

TiPSE

The Territorial Dimension of Poverty and Social Exclusion in Europe

**FINAL REPORT**

**ANNEX 6**

**Development and Mapping of Social Exclusion Indicators**

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The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

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The ESPON TiPSE Project:

The TiPSE project has been commissioned by the European Observation Network for Territorial Development and Cohesion (ESPON) programme. It is concerned with the issue of poverty and processes of social exclusion in Europe. The project aims to improve the evidence base for policy which promotes inclusive growth, within the context of the EU2020 strategy.

One of the key challenges in Europe is to address regional or local concentrations of poverty and social exclusion. This remains a national responsibility within the context of EU strategic guidance. In practice it is often regional or local administrations which face the challenge of implementing national policies to ameliorate deprivation and exclusion. At a higher level, the EU defines its role as identifying best practices and promoting mutual learning.

The ESPON TiPSE project aims to support policy, both by enhancing the evidence base and by identifying existing good practice. Poverty and social exclusion are essentially relative concepts, arguably meaningful only within a specified geographical context. This underlines the central importance of observation, measurement, and careful data analysis as an essential preparation for intervention.

A central aim of the project is to generate a regional database, and associated maps, of poverty and social exclusion indicators. The project will thus establish macro and micro-scale patterns of poverty and social exclusion across the ESPON space. Such quantitative analysis of geographical patterns is considered a crucial part of the evidence base for policy.

In addition, in order to better understand the various social and institutional processes which are the context of these patterns, a set of ten case studies are to be carried out. These are more qualitative in approach, in order to convey holistic portraits of different kinds of poverty and social exclusion as experienced in a wide variety of European territorial contexts. An important goal for the project will be to identify policy approaches which can effectively tackle exclusion, and thus strengthen territorial cohesion. The case studies are intended to further this objective by exploring local policy processes and highlighting good practice.

The TiPSE research team comprises 7 partners from 5 EU Member States:

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**LIST OF ABBREVIATIONS**

CAP – Common Agricultural Policy

ERDF – European Regional Development Fund

ESPON – European Observation Network for Territorial Development and Cohesion

EU – European Union

FYROM – Former Yugoslavian Republic of Macedonia

GDP – Gross Domestic Product

LAU – Local Administrative Unit

LFS – Labour Force Survey

NUTS – Nomenclature of Territorial Units for Statistics

OMC – Open Method of Coordination

TiPSE – The Territorial Dimension of Poverty and Social Exclusion in Europe

TPG – Transnational Project Group

UNDP – United Nations Development Programme

Referred ‘Tasks’ relate to tasks of TiPSE project

Referred ‘Annexes’ relate to the Final Report of TiPSE project

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# Executive Summary

The aim of Task 2.6 ‘Development and mapping of social exclusion indicators’ of the research project TiPSE (The Territorial Dimension of Poverty and Social Exclusion in Europe) was to establish a link between Task 2.1 (Review of concepts of poverty and social exclusion) and Task 2.8 (Analysis of conceptual implications of social exclusion maps), with the help of the TiPSE database generated in Task 2.3.

Methodologically, the project uses a hypothetico-deductive framework: after conceptualisation of social exclusion in Task 2.1, the task of this work package was the operationalization of social exclusion. Thus, the basic issues were

* to find specific indicators throughout the ESPON space which cover domains and dimensions of social exclusion, decided in Task 2.1;
* to collect data at the lowest possible regional scale from different official sources (see Task 2.3 on TiPSE database), integrate and map them (thereby offering a meaningful starting point for macro-regional and cross-European comparisons in Annex 8 of Final Report);
* reflect on the usability of the database in understanding the territorial dimension of social exclusion in Europe.

The study identified four domains and 10 dimensions of social exclusion (see the table below).

|  |  |  |  |
| --- | --- | --- | --- |
| *Domain identified by Task 2.1* | *Dimension recommended by Task 2.6* | *Number of indicators (2001)* | *Number of indicators (2011)* |
| Earning a living | Income earned by tax payers | 2 | 2 |
| Employment | 27 | 4 |
| Access to basic services | Health | 3 | 3 |
| Education | 2 | 2 |
| Housing | 6 | 3 |
| Social environment | Age | 3 | 3 |
| Ethnic composition | 1 | 1 |
| Immigrants | 1 | 1 |
| Household structure | 4 | 2 |
| Political participation | Citizenship | 1 | 1 |

The indicators were chosen after detailed considerations by project partners regarding relevance, policy implications and data availability. Data sources are partly standardised Eurostat datasets, partly official national statistics collected by TiPSE project partners. Non-census Eurostat data, census 2001 and 2011 data from national sources is part of ESPON TiPSE’s integrated database (Annex 2) as well.

This research conceptualized social exclusion as a relational, process-oriented and multidimensional phenomenon. ESPON TiPSE identified several indicators for each of the dimensions as proxy variables. Furthermore, a pilot model for a composite index of vulnerability to social exclusion was developed using the 2011 dataset. The reason for not using complex mathematical-statistical analysis during the interpretation of the dataset – only in a form of a pilot experiment – is that this is more viable for applied projects with policy relevance.

An important deliverable for Task 2.6 was a set of maps which visualised all indicators throughout the ESPON space. 50 maps of the ESPON space was prepared from Eurostat and census 2001 data, as well as 22 maps showing census 2011 data. Apart from that, to ease partners’ duties in Task 2.8, separate maps with the same categorisation were prepared for each of the 4 macro-regions in the TiPSE project; these were used in the macro-regional chapters of Annex 8.

After collecting and mapping the data for social exclusion, this task of the TiPSE project concluded that Eurostat covers some dimensions of social exclusion at the NUTS 3 spatial scale, but not all. Therefore, census data from national sources was indispensable to capture some dimensions. Non-standard statistical sources were not considered in the project because of comparability issues across European countries.

This methodological paper ended with a discussion on possibilities and limitations of mapping the socially excluded. Macro-level mapping is important in outlining social exclusion, but the social construction of maps through researchers has also to be taken into account. People’s place-based and context-dependent perceptions on social exclusion are not part of Task 2.6, but are discussed in detail in ESPON TiPSE’s case studies.

# Introduction

This methodological paper on social exclusion indicators is one of the outputs of Task 2.6 entitled ‘Development and Mapping of SE indicators’ (the other being a set of maps on the territorial dimension of various aspects of social exclusion). The project proposal of ESPON TiPSE described the aims of Task 2.6 and established links to other work packages. As page 23 of the Application form Part B states, this task ‘aims to develop ‘mappable’ indicators of social exclusion at the NUTS 3 or LAU 1 level’. Task 2.6 established explicit links to the definitions of social exclusion put forward in Task 2.1 (see Annex 1 of the TiPSE Final Report). The first part of this methodological paper therefore explains, how ‘academic’ definitions summarised in Annex 1 might be matched with ‘Implications for indicators’; i.e. how issues touched upon in academic literature are to be elaborated on in a meaningful way in cross-European regional mapping of the territorial dimension of social exclusion.

As for the implementation of this mapping exercise, ESPON TiPSE project proposal advanced the simple proxy indicator methodology, and also a simple composite index was developed in the course of the project. In order to validate the usefulness of this approach, this methodological paper offers a short overview of possible methods when one is to measure or quantify different dimensions of (territorial) social exclusion. These aspects have already been highlighted in Annex 1 ‘Review of concepts of poverty and social exclusion’. However, Annex 1 did not aimed at putting emphasis on possibilities of comparisons throughout the ESPON space and the availability of cross-European regional (NUTS 3 level) data. In this sense, this paper distils some considerations from the academic debates and policy practices reported on in Annex 1, and triangulates these with Task 2.3 on the TiPSE database (see also Annex 2 of the TiPSE Final Report).

In the chapter ‘Measuring social exclusion – a step-by-step approach’ we aim at showing the dimensions and some proxy variables of social exclusion at the European scale. This chapter features both census 2001 and census 2011 data. According to the TiPSE project proposal, mapping has been undertaken primarily on NUTS 3 level, but regarding some indicators only NUTS 2 level data was available. Collection of data and mapping of social exclusion indicators on LAU 1 level (using primarily census data) was dedicated to the case studies of TiPSE (Task 2.4) in the course of the project.

This paper ends with the discussion of the results and with some considerations for the EU-level policy-making regarding the mapping of social exclusion.

