important to review the accuracy and relevance of these indicators and, where necessary, reformulate them.

[6] Please see the country examples included in the summary paper.

Figure 1: Example of data sets and indicators



Cross cutting indicators

There are some indicators which should be taken account across all thematic areas. This includes demography and territorial indicators:

- Demography: It refers to ageing, fertility rate, mortality, in and out migration etc. These parameters may affect all thematic areas, thus, they should be considered in the mapping process. There are wide variations in demographic trends in Europe between and within Member States. Already today, many areas of Europe, often at sub-regional level, face serious challenges with acute social and economic consequences. Some areas face sharp population decline, while others will experience steady population growth.
    - Depopulation may have different characteristics across EU Members States. In the Central and Eastern European countries, depopulation is at times coupled with rural poverty. This is not necessarily the case in other EU member states, where the rural poverty is not so prominent. In both cases, depopulation limits economic opportunities and reduces access to good quality basic service.
    - Building services in depopulated areas raises questions of long-term sustainability. Another solution could be to increase the transport to neighbouring services.
    - For instance, the sustainability of kindergartens and schools in rural areas (small localities) is a complex issue. In some localities, the number of children is declining, and access to quality non-segregated education is very limited. In some other, localities in Central and Eastern European countries, the number of Roma children is increasing, which might lead to segregated education.

- Territorial indicators should highlight the specificities of thematic areas at different territorial levels (NUTS2; NUTS3; NUTS4/LAU1; neighbourhood level). National data is very important for having a general overview of the situation. At the same time, without a further territorial analysis, specific situations at various territorial levels, including distribution of poverty, cannot be observed. It is highly recommended to analyse sectoral data at the lowest possible territorial level.

- As it was mentioned before, data and the corresponding indicators might not be available at the lowest territorial level. It might therefore require further data collection.
- Several Member States have introduced methodologies to identify pockets of poverty indicators, which are used in different thematic areas (for more details see the summary paper). Without the existence of the maps indicating poor/deprived areas there is a high risk that social investments will not contribute significantly to reducing territorial inequalities.
- Territorial indicators might also be very useful to assess sustainability, as in some remote and sparsely populated and mountainous (as discussed above in the depopulation paragraph) areas, access is limited.

- Mobility of people: Mobility may take different forms at national, regional and local level, including out-migration (emigration, leaving) and in-migration (immigration, arrival). Both will impact the outcomes of the infrastructure mapping as it may lead to decreasing/increasing needs for services and infrastructure (e.g. depopulation).

N°4 Gap analysis

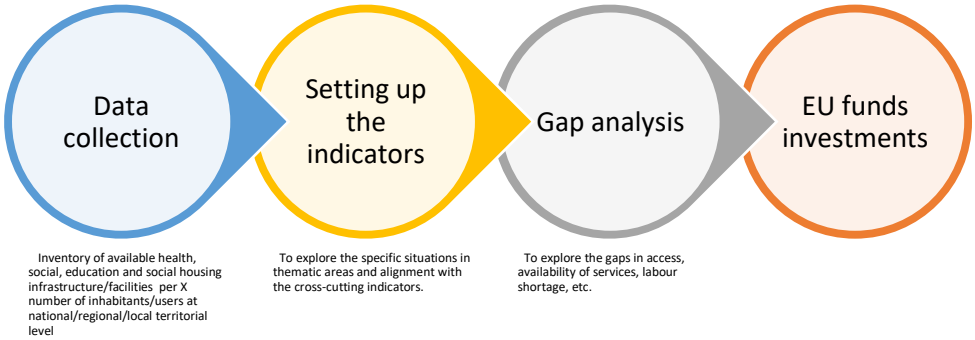
One of the most important lessons learnt from the mappings reviewed is the lack of gap analysis. Most of these documents are called "maps" when, in fact, they represent a description or inventory of available services. This approach fails to identify the gaps, namely, the issues that should be addressed by policy measures, national budgets and EU funds investments.

Following these lessons, it is important to highlight that gap analysis is the essential part of the mapping. The process of identifying the gaps is composed of a number of important steps:

1. In the course of the data collection (as described above), it is possible to describe available health, education, social care, housing services ('inventory').
2. Indicators should be identified, which should help to better understand the specific challenges, needs in thematic areas.
3. The indicator provides the information on the actual situation. Using this outcome, gaps can be identified. Gaps may refer to unequal access to services, shortage of labour force, low quality of services, etc.