# Domains, dimensions and indicators of social exclusion

Social exclusion and its ‘territorial dimension’ is a fuzzy concept both in the academic literature and in the policy practice. Annex 1 has already documented an extensive body of academic and policy literature on these concepts which is not needed to reiterate here. However, the review of academic practices has clear implications for the tasks to be undertaken in Task 2.6, as far as how to operationalize these theoretical concerns in a cross-European regional level mapping exercise on different dimensions of territorial social exclusion.

One of the most important conclusions of Annex 1 for Task 2.6 is that definitions of social exclusion, academic and policy practices are highly context-dependent, they reflect situated knowledges of researchers and policy-makers (cf. Haraway, 1988), and are also a result of how statisticians conceive the world (state-thinking in Bourdieu’s words – Bourdieu, 2004: 90–91). They offer a partial view from partial closed spaces of the research or policy field of the particular studies and policy actions. Hence, they cannot be easily upscaled to an ESPON-space-wide NUTS 3 level mapping of social exclusion. Nevertheless, the literature brought together in Annex 1 was essential in making decisions in ESPON TiPSE on domains, dimensions and indicators of social exclusion.

Social exclusion is a relational, dynamic and multifaceted phenomenon, according to Silver (1994). Consequently, measuring and mapping (territorial) social exclusion should aim at finding indicators and proxy variables which

1. at least in some examples reflect the relational nature of included and excluded people / groups of people (gender gaps are good examples of this type of understanding);
2. as exclusion is not only a state of ‘being in a society’ but also a process, apart from stock indicators flow indicators may be used as well (this is one of the reasons for collecting both 2001 and 2011 census data) (cf. also Madanipour et al, 2003);
3. cover several dimensions of social exclusion that are inseparable from each other but interact in complex ways and on different geographical scales (for this aspect, Task 2.6 will only deliver inputs, results will be analysed in Task 2.8).

In this section, following some notes on the territorial dimension of social exclusion, *domains, dimensions and indicators* of ESPON TiPSE’s understanding of social exclusion will be introduced and discussed. This approach of having a three-level hierarchy is following the seminal study of Levitas et al. (2007) which differentiated between three subject groups and ten dimensions of social exclusion each of which measured by various indicators.

## Some notes on the territorial dimension of social exclusion

ESPON TiPSE project does not focus on social exclusion in general, but the overarching aim is to draw conclusions on the *territorial aspects* of the phenomenon. As Annex 1 noted, most of the EU policy documents are aware that there is some sort of spatiality (or regional inequalities) in the distribution of poverty and social exclusion, but they more or less theorise ‘the spatial’ as an appearance, i.e. only registering that social phenomena differ over space.

Annex 1 emphasised that many of contemporary approaches address sites and spaces of exclusion, such as exclusive and inclusive spaces. Examples catalogued in Annex 1 of the TiPSE Final Report vividly show that most of these empirical studies are on the ‘micro-level’ (research on exclusion within the city, in rural spaces and places etc.), and regional level studies focus largely on which natural, social and economic endowments regions possess of.

Social sciences in the past decades more or less univocally understand ontologies of ‘the social’ and ‘the spatial’ in their co-constitution (for an early example see Gregory and Urry, 1985). This approach dismisses the idea of space as being a stage on which social relations unfold, as well as the idea of the abstract space which has a pure distance-decay function (as put forward by neoclassical economics). What this ‘new’ approach stressed instead is the view that social relations are constructed over space, and that space plays a role in how social relations are constructed (Massey, 1985; Sayer, 1985).

This understanding has some serious implications for the research done on social and spatial exclusion (also in the context of ESPON TiPSE). Firstly, spatiality of social exclusion is not something to be abstracted of in any research. In this sense, ESPON has a crucial role in directing policy-makers’ attention towards the idea that social exclusion is inherently spatial (at multiple scales) which must be considered in any policy-making practice.

Secondly, spatiality of social exclusion is not yet another dimension or aspect to be conceptualised. In this sense, maps on different dimensions of social exclusion (and specific indicators derived from these dimensions) show the co-constitution of society and space in a complex way. ESPON TiPSE also tackles this theoretical, methodological and ethical issue by combining mapping (Task 2.6) and its interpretation (Task 2.8) with case studies (Task 2.4).

Thirdly, although the maps produced in Task 2.6 may be easily interpreted as showing socially excluded NUTS 3 regions, one has to take into consideration that it is not the region which is excluded, but in the end people or groups of people. As social exclusion is an issue also addressed by EU’s regional policy, it is meaningful nonetheless to map social exclusion on NUTS 3 level. For it is important to gather information which regions and in which meaningful ways may be targeted by EU’s regional policy to open up more inclusive realities for people living in these areas.

Fourthly, socio-spatial exclusion is a multi-scalar phenomenon. Although current literature on the social constructedness of scale (Herod, 2011) challenges that different social phenomena can be meaningfully linked to pre-constructed ‘levels’ and territorialisations of space, a consequence for ESPON TiPSE is to elaborate on the multi-scalarity of social exclusion. Hence, different dimensions of social exclusion have different importance at certain geographical scales. This means that a mixed-method approach with a combination of NUTS 3 level mapping and qualitative micro-level case studies (at lower spatial scales) would tell us something about how social exclusion actually takes place. In fact, NUTS 3 level mapping alone can also reveal some aspects of the multi-scalarity of social exclusion. To name a few examples, intra-household exclusion may be indicated by the proportion of inactive population (housewives are also within this group); ethnic/migrant composition of a region may indicate neighbourhood-level exclusion in urban areas; NUTS 3 level data on access to cultural institutions (such as a library) or passenger car density within the population may reveal that inhabitants of small villages within a rural region are facing social exclusion. State-level social policies (such as laws on social transfers) impact undoubtedly NUTS 3 level data as well.

This summary on the territorial dimension of social exclusion attempted to put forward some key theoretical issues on how ‘the social’ and ‘the spatial’ interact, the co-constitution of which may interfere with the mapping exercise of Task 2.6. Some further notes will be made in the methodological and concluding part of this report.

## Domains of social exclusion

This part of the ESPON TiPSE research project from outlining social exclusion as a scientific and policy concept (Task 2.1) through obtaining data (Task 2.3) through mapping (Task 2.6) and interpretation of maps (Task 2.8) more-or-less follows a hypothetico-deductive scheme. It might be conceived as a testing exercise starting from hypotheses on social exclusion and testing them in the ESPON space. Task 2.1 undertook the conceptualization of social exclusion, the major value added of Task 2.6 being the operationalization of the same term.

In the course of the conceptualization of social exclusion, Annex 1 identified different domains of social exclusion. According to Reimer (2004) and Philip and Shucksmith (2003), social exclusion operates in an interrelated way through four overlapping major social systems:

1. Market relations, or private systems;
2. Bureaucratic relations, or state administrative systems;
3. Associative relations, i.e. collective action processes based on shared interests;
4. Communal relations, based on shared identity, among family and friends networks.

This concept of different relations undoubtedly helps in making sense of how social relations unfold (also over space) in order to exclude or include people or groups of people. Nevertheless, for TiPSE they represent an abstract level of social exclusion which has to be measured by some ‘clear’ indicators which are meaningful and available at NUTS 3 regional level in the ESPON countries. Because of these limitations, Annex 1 has already identified four domains of social exclusion for the mapping exercise:

1. Earning a living;
2. Access to basic services;
3. Social environment;
4. Political participation.

Annex 1, however, did not established the conceptual links between Philip and Shucksmith’s social systems and ESPON TiPSE’s domains. There is apparently a direct link between the two, but some deviations will be summarised in the following chapter on ESPON TiPSE Indicators.

EU level policies’ frameworks changed in the past whether they identify domains of social exclusion. As Annex 1 noted, EU-commissioned research in 1998 identified five domains (factors) that *cause* social exclusion, namely social, economic, institutional, territorial factors and symbolic references (European Commission, 1998). Hence, *a difference should be made between a) domains–dimensions–indicators along which causes of social exclusion may be measured, and b) domains–dimensions–indicators along which policy intervention can tackle social exclusion.* A slightly similar approach is adopted by a Polish case study which differentiates between ‘symptoms’ of social exclusion and refers also to the monitoring of policy intervention by assessing subjective exclusion consequences (for the latter, survey data was used) (Ministry of Labour and Social Policy and UNDP 2006).

EU level policies following the 1998 report focused more on the ‘Earning a living’ domain. Annex 1 concluded that the Lisbon Strategy and its re-launch in 2005 shifted the emphasis from economic and social cohesion to growth and jobs; which means that the policy discourse is focused on coping social exclusion by job-creation and increasing (per capita) income. The EU 2020 agenda – also cited in Annex 1 – on the one hand pushes forward a slightly different understanding by emphasising social exclusion throughout the life-cycle, on the other hand the growth-related understanding of social exclusion did not change at all. In this sense, the approach followed by the EU policy-making corresponds to only one or two of the three characteristics of social exclusion referred to earlier (relationality, process-orientation and multidimensional character). Relationality of social exclusion is considered one-sidedly, as relations between the ‘excluded’ and the ‘included’ are narrowed down to economic, growth-related issues (i.e. exclusion can be solved only by the fact that some ‘included’ people are working and producing added-value in the economy). Process-orientation of social exclusion is covered by focusing EU policy on a process (growth), and not on some static goal. Multi-dimensionality of social exclusion is, however, largely omitted. Generally speaking, the same approach was followed in the aforementioned Polish study which conceptualised social exclusion as reflected in two areas: exclusion from the labour market and exclusion from the market of goods and services (consumption), thereby offering a ‘pure economic’ perspective of the phenomenon (for the details see Ministry of Labour and Social Policy and UNDP 2006).

There are other examples, however, which take into account different, non-economic areas of social exclusion. UNDP (2011) differentiates between exclusion from economic life, social services, civic and social participation; and the OMC (Open Method of Coordination on Social Protection and Social Inclusion) also follows the same approach with the following domains: income (poverty), material deprivation, health, (low) educational attainment, access to the labour market, access to social care.

Neither approach is necessarily capable of solving the conceptualisation problem of social exclusion in all prevailing socio-spatial contexts or ‘welfare regimes’ throughout Europe. For example, several studies in both Western and post-socialist countries (with research undertaken before and after the 2008 crisis) analysed the emerging group of working poor, which means that people with jobs are also facing poverty and social exclusion in these regions (Smith, Stenning, Rochovská and Świątek, 2008; Wills and Linneker 2014). Although many (mostly theoretical) criticisms on the ‘active inclusion through employment’ approach were cited by Annex 1, it is also important to note that it is exactly the territoriality (or socio-spatial embeddedness) of social exclusion because of which cross-European, univocal understandings and ‘treatments’ may fail in the end. In this sense, the EU’s reformed regional policy focusing on place-based approaches would establish a good opportunity to take into account the variegated socio-spatial contexts of exclusion.

## Dimensions of social exclusion

Annex 1 identified four domains of social exclusion for the TiPSE project to be used in the mapping exercise. To operationalize these four domains, several ‘dimensions’ were chosen as the next step.

Although explicit domains of social exclusion are mostly missing from European policy-related documents (but these can be elaborated on ‘inductively’ in research overviews such as Task 2.1 or Task 2.6 of TiPSE), dimensions of poverty and social exclusion are present in many cross-European and national social policy documents. As Annex 1 offered an extensive overview of them, only the European level will be discussed further in this paper.

Poverty is not a central concept in Task 2.6, and poverty is mostly defined one-sidedly, only relating to material-financial assets. In spite of that, some documents move towards a multi-dimensional understanding, as identifying dimensions of poverty is present in some documents of the EU policy. As an example, also referred to in Annex 1, the European Commission’s Platform against Poverty and Social Exclusion monitors and targets social exclusion with using three dimensions: the at-risk-of-poverty rate after social transfers, the index of material deprivation (lacking 4+ deprivation items) and the percentage of people living in households with very low work intensity (Bradshaw and Mayhew, 2010).

Both the Fifth and the Sixth report on economic, social and territorial cohesion (European Commission 2010, 2014) identified different aspects of social exclusion. In the evaluation of the impacts of cohesion policy, the reports take into consideration the important role of cohesion policy in reducing unemployment and increasing employability, as well as in tackling disadvantages in education and training. Furthermore, they discuss the contribution ERDF made by funding infrastructural investments throughout Europe. All of these aspects are covered by ESPON TiPSE’s proposal on the different dimensions and indicators of social exclusion (see the next chapter as well). In the Fifth cohesion report the multi-dimensional character of exclusion is discussed as to be tackled by identifying vulnerable groups (whose constitution as a separate group reflects different dimensions of their social exclusion), such as ‘people with special needs’, ‘migrants and minorities’, ‘asylum seekers’ or ‘Roma people’ (pages 227–230.). Targeted may it sound, and not calling into question the easiness of this understanding in the policy practice, an inherent problem in this approach is the stigmatisation of whole groups of people as being excluded (because they are migrants or because they are Roma). The Sixth cohesion report uses the Europe 2020 strategy’s approach by using three aspects (being severely materially deprived; living in a jobless household or household with very low work intensity; being at risk of poverty) to measure social exclusion (European Commission 2014). Having said that, ESPON TiPSE’s work packages partly aim at the verification these approaches by cross-comparisons of several dimensions and indicators (such as the dimension of ethnic composition or that of immigrants with the employment dimension).

Another sectoral policy discussed by Annex 1 of Final Report is the common agricultural policy (CAP). In the past decades the emphasis of CAP shifted from direct subvention of agriculture to a multi-faceted rural development agenda. In this sense, the EU is targeting with the common agricultural policy-making one territorial appearance of social exclusion, namely that of rural areas and of people living in rural areas. A logical conclusion to be drawn is that industrial structure of regional economies (e.g. agriculture’s share in the GDP or in the employment) may also be considered as one possible dimension in the ‘Earning a living’ domain, to be touched upon by ESPON TiPSE. However, it will not be considered among the indicators in this project. The main reason for that is that the sectoral composition of regional economies is in non-mutual relationship with the vulnerability to social exclusion (e.g. higher percentage of the manufacturing industry may indicate a region of industrial decline with higher social exclusion or prosperous manufacturing with less social exclusion).

Following that, the four domains of social exclusion have been disaggregated into different dimensions (see Table 1).

Table 1: Domains and dimensions of social exclusion recommended by Task 2.1 and Task 2.6

|  |  |
| --- | --- |
| *Domain identified by Task 2.1* | *Dimension identified by Task 2.1 and recommended by Task 2.6* |
| Earning a living | Income earned by tax payers |
| Employment |
| Access to basic services | Health |
| Education |
| Housing |
| ~~Transport and communication~~\* |
| Social environment | Age |
| Ethnic composition |
| Immigrants |
| ~~Crime and safety~~\* |
| ~~Municipal income from property taxes~~\* |
| ~~Municipal spending on social assistance~~\* |
| Household structure\*\* |
| Political participation | Citizenship |
| ~~Voters~~\* |
| ~~Civic engagement~~\* |

Notes:

\* Listed as potential dimension in Annex 1 (related to works of Task 2.1) and omitted during the operationalization in Task 2.6.

\*\* New dimension proposed by Task 2.6 and not included in Annex 1.

Using this approach, a vast majority of dimensions covered by EU’s and member states’ social policy are taken into account. Moreover, this combination reflects the multi-dimensionality of social exclusion which is the mainstream understanding in the academic discourses evaluated in Annex 1. The dimensions also address Reimer (2004) and Philip and Schucksmith’s (2003) four overlapping social systems, further specified in Table 2.

Table 2: Matching TiPSE’s domains and dimensions with Reimer (2004) and Philip and Shucksmith’s (2003) systems of social exclusion

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Domain identified by Task 2.1* | *Dimension identified by Task 2.1 and recommended by Task 2.6* | *Reimer (2004) and Philip and Shucksmith’s (2003) social systems* | | | |
| *Market relations (Private systems)* | *Bureaucratic relations (State systems)* | *Associative relations (voluntary systems)* | *Communal relations (family and friends)* |
| Earning a living | Income earned by tax payers | X |  |  |  |
| Employment | X |  |  |  |
| Access to basic services | Health |  | X |  |  |
| Education |  | X |  |  |
| Housing | X | (X) |  |  |
| ~~Transport and communication~~\* | (X) | X |  |  |
| Social environment | Age |  |  | (X) | (X) |
| Ethnic composition |  |  | (X) |  |
| Immigrants |  |  | (X) | (X) |
| ~~Crime and safety~~\* |  |  | (X) |  |
| ~~Municipal income from property taxes~~\* |  | X |  |  |
| ~~Municipal spending on social assistance~~\* |  | X |  |  |
| Household structure\*\* |  |  |  | X |
| Political participation | Citizenship |  | (X) | X |  |
| ~~Voters~~\* |  | (X) | X |  |
| ~~Civic engagement~~\* |  |  | X |  |

Notes:

\* Listed as potential dimension in Annex 1 of Final Report and omitted during the operationalization in Task 2.6.

\*\* New dimension proposed by Task 2.6 and not included in Annex 1.