The following graphic explains the mechanism of the gap analysis:

Figure 2: Steps of the gap analysis



As an example, in the case of persons with disabilities, the following steps can be used to understand how to identify gaps and the corresponding investments.

1. Inventory of all available health, social, education and social housing infrastructure/facilities ('inventory') per X number of inhabitants/users at national/regional/local territorial level
2. Setting up indicators, such as:
    - Number of day centres / 1000 people with disabilities / local level
    - Number of social housing units / 1000 people with disabilities / regional level
    - Number of inclusive schools meeting accessibility requirements / 1000 children with disabilities / regional level
    - Etc.
3. Following the outcomes of the indicators, gaps can be identified, such as:
    - according to the inventory, 5 day centres per 1000 people with disabilities are available at local level. However, based on the indicator 40 day centres per 1000 people with disabilities are needed. So, the gap is 35 day centres.
    - according to the inventory, 20 social housing units per 1000 people with disabilities are available in a region. However, based on the indicator 30 social housing units per 1000 people with disabilities are needed in a region. So, the gap is 10 social housing units.
    - according to the inventory, 15 inclusive schools meeting accessibility requirements per 1 000 children with disabilities are available in a region. However, based on the indicator 20 inclusive schools meeting accessibility requirements per 1000 children with disabilities are needed. So, the gap is 5 inclusive schools meeting accessibility requirements.
    - Etc.
4. EU funds investments should reflect on the identified gaps. Following the examples above, 35 day centres, 20 social housing units and 5 inclusive schools meeting accessibility requirements should be in the operational programme.

4. Recommendations for the prioritisation of EU funds investments

N°5 Prioritisation of investments based on outcomes of mapping

The gap analysis may have identified more gaps than the EU funds investments can cover. It might therefore be necessary to identify which gaps should be prioritised for the EU funds investments. In order to make the prioritisation, it may be necessary to put in place a set of criteria. The set of criteria may depend on the local/regional/national circumstances. At the same time, the following criteria may be considered (non-exhaustive list):

- *Reducing social and territorial inequalities*: In view of the objectives of Cohesion Policy, gaps addressing the unequal access to services (in terms of social groups or territories, e.g. Roma, deprived areas/neighbourhoods) should take priority.
- *Return on investments:* gaps which highlight the highest return on investments in public services and/or long-term integration, should be prioritised. For example, investments in early childhood education may have the highest return on investments compared to investments in other parts of education system.
- *Sustainability:* Among all identified gaps, those which refer to sustainable way of building services (e.g. social housing vs. temporary housing) should be prioritised.
- *Consultation:* If the identified gap is supported by the outcomes of the consultation, it should be prioritised.

5. Recommendations for the monitoring and evaluation

N°6 Monitoring and evaluation

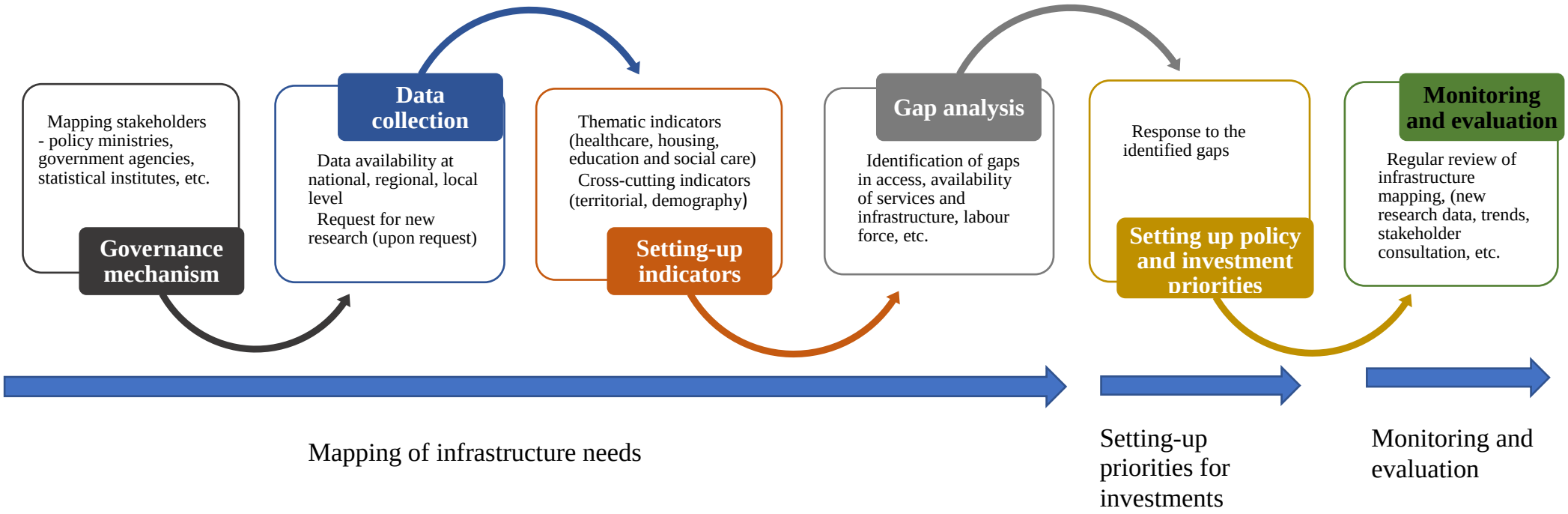
Data and trends used in the mapping might evolve during the programming period. It is important to regularly assess whether data, indicators and the identified gaps are adequately reflecting the current situation. To review the mapping, it may be relevant to consider:

- Information provided by service providers, communities most affected by limited access to services, public authorities, etc. This may entail regular consultation with stakeholders.
- New studies and research, published after the finalisation of the mapping, which highlight new information.

6. Steps for the mapping process

Following the recommendations above, a number of steps should be followed throughout the mapping process. The infographic below provides a summary in a step-by-step approach.

Figure 3 – Steps



Checklist for mapping methodologies

The checklist should help desk officers in the review of the infrastructure mapping in the fields of education, housing, health, childcare and social care.The main objective of the checklist below is to operationalise the recommendations spelled out in the documents. It follows the structure of the recommendations, namely, the questions refer to governance mechanism, data collection, gap analysis, investment priorities, monitoring and evaluations. The checklist brings forward essential elements that need to be discussed in the scope of the mapping.

The questions in the checklist should serve as assistance in reviewing methodologies. There is no minimum number of questions, which should be 'correctly replied', rather all questions should be taken into consideration when reviewing infrastructure mapping. It should also concern the fulfillment of enabling conditions, so the checklist should not serve as assessment tool of enabling conditions. At the same time, it should explore any potential deficiencies in methodologies, such as insufficient data collection, lack of gap analysis, inconsistency between the identified gaps and investment priorities, etc. After the completion of the checklist, so the review of the infrastructure mapping methodology, the comments and the corresponding dialogue with Member Statey can be better formulated.

ITEM	COMMENTS
Governance mechanism	
Is there a coordination mechanism between institutions at national level (policy ministries, managing authorities, statistical institutions, etc)?	
Is there a clear division of tasks and responsibilities within the coordination mechanism?	
Are the mapping processes at national, regional and local level coordinated?	
Data	
Is there an overview of the data sources that were used for the mapping?	
Is there a justification on the choice of data sets?	
If data was missing, was there a request for new data collection? (if applicable)	
Is there a review established to assess the validity (e.g. data validity) of current and past infrastructure mapping mechanisms?	
Are the thematic indicators clearly described and is their relevance justified?	
Are the cross-cutting indicators (such as demography, territorial disparities, mobility of people) closely linked to thematic indicators?	
Gap analyses	
Does the mapping include a gap analysis?	

Are the identified gaps based on the analysis of thematic and cross-cutting indicators?	
Are the identified gaps in access, availability of services and infrastructure clearly presented?	
Investment priorities	
Is the prioritization linked to the outcomes of the gap analysis?	
Is the set of criteria for prioritization clearly described?	
Are the criteria aligned with the objectives of Cohesion Policy (reducing social and territorial inequalities)?	
Monitoring & Evaluation	
Is there a regular monitoring and evaluation of infrastructure mapping in place?	
Is there a mechanism in place to follow-up the outcomes of monitoring and evaluation?	

ANNEX

Examples of thematic indicators

Before consulting this list, please consider the following:

1. It is not an exhaustive list, it is just used for guidance, for providing main indicators that probably are going to be encountered in the mappings
2. A lot of indicators are basic, are measured at EU level and are used in all countries and in comparative analyses.
3. In this document (page 6) you can find the main sources for consulting indicators.
4. There are different types of indicators (outcome indicators, result indicators, primary indicators, relative indicators, etc) in every field
5. The aim of the review is not to check if all possible indicators are measured, but if all the problems in the territory are the measured by indicators, so that there is a good argumentation for prioritization of investments and for analysing all possible consequences.