X primary correspondence; (X) secondary correspondence

Reimer (2004) and Philip and Shucksmith’s (2003) market relations in the society show strong links with three dimensions of TiPSE’s social exclusion: inclusion into labour markets, income earned by individuals/households and housing are mostly defined by market processes and private systems. In addition to that, transport and communication infrastructure is partly governed by private actors. The state system or bureaucratic relations are represented in TiPSE by several variables: health, education, transport and communication infrastructure. The former two are mostly influenced by public policies, whereas transport and communication only partly (see the more detailed description of indicators in the next section). Housing may include some elements of social housing (as part of the municipal or state policy), political participation includes some associations with the role of the state, therefore both of them are considered as secondary constitutive within the dimensions. Associative relations, collective action processes cover realms of social life where relationships based upon shared interests within a group are taken into account. Primarily, these may be linked to various aspects of political participation (citizenship, voting intentions and civic engagement); secondary, these are related to different dimensions of identification and identity-building factors (age, ethnicity, migrant background, criminality). Communal relations (or relations with friends and families leading to social exclusion) is probably the least covered aspect of ESPON TiPSE. This social system may be operationalized, measured and quantified in a cross-European comparative study in an uneasy way. Household structure is a proxy dimension for this aspect and there are only two other dimensions somewhat implying characteristics of family and friends relationships.

## Indicators of social exclusion

Following the identification of domains and dimensions of social exclusion for ESPON TiPSE, key indicators or variables of the different dimensions were chosen. We are aware that there are certain limitations in the selection of the indicators (many of these concerns are discussed in Levitas 1999), and we conceive research results of TiPSE as a starting point for a wider discussion on the relevance of these indicators in understanding and tackling social exclusion. In this phase, theoretical considerations of Task 2.1 and Task 2.6 outlined earlier in this paper are to be matched with findings of Task 2.3. Major criteria of finding suitable indicators were the following:

1. the indicator represents the dimension (and the domain) of social exclusion in a meaningful way;
2. the chosen indicator is most possibly an established or potential key variable in social policies throughout Europe (this aspect is important for the policy-implications of the ESPON project);
3. data is available at least at NUTS 3 level (LAU 1 data availability is important for the case studies, and for national policy making, less for the spatial scale of the EU).

The indicators presented in this methodological paper represent a result of longer discussions among ESPON TiPSE partners and between ESPON TiPSE and the ESPON Coordination Unit. Some dimensions had to be dropped during the implementation phase, because criterion a) or c) was not fulfilled. These shortcomings have already been reported in the Interim Report of the project (such as the virtual absence of data in the domain ‘Political participation’).

The review of EU and member states’ policies on social exclusion in Annex 1 clearly showed that measurement and monitoring of social exclusion is based on indicators which in the majority of the cases are not grouped in dimensions and domains. Hence, there is a marked difference between the approach of ESPON TiPSE – which follows a deductive way of making sense of the world by starting with theories and distilling them to indicators – versus that of social policy which approaches inductively, i.e. it starts with collecting and interpreting indicators in order to draw conclusions on processes of social exclusion on the more abstract and more general level.

Having said that, it is still possible to establish conceptual links between the four domains of ESPON TiPSE and the indicators of different social policy practices.

Annex 1 emphasised that EU level policy (such as the Laeken indicators) are more focused on the domains ‘Earning a living’ and ‘Access to basic services’. Consequently, they fail to correspond the three criteria of relationality, process-orientation and multi-dimensionality referred to earlier in this paper.

Other studies cited in Annex 1 focus more on the lack of social integration. This approach covers predominantly the ‘Social environment’ and the ‘Political participation’ domains of ESPON TiPSE. As for the mapping exercise undertaken in Task 2.6 these indicators are hardly useful, as data is collected during extended fieldwork via sampling and survey-methodology, and is not available in a harmonised way for a reliable cross-European comparison. (For example, Eurobarometer’s studies offer representative regional level data either on NUTS 1 level – mostly for countries with smaller population – or on NUTS 2 level.)

Yet another group of studies referred to in Annex 1 uses indicators which identify vulnerable social groups (drug addicts, homeless people etc.) by using context-variables in a more direct, one-dimensional way than our approach. As those studies stigmatise ‘a priori’ by referring to one dimension (a surface appearance) as a sole cause of social exclusion – e.g. homeless people are socially excluded and they are excluded because they are homeless (cf. Mitchell, 2011) –, this approach will not be followed in ESPON TiPSE because of ethical and moral concerns.

As the further step, indicators of social exclusion were gathered to all domains and dimensions. Both Eurostat and national data sources (for census 2001 and census 2011 variables) were consulted in the course of the project by partners. Table 3 contains the list of variables. For derived variables, further discussion is to be found in Chapter 4.

The two most important datasets used in ESPON TiPSE project are Eurostat and national statistical sources (census variables). Pros and cons using Eurostat data are the following:

* harmonised data for all member states, therefore data is ‘fully’ comparable (metadata offers some hints on the geographical, context-dependent cross-comparability);
* longitudinal comparisons are possible (e.g. between census data of 2001 and 2011);
* easy-for-use datasets, available free of charge;
* not all data is available on NUTS 3 level;
* few of the dimensions of social exclusion are covered in Eurostat datasets.

Several data is only available from censuses in either some or most or all of the countries. Although Eurostat gathered census data for the 2001 and 2011 rounds (for the latter see the Eurostat Census Hub under https://ec.europa.eu/CensusHub2), there are gaps because of various reasons (no census was carried out, such as in Germany; new and non-member states’ data is missing, etc.). As for regional breakdowns of the 2011 census period EC Regulation 763/2008 Article 5 (2) states that ‘Member States shall provide the Commission (Eurostat) with final, validated and aggregated data and with metadata, as required by this Regulation, within 27 months of the end of the reference year [2011].’

In this methodological paper, detailed descriptions are offered for each indicator, and all changes between Task 2.1 and Task 2.6 are explained (some of them have already been touched upon in the Interim Report of TiPSE). Another deliverable of Task 2.6 is a set of maps for all indicators.

Table 3: ESPON TiPSE indicators of social exclusion by dimensions and domains

| *Domain identified by Task 2.1 and Task 2.6* | *Dimension identified by Task 2.1 and recommended by Task 2.6* | *Indicator recommended by Task 2.1 and Task 2.6* | *Indicator further specified by Task 2.6* | *Years covered in TiPSE collection* | *Source* | *Further qualification\* summarised by traffic lights* | *Composite index indicator (2011)* |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Earning a living | Income earned by tax payers | Income earned by tax payers | Net disposable household income | 2001, 2011 | Eurostat | ++++(-)(+) |  |
| Ratio of employed persons in elementary occupations | 2001, 2011 | Census | ++--(+)(+/-) | Yes |
| Employment | Employed | Economic activity rate | 2001 | LFS (Eurostat) |  |  |
| Economic activity rate | 2001 | Census |  |  |
| Male economic activity rate | 2001 | LFS (Eurostat) |  |  |
| Male economic activity rate | 2001 | Census |  |  |
| Female economic activity rate | 2001 | LFS (Eurostat) |  |  |
| Female economic activity rate | 2001 | Census |  |  |
| Activity gender gap | 2001 | LFS (Eurostat) |  |  |
| Activity gender gap | 2001, 2011 | Census | +-+-(+)(+/-) |  |
| Employment rate | 2001 | LFS (Eurostat) |  |  |
| Employment rate | 2001 | Census |  |  |
| Male employment rate | 2001 | Census |  |  |
| Female employment rate | 2001 | Census |  |  |
| Employment gender gap | 2001 | Census |  |  |
| Unemployed | Unemployment rate | 2001 | LFS (Eurostat) | +-+-(+)(+) |  |
| Unemployment rate | 2001, 2011 | Census |  |  |
| Male unemployment rate | 2001 | LFS (Eurostat) |  |  |
| Male unemployment rate | 2001 | Census |  |  |
| Female unemployment rate | 2001 | LFS (Eurostat) |  |  |
| Female unemployment rate | 2001 | Census |  |  |
| Youth (15–24) unemployment rate | 2001 | LFS (Eurostat) |  |  |
| Youth (15–24) unemployment rate | 2001, 2011 | Census | +-+-(+)(+/-) |  |
| Unemployment gender gap | 2001 | LFS (Eurostat) |  |  |
| Unemployment gender gap | 2001 | Census |  |  |
| Inactive | Inactivity rate | 2001, 2011 | Census | +-++(+)(+) | Yes |
| Male inactivity rate | 2001 | Census |  |  |
| Female inactivity rate | 2001 | Census |  |  |
| Inactivity gender gap | 2001 | Census |  |  |
| Long-term unemployed | – | – | – |  |  |
| Jobless households | – | – | – |  |  |
| Access to basic services | Health | Access to primary health | Health personnel per 100,000 inhabitants | 2001, 2011 | Eurostat (NUTS 1–2) | -+--(-)(+/-) |  |
| Hospital beds per 100,000 inhabitants | 2001, 2011 | Eurostat (NUTS 1–2) | -+--(-)(+/-) |  |
| Life expectancy | Life expectancy at birth | 2001, 2011 | Eurostat (NUTS 1–2) | ++++(-)(+) |  |
| Education | Pre-school access | – | – | – |  |  |
| Primary school access | – | – | – |  |  |
| Cultural house / library access | – | – | – |  |  |
| Educational attainment: primary or less than primary education (ISCED levels 0–1) | Ratio of population with low qualification | 2001, 2011 | Census | +-++(+)(+) | Yes |
| Educational attainment: tertiary education (ISCED 5–6) | Ratio of population with high qualification | 2001, 2011 | Census | +-++(+)(+) |  |
| Housing | Tenure status of households | – | – | – |  |  |
| – | Ratio of housing units without water supply system | 2001, 2011 | Census | --+-(+)(+) | Yes |
| Ratio of housing units without inside toilet | 2001 | Census |  |  |
| Ratio of housing units without bath or shower | 2001, 2011 | Census | --+-(+)(+) |  |
| Ratio of housing units without central heating | 2001 | Census |  |  |
| Number of occupants per room | 2001, 2011 | Census | --+-(+)(+) |  |
| Useful floor space per occupants | 2001 | Census |  |  |
| Transport and communication | Post office | – | – | – |  |  |
| Broadband internet | – | – | – |  |  |
| Transport | – | – | – |  |  |
| Number of passenger cars | – | – | – |  |  |
| Social environment | Age | – | Total dependency rate | 2001, 2011 | Census | +++-(+)(+/-) |  |
| Child dependency rate | 2001, 2011 | Census | +++-(+)(+/-) |  |
| Old age dependency rate | 2001, 2011 | Census | +++-(+)(+/-) | Yes |
| Ethnic composition | – | Ratio of Roma population | 2001, 2011 | Census | -++-(+)(+) | (Yes) |
| Immigrants | – | Ratio of foreign-born population | 2001, 2011 | Census | +++-(+)(+/-) | (Yes) |
| Crime and safety | – | – | – |  |  |  |
| Municipal revenue from property taxes | – | – | – |  |  |  |
| Municipal spending on social assistance | – | – | – | – |  |  |
| Household structure (new dimension of Task 2.6) | – | Ratio of lone parent households | 2001, 2011 | Census | +-+-(+)(+/-) |  |
| Ratio of lone parents | 2001 | Census |  |  |
| Average household size | 2001 | Census |  |  |
| Ratio of households with 6 or more persons | 2001, 2011 | Census | +++-(+)(+/-) | Yes |
| Political participation | Citizenship | – | Ratio of population not citizens of the country | 2001, 2011 | Census | +++-(+)(+/-) | (Yes) |
| Voters | – | – | – | – |  |  |
| Civic engagement | NGOs | – | – | – |  |  |
| Members of NGOs | – | – | – |  |  |

*\** *Order of signals: Coverage, Harmonization, Discrimination, Interpretation (NUTS level)(relevance)*

*Meaning of signals: +=basically positive, -=basically negative, NUTS+, lover NUTS=-, (in case of SE relevance: +/- the relevance is not straightforward)*

*Scoring: two + criteria were conditional to amber, (+) NUTS 3 availability of data and (+) relevance to PSE were conditional to green*

Further considerations were made during the implementation phase whether to use other data sources from all of ESPON countries’ national statistical offices and other official or non-official data producers. This exercise is however not easy, as the TiPSE project and TiPSE’s project partners do not possess capabilities of a statistical institution in harmonising different datasets which use different methodologies. A value-added of this project is that project partners have collected some 2001 and 2011 census data for many dimensions of social exclusion from official national sources; these datasets have been integrated and are part of Task 2.3 (TiPSE database).

Several studies use survey-based data indicators in identifying causes and consequences of social exclusion. Thereby, they try to tackle shortcomings of above-mentioned understandings, for example that the Laeken indicators do not include any measurement of social isolation or subjective well-being (cf. Lelkes 2006). As these kinds of statistics are not available for a cross-European comparison in the above-mentioned databases, ESPON TiPSE does not aim to cover these aspects explicitly. However, some conclusions will still be drawn from the case studies (Task 2.4) regarding ‘subjective’ dimensions of social exclusion.

# Methodology of development and mapping of social exclusion indicators

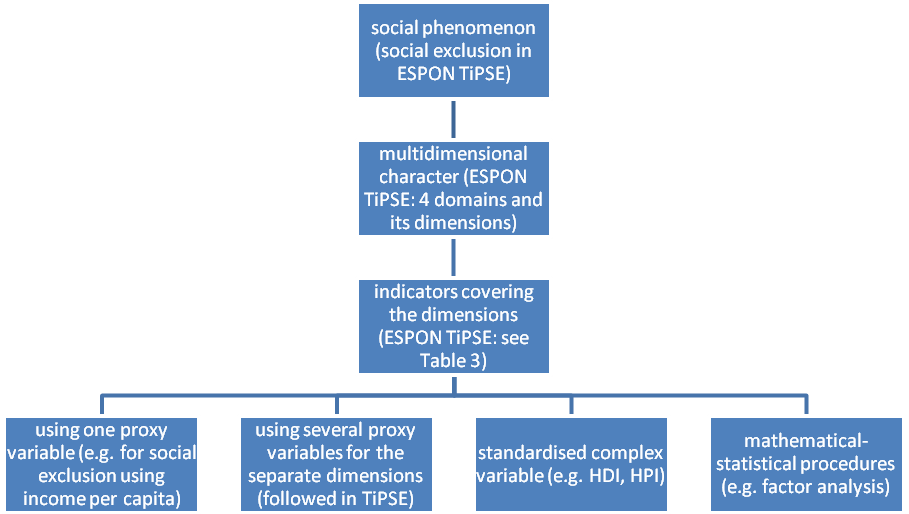
## A review of potential methodologies and the introduction of TiPSE approach

Within the social sciences’ research practice several methods exist how to measure multifaceted social phenomena and how to make sense of the world ‘outside’. In this section several options for tackling this issue are discussed. Conclusions will be drawn for firstly how to measure social exclusion in the TiPSE project, and secondly certain implications for geographical or territorial analyses will be examined.

As already outlined in Annex 1, social exclusion is mostly understood in a logocentric way in the literature. This means that social exclusion ‘as such’ is thought of to be existing in an ordered world which can be fully accessed by scientific method. This is practised in TiPSE by extensive research and quantification (Task 2.3 and Task 2.6), a more qualitative interpretation of the extensive research phase (Task 2.8) and by intensive research (Task 2.4’s case studies) (cf. Sayer, 1992). In ESPON TiPSE, data analysis is having less an exploratory character in the sense that understanding of social exclusion as a concept is constructed by interpreting datasets. Rather, TiPSE uses a deductive way of thinking by constructing domains and dimensions of social exclusion, before the data collection and mapping exercise starts (with some fine-tuning during the data collection process). Annex 1 also referred to social exclusion as a multidimensional phenomenon (or process), the dimensions of which are intersecting, i.e. there are certain overlaps and/or causal relations between them. The dimensions should be measured by several indicators in the course of any project dealing with multifaceted phenomena.

In the quantitative social sciences literature there exist several methods for measuring complex phenomena. The most prevailing methodologies are summarised in Figure 1.