Examples of indicators for health

- Population from a certain area expected to benefit from health services (ERDF common indicator)
- Coverage of population of migrant and asylum seekers (OP indicator in EL)
- Standardized rate of hospitalization
- In-patient average length of stay, in days
- Hospital beds per 100 000 inhabitants
- Long term hospital beds per 100 000 inhabitants
- Acute care hospital beds per 100 000 inhabitants
- Persons to whom care has been provided in a community/at home/in a nursing house
- Percentage of persons discharged from hospital who are re-admitted within 30 days
- Percentage of general practitioners in outpatient care
- Percentage of illness cases where the first point of contact is a general practitioner
- Proportion of people in the first quintile of equalized income (20% lowest income group) with self-declared unmet needs for health care services due to either financial barriers, waiting times or travelling distances
- No. of inhabitants per one general practitioner per region
- Number of women per one gynaecologist, by region
- Shortage of physicians per 100 000 inhabitants
- Shortage of nurses per 100 000 inhabitants
- Life expectancy at birth
- Infant mortality rate
- Diabetes incidence
- Cancer incidence

Examples of indicators for housing

- House prices (% change compared o previous year)
- People owning their home (as % of the total population)
- People renting their home (as % of the total population)
- People (total population and poor households) for whom housing cost is an overburden (as % of the total population)
- Number of social housing units
- Share of social housing units
- Number of housing units in segregated areas
- Number of housing unit located in environmentally hazardous territories
- Number of housing unit located in non-registered territories
- Average household size
- Total length of newly built roads
- Total length of reconstructed roads
- Population served by improved water supply
- Number of newly developed housing units
- Overcrowding in housing
- Severe housing deprivation
- Type of dwelling (flats, detached or semi-detached housing)
- Tenure status (mortgage/loan, rent, ownership)
- Age of dwellings
- Average size of dwellings
- Average no. of occupants
- No. of unoccupied buildings
- Coverage of utilities (electricity, water, sewage)
- Building materials of houses
- Registration of the land

Examples of indicators for education

- Performance indicators per age groups (cognitive outcomes, socio-emotional outcomes)
- No. of teachers
- Professional competencies of teachers and educational support staff
- No. of auxiliary personnel
- No. of children enrolled (it breaks down on age, cycles, teaching languages, territorial units, etc)
- No. of children not enrolled, however pre-school/ school age;
- Data about the rationalization of school infrastructure[7]
- No. of children abandoning school
- No. of children who graduated school
- No. of educational facilities with high share of marginalised students (segregated facility)
- No. of children per school/classroom
- Distance as a barrier accessing the school/ pre-school education

[7] Demographic changes end up in closing schools and pre-schools.

- No. of school buses
- No. of schools with toilet outside the building
- No. of schools
- No. of children enrolled to compulsory pre-school education
- No. of children not enrolled, however compulsory pre-school education age
- Quality of school/ pre-school education[8]
- No. of children regularly attending pre-school education
- No. of creches, kindergarten
- No. of children with special educational needs in schools
- No of children who promoted to the upper educational cycle
- Early school leaving indicator
- Results at the national and international evaluation tests[9]
- No. of vocational training schools
- No. of children involved in vocational training
- No. of people involved in adult training
- Addressing educational equity challenges of vulnerable school and pre-school age children
- Yearly public expenditure on education

Examples of indicators for social services

- No of day care centres for elderly people
- No. of elder people in need for care (living alone)
- No. of centres for victims of abuse (violence)
- No. of foster parents
- No. of crisis intervention and emergency services (shelters)
- No. of social workers
- No. of mother and baby units
- No. of people using the newly developed community-based services
- No. of newly developed community-based services
- No. of institutions closed down
- No. of persons who moved out of the institutions to live independently in the community
- No. of children reintegrated with their families
- No. of children placed in family-based care
- No. of newly developed housing options that support community living
- No. of sheltered homeless people moved into permanent (supported) housing
- No. of reception centres
- No. of accommodation for third-country nationals and refugees

[8] The quality of education is of paramount importance for the cognitive and socio-emotional development of children.

[9] PISA (Programme for International Student Assessment), TIMMS (Trends In International Mathematics And Science Study) and PIRLS (Progress in International Reading Literacy Study) if available.