Figure 1: Measuring complex phenomena: an outline of possible methodologies



1. The easiest solution to capture a multidimensional phenomenon is to use one proxy variable. The theoretical underpinning is that this sole indicator represents the whole complexity exactly because the dimensions are interlinked in a causative way. Annex 1 notes some examples from the literature which belongs to this group. For instance, if social exclusion and poverty is used interchangeably in research practice, and poverty is conceptualised and operationalised as people with an income below 60% of the equivalised disposable national median (after social transfers), then per capita income is regarded as a simple proxy variable of social exclusion. Another example is from EU’s regional policy where regional per capita GDP and GNI are the sole variables for measuring the concept ‘development’. It is unquestionable that this approach is easy to understand, easy to implement in policy discourse, there are no high-excess data collecting and data processing costs in governing the society. On the other hand, this approach oversimplifies social realities in a vast majority of cases, thereby TiPSE needs a more fine-grained way of interpretation.
2. A more complex way of operationalizing research on multifaceted issues is to use more than one proxy variable. Here, the deductive way of thinking starts with conceptualising a phenomenon by constructing several dimensions. These may be hypothesised as being interlinked, or being separate and showing separable aspects. Dimensions might be measured by one single indicator per dimension, or several indicators might be considered for each of the dimensions. For example, UNDP (2011) operationalised 3 dimensions of social exclusion with 8 indicators each (24 altogether), then for all cases (here: individuals and not regions) it was assessed in how many indicators one is socially excluded (certain thresholds were used for all the indicators). The approach of identifying different dimensions and several indicators for each of them is followed by ESPON TiPSE, as it was described in the preceding parts of this paper in detail. The considerations for this choice are that it is more complex than a simple variable method (thereby offering a more nuanced understanding of social exclusion), and that it is still simple enough to implement in social policies at the EU, national and regional scales. This approach leaves a considerable room for manoeuvre in the further course of the project regarding capturing interlinkages across dimensions and indicators: other tasks of ESPON TiPSE will elaborate on this aspect as well.
3. The third option is to use a standardised complex variable for measuring complex social phenomena. For example, in the English Indices of Deprivation 38 separate indicators grouped into seven domains are used; income, employment, health, education, crime, access to services and living environment, inter alia. Each domain has a distinct weight in the complex index calculated using the 38 variables (<http://www.communities.gov.uk/documents/statistics/pdf/1871208.pdf>). This understanding is also followed by the UN and other national and supra-national policy actors when using the Human Development Index (HDI) or the Human Poverty Index (HPI) in conceptualising and operationalising development or poverty (for a European example on NUTS 2 level see Bubbico and Dijkstra, 2011). This method may be understood as a follow-up to b) – identifying dimensions, each of which measured by one or two variables, then these variables forming a simple composite variable after various mathematical transformations. The normalization of variables is done by using descriptive statistics (maximum and minimum) in the case of HDI and HPI, and the weighting of the disparate aspects is possible in combining the dimensions into the index. Regarding the (in)separability of the dimensions, this method is quite Janus-faced. On the one hand it tells apart different dimensions (and represents them as having no interlinkages between them; if there were any, then it would be possible to look only at one of the correlating dimensions), on the other hand with the practice of calculating the average of the dimensions for the index it underlines that the dimensions are interchangeable (i.e. human development may be increased by a better educational attainment in the same way as with extending life expectancy). ESPON TiPSE also aimed at constructing a composite index for measuring vulnerability to social exclusion using the project’s database. This pilot index was calculated for 2011.
4. The most complicated possibility is to use complex mathematical-statistical methodology, such as multi-dimensional regression, factor or principal component analysis. When using multi-dimensional regression (such as in PovMap) one aims to capture an unknown phenomenon by a combination of different variables for which there is a data coverage. The aim of the factor and principal component analysis is to reduce the number of variables by combining them into dimensions (factors) which are statistically independent from each other. Whereas in some cases factor analysis offers a meaningful way to capture multifaceted social phenomena (such as social exclusion), it is still a complicated method which is not really capable of channelling into social policy. Another problem is the comparability of the method: in different spatio-temporal contexts the results (factors) are different, thereby hardly comparable. Moreover, the method is based on a certain black-boxing: it uses a huge dataset as an input and results in factors as an output, but what happens during the calculation process is blinded out by the method itself. As one of the consequences, it is quite problematic when we try to understand mechanisms among different aspects of social exclusion. Another limitation for territorial analyses is that the method itself is not capable of saying anything about the spatiality and spatial structure of the phenomenon in question (as during the method correlations are calculated between variables and not between regions), and the results of the factor analysis is only valid at the geographical scale of the data (for a further discussion see Czirfusz, 2010). Another possibility of using sophisticated mathematical transformations for getting social exclusion indices is presented in a Polish case study (Ministry of Labour and Social Policy and UNDP 2006, Annex 2).

In ESPON TiPSE, Task 2.6 puts forward a methodology of b) – to use different proxy variables for different dimensions of social exclusion throughout Europe, and c) a development of a pilot model of a composite representation of social exclusion.

As for the composite variable, next chapter discusses in detail which considerations were taken into account, thus only the main points are summarised here. The composite variable – calculated using census 2011 data – attempts to cover all domains and dimensions of social exclusion defined in the project (health, immigrants, ethnic composition and citizenship are finally omitted). Chosen indicators are assumed to be comparable across the ESPON space and not correlate strongly with each other. The list of selected indicators is to be found in Table 3. Calculation of the composite variable is based on first, a z-score standardization procedure, and second, dummy variables were introduced (representing whether a certain region is above or below z-score 1). Classification of regions was done by using these dummy variables (not vulnerable to social exclusion, vulnerable to social exclusion from one aspect, vulnerable to social exclusion from more aspects). This approach of classification was used at both dimension and domain level, as first and second steps of modelling.

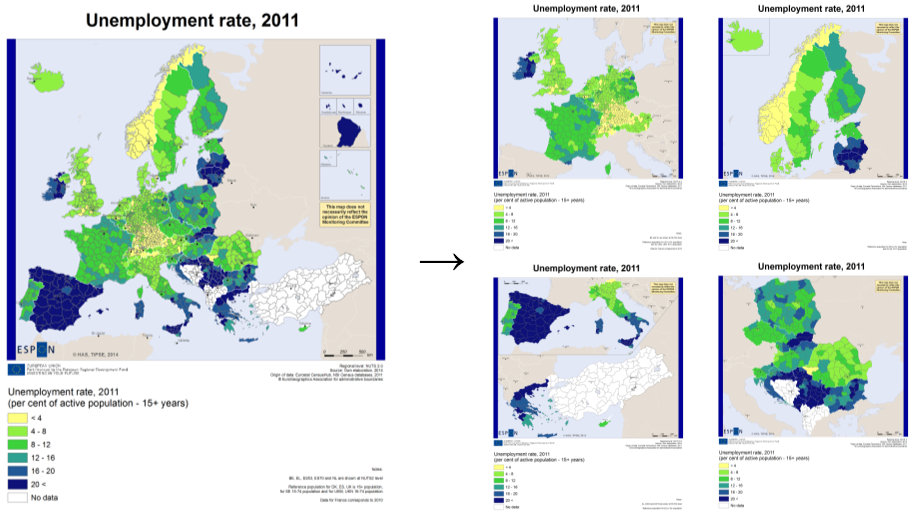
The mapping process (as part of Task 2.6) also needs some methodological explanation. One of the issues the mapping process faced was which categorisation of the data is meaningful to use. One option might have been to use quintiles in the legend (quintiles are defined using the whole dataset, not the countries’ data separately; this would have meant that the maps are more comparable). However, because of the limitations of this approach, namely that this understanding implies that there are X percent of each society which are socially excluded or are vulnerable to social exclusion, we used different categorisations for each indicator. In the TiPSE mapping exercise the distribution curve of the indicator was considered, and Team HAS’s background knowledge on the dataset was mobilised to produce the best possible visualisation. If it was meaningful, the equal interval method was used. If it resulted in uneven number of cases in each category, or the dataset seemed to be clustered in larger groups, the categories were modified accordingly. For each map 6 (or 5) categories (plus ‘no data’) were used.

To ensure integration of the mapkit into macro-regional descriptions of Task 2.8, 4 macro-zooms with the same categorisation were prepared for each of the ESPON space maps (Table 4, Figure 2). These macro-zooms were used in the exploratory phase in Task 2.8, i.e. to study the inner territorial differentiation of social exclusion in each macro-region; and also as illustrations for Annex 8 of TiPSE Final Report.

Table 4: Macro-regions of the TiPSE project

| Macro-region | Countries |
| --- | --- |
| Atlantic and Central European region | Austria, Belgium, France, Germany, Ireland, Liechtenstein, Luxemburg, Switzerland The Netherlands, United Kingdom |
| Nordic and Baltic region | Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Sweden |
| Mediterranean region | Cyprus, Greece, Italy, Malta, Portugal, Spain, Turkey |
| East Central Europe and the Balkans region | Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Former Yugoslav Republic of Macedonia, Hungary, Kosovo, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia |

Figure 2: ESPON space map and macro-regional zooms: an example



## Introduction of a pilot model of a composite representation of social exclusion

Social exclusion is regarded as a multidimensional phenomenon according to ESPON TiPSE project. The research framed a domain and dimension structure for analysing the exclusion patterns by several illustrative indicators of vulnerability to exclusion. In this framework the analysis of spatiality of single dimensions leads to the understanding of complex patterns of social exclusion in Europe in an indirect way, while it also gives a representation of the most (and multiply) affected areas.

As it was mentioned above a direct synthetic representation of multidimensionality of social exclusion can be based on composite indices. In this case the analysed domains or dimensions are built into a common model which represents the complex effect of exclusion factors. The influence of single components on outlined patterns is hard to define by following that way, because different domains or dimensions of exclusion can cancel the effect of each other. If the regional distribution of indicators representing factors of exclusion shows a very different picture, values of the composite indicator do not illustrate well the actual vulnerability to exclusion. A reasoned selection of variables and the application of different weights can moderate the effect of this problem.

As the domain and dimension structure in the operationalized social exclusion analysis of TiPSE is quite unbalanced, and the NUTS 3 coverage offers a limited set of indicators, a simpler classification of regions according to their vulnerability to different exclusion factors is proposed in this pilot model in order to illustrate the patterns of social exclusion in a complex way. In this model classification is carried out by single domains. Each indicator (representing different dimensions within the domain) is counted up which exceeds a given threshold in each region. The threshold divides regions into the most vulnerable ones and those of not endangered by that factor of exclusion. This classification provides a maximum score according to the number of dimensions (and indicators) per domains and by following this approach regions can be labelled as ‘not affected by exclusion’, ‘vulnerable to one or another factor of exclusion’ or ‘multiply affected’.

This method also offers the possibility to identify different types of risk factors affecting a region and as it also holds the possibility of combination of results. Not just domain level classifications can be carried out, but more complex classifications as well, by combining the patterns of the analysed domains.

Beside the selection of variables representing dimensions of each domain, the reasonable identification of the applied threshold is essential. In this pilot experiment TiPSE TPG propose a dynamic determination of thresholds based on z-score normalization, however other approaches can also be reasonable (using the mean values of indicators, picking the top quintiles of regions etc.).

Standardization transforms the applied variables into comparable form. By presuming that low values of variables represent more favourable position and high values of variables represent more disadvantaged situation, greater z-scores also imply higher risk of exclusion. Standardized variables have a mean=0 and standard deviation=1, so one can presume that those regions where transformed z-scores exceed 1 in this sense, they have the most disadvantaged situation within the given set. Thus, it can be applied as meaningful and reasonable (though still arbitrary) point of reference/threshold during calculation and classification.

The identification of thresholds in this classification raises the question of that how the dataset of calculation is determined. If the method is applied for an analysis of e.g. a group of countries, between country differences can be ideally interpreted only in case if the dataset is complete (every chosen variable in every country is available). In this case different countries can be put in a common model which makes them comparable (standardization is carried out by using not separated variable means and standard deviation by country but by applying ‘regional’ values). Otherwise only relative positions within different countries can be represented simultaneously by separate country-models as another model version. This latter mode of representation gives less chance to make a wider regional comparison as it (falsely) increases the effect of regional (within country) differences. For example the standardized scores can indicate a more disadvantaged situation in a country with a high standard deviation of unemployment rate (e.g. 3%,4%,5%,6%,7%), while the positions of another country with evenly high values of the variable (e.g. 20%, 20%, 20%,20%,20%) seem to be more favourable in this sense.

Considerations of selection of variables should take several conditions into respect in order to achieve a reliable model. Main principles are:

* The selected variables should make a good representation of the risk factors related to the given domain or dimension. Every domains and dimensions should be represented.
* Variable measures should be comparable (if transformations are needed, they also should be done). If the study covers a group of countries, the comparability of the meaning of variables and the vulnerability of being an effective measurement of risk of exclusion are also important issues.
* The selected variables should not correlate strongly with one another.

If a dimension was able to be covered with several suitable indicators, those were picked which did not strongly correlate with other indicators from other domains and had better spatial coverage at NUTS 3 level. Health dimension was not represented in the model, because no indicator at NUTS 3 level could represent this aspect of exclusion. Some indicators (measures of Roma population, foreign-born population, non-citizen population) were considered to use, but due to content-related and coverage issues they were finally omitted from the experiment. Thus, the domain and dimension coverage of the pilot model is not complete. Other indicators (ratio of employed persons in elementary occupations and ratio of housing units without water supply system) also have imperfect coverage, in spite of that they were kept in the model.

The selected indicators are (by domains and dimensions):

* Ratio of employed persons in elementary occupations (Elementary\_occupations11) – Earning a living / Income

Reasoning: Employment in elementary occupation can be associated with gaining only a lower income, and it potentially increases the risk of exclusion.

Comment: It has no coverage for Belgium, Denmark, Greece, France, Croatia, Italy, the Netherlands, Austria, Poland, Romania, FYROM, Turkey, Albania and Bosnia and Herzegovina

* Inactivity rate, Census (Inactivity11\_Census) – Earning a living / Employment

Reasoning: Absence from the labour market leads to a higher risk of earning only a precarious living.

Comment: It has no coverage for Belgium, Greece, the Netherlands, FYROM, Turkey, Albania and Bosnia and Herzegovina

* Ratio of population with low qualification (Low\_qualification11) – Access to basic services / Education

Reasoning: Lower qualification decrease the success of participation in the labour market, potentially leading to exclusion.

Comment: It has no coverage for Belgium, Greece, the Netherlands, FYROM, Turkey and Bosnia and Herzegovina

* Ratio of housing units without water supply system (No\_water11) – Access to Basic services / Housing

Reasoning: Bad housing can also be a symptom of exclusion. The accessibility of different housing facilities and installations is not only a social issue, but it is affected by several other factors (e.g. technology, climate, environment etc.). The access to a water supply system is probably one of the most universal indicator of housing conditions.

Comment: It has no coverage for Belgium, Denmark, Germany, France, Malta, Netherlands, United Kingdom, Switzerland, Iceland, Liechtenstein, FYROM and Bosnia and Herzegovina

* Old age dependency rate (ODependency\_rate11) – Social environment / Age

Reasoning: Old age dependency rate can represent this vulnerable population group potentially endangered by different forms of exclusion (mostly in disadvantaged areas).

Comment: It has no coverage for FYROM and Bosnia and Herzegovina

* Ratio of population Roma (Roma\_population11) – Social environment / Ethnic composition

Reasoning: Roma population in East Central Europe and in the Balkan countries is one of the population groups affected to a high degree by many dimensions of social exclusion.

Comment: Potential overlap with other risk factors of exclusion as it identifies a vulnerable population group endangered by the negative effects of non-participation in the labour market, low qualification, bad housing conditions etc. It has no usable coverage for most of the countries of Europe; should be considered to drop in an extended model.

* Ratio of foreign-born population (Immigrants11) – Social environment / Immigration

Reasoning: Immigration status can increase the risk of social exclusion (e.g. limited access to different forms of social security, different form of disadvantages in the labour market etc.).

Comment: It has no coverage for FYROM, Turkey and Bosnia and Herzegovina. The reasoning of the variable as an indicator of exclusion can be questioned, therefore the indicator was dropped from the pilot model

* Ratio of households with 6 or more persons (Overcrowded\_households11) – Social environment / Household structure

Reasoning: Overcrowded households can face a higher risk of exclusion related for example to earning a living or access to basic services.

Comment: It has no coverage for FYROM, Turkey and Bosnia and Herzegovina

* Ratio of population not citizens of the country (Non\_citizens11) – Political participation / Citizenship

Reasoning: Having no rights ensured by citizenship (e.g. access to different forms of social security etc.) can increase the risk of social exclusion.

Comment: Represents the only dimension of a domain, its weight is too big for not deforming the model results. It has no coverage for FYROM, Turkey and Bosnia and Herzegovina. The reasoning of the variable as an indicator of exclusion can be questioned, therefore the indicator was dropped from the pilot model.

If we presume that the selected indicators represent different symptoms of exclusion then higher values of a variable indicate potentially higher risk of exclusion. If a variable does not follow this order then it should be inverted (100-x, 1-x) for calculation. Standardized scores were calculated for every variable – firstly separate models for a wider group of countries in order to illustrate within country differences, then in a second model for a common group of countries with available conditions in order to have a common ‘regional’ (between country) view.

Step 1 – Standardizing the variables (both as separate countries and common group of countries):

In the second step these z-scores were transformed by following a binary classification. If the standardized value of the indicators exceeded 1 it was labelled as ‘1’, if it was below 1 it is labelled as ‘0’. As a next step, these 0 and 1 values were summed up per domains in each region and they provided the following classification. If the sum is 0, the region is labelled as ‘not affected by exclusion’. If it is 1, the region is ‘vulnerable to one or another factor of exclusion’, and if the sum is 2 the area is classified as ‘multiply affected’ region. A combination of domain representations was also carried out in the proposal by following the same logic, by counting up those cases where the region was labelled as excluded in one or more domains.

The extension of the calculations to the whole ESPON space raises many questions to discuss as it interfere several points of limitations, while the methodology followed in the pilot model seems to be basically applicable. Main conclusions on limitations of indicator selection, calculation and representation are as follows:

* In some cases the selected variables do not universally give a good representation on the risk factor related to the given domain or dimension. It depends on which country is affected, the type of welfare regime, conditions of social security etc. Thus the same relative situation according to an indicator does not imply the same risk of exclusion.
* In some other cases, variable measures (of different countries) are not fully comparable even they all refer to the risk of exclusion. In this way between country differences are harder to interpret, within country situation are more reliable to present.
* Data coverage for 2011 is far from complete. At the point of selection of variables for the pilot model achieving the best coverage of data (also for a potential extension) was a very important aspect. All domains can be represented by at least one variable with acceptable coverage, however the detailed representation of every domain and dimension is not guaranteed. Beside the general gaps related to smaller (or non-ESPON) countries the bad data coverage of some EU countries (e.g. Belgium, Greece or Netherlands) is also a problematic issue in this sense.
* In those cases, where indicator values were missing in one or more countries, these regions were generally labelled as not vulnerable or not affected by exclusion – what is not certainly valid. If a total domain remained uncovered, that country (and its regions) was omitted from subsequent classification and analysis. This solution raises further limitations of such a model and questions about how missing data cases should be managed. For example, if the model is limited to the countries which are fully covered by data, it might tell less from the viewpoint of a European model.
* A model representing the risk of exclusion with a focus on within country differences probably provides a wider coverage, but it has a less chance to present differences between countries by following this approach. A calculation which feeds the analysed group of countries into a common model (i.e. standardization is carried out by using not separated variable means and standard deviation by country but ‘regional’ values) makes the comparison of risk of exclusion between different countries plausible. However it can cover the differences within a country at the same time. Thus a parallel representation of the two models can be necessary.

Despite these limitations the proposed methodology might have its value added in analysing spatial patterns of social exclusion, as it can represent different geographies of exclusion in a common model by illustrating separate and overlapping characteristics. The main findings of the experiment are discussed in Annex 8 of Final Report, on the analysis of conceptual implications of social exclusion maps (in Chapter 5).

# Measuring social exclusion – description of the indicators

The following part introduces all of the domains, dimensions and indicators used by ESPON TiPSE (see also Table 3). This paper also discusses limitations the project faced during the implication, and solutions for overcoming methodology and data availability issues.

## Earning a living

### Income earned by tax payers

**Short description:** Statistical data on income of persons and households is one of the key dimensions and indicators of poverty and social exclusion. Thereby, including it into social exclusion dimensions was unquestionable. Two indicators were used to cover this dimension.

**Data availability:** Eurostat data on disposable and primary income of households is available, but only for NUTS 2 and NUTS 1 regions. Net disposable household income from this source was collected and mapped as the first variable. The other indicator has been the Ratio of employed persons in elementary occupations, available in census datasets.

**Census 2001 coverage:** Ratio of employed persons in elementary occupations (ISCO major group 9) was largely available for the ESPON space, only 213 missing cases are among the 1517 regional entities (major gaps: Belgium, Norway, Turkey, Albania, Bosnia and Herzegovina).

**Census 2011 coverage:** Ratio of employed persons in elementary occupations was largely available for the ESPON space. 8 countries (Denmark, Greece, France, Italy, The Netherlands, Austria, Portugal and Romania) were only represented at NUTS 2 level, and slightly different reference populations had to be used in different countries.

**Comments:** Task 2.3 (TiPSE database) also revealed that data on disposable income is only available in Eurostat datasets on the NUTS 2 level. The ESPON 2013 project which covers this aspect, ReRisk, includes disposable income per capita for NUTS 2 regions (year 2004–2005). Therefore, NUTS 2 level was used for both 2001 and 2011, and a second proxy variable (ratio of employed persons in elementary occupations) was chosen for this dimension.

Ratio of employed persons in elementary occupations represents this dimension in the composite indicator.

### Employment

**Short description:** Employment is one of the two dimensions in the ‘Earning a living’ domain. Its several aspects imply vulnerability to social exclusion in a very clear way.

**Data availability:** Cross-comparable data with LFS and Census methodology is available from the Eurostat website and from official national sources. Task 2.3 has already reviewed the availability of employment and unemployment data in detail.

The sub-topic Employment was measured by 13 variables for the 2001 census round: the Economic activity rate (whole population, male, female; both LFS and census datasets), the calculated Activity gender gap, Employment rate (whole population – both LFS and census datasets, male and female statistics from censuses), and the calculated Employment gender gap. As employment data is provided only on NUTS 2 level by Eurostat, census data was also used to ensure NUTS 3 coverage. For the 2011 census round only the Activity gender gap was calculated.

The second sub-topic has been Unemployment with 10 indicators in the 2001 census round. Unemployment rate datasets are more modest than that of activity rate, Task 2.3 revealed that by using data from LFS year 2005 is more suitable for mapping. Statistics on long-term unemployment rate were available for NUTS 2 regions only, and official census data was not available either. Thereby, a mixture of LFS and census data in the indicator list was used to overcome limitations. Unemployment rate for the whole population, for male and female population separately, and the youth (15–24 years) unemployment rate was collected from both census and LFS (Eurostat) sources. Unemployment gender gap was calculated. This sub-topic was covered in the 2011 dataset by two variables: unemployment rate and youth (15–24) unemployment rate (both collected from census sources).

The third sub-topic, Inactivity, was operationalized by 4 variables for 2001: inactivity rate, male and female inactivity rate, and the calculated inactivity gender gap; all from national census data. For 2011, only the inactivity rate was used.

**Census 2001 coverage:** Eurostat published data on its website on some employment-related data. National statistical sources were consulted by all partners which ensured a better coverage. Still, for about one-third of the regions no data was available for most of the indicators – the major limitation being that datasets from Germany are missing. Exceptions are the Economic activity rate, Inactivity rate, Employment rate, Unemployment rate (only for the whole population, statistics according to gender are missing) where data from Germany was accessible.

**Census 2011 coverage:** These datasets were compiled using Eurostat data, the Eurostat Census Hub and national sources. For each of the indicators NUTS 2 data was used if NUTS 3 level data was unavailable (gender activity gap: 4 countries; inactivity rate and unemployment rate: 3 countries, youth unemployment rate: 6 countries). As for the inactivity rate different reference populations limit the comparability of the variable. For Turkey no information could be gathered.

**Comments:** Year-by-year data is available from the Eurostat website, although some aspects are not covered on NUTS 3 level. LFS methodology ensures an easy comparability of data throughout Europe. Lack of data was mitigated by using different national official sources if it was possible. An emerging topic and indicator in Europe in the post-2008 period is the high youth unemployment rate which was also included into the TiPSE dataset. Two indicators, long-term unemployed and jobless households (both proposed by Annex 1) were omitted from the database because data coverage was scarce.

As indicators of employment dimension covered more than the half of the set of indicators collected for 2001 (e.g. duplication of indicators by gathered both from LFS and censuses), the picture was quite unbalanced considering social exclusion as a whole and in view of the applied domain structure. For 2011 NUTS 3 level LFS data became unavailable and other considerations also led to the reduction of number of employment indicators (balancing the weights among domains, frequency in partners’ analyses, considerations of data coverage etc.).

The variable Inactivity rate was used in calculating the composite index of vulnerability to social exclusion.

## Access to basic services

### Health

**Short description:** Health related issues represent a major aspect why certain groups of people become vulnerable to social exclusion. They will therefore also being covered in ESPON TiPSE.

**Data availability:** The indicator list identified two aspects of health: access to primary health services, and life expectancy. The former is covered in Eurostat databases, but only at NUTS 2 level (hlth\_rs\_prsrg). Here, health personnel and hospital beds per 100,000 inhabitants is a common indicator used by social exclusion and quality of life studies – these two are also covered in the TiPSE project. The other aspect, healthy life expectancy is a variable of the Human Development Index. This index is calculated on the regional level in the EU by Bubbico and Dijkstra (2011), however, only at NUTS 2 level (demo\_r\_mlifexp and tgs00101 datasets). Nevertheless, in this project we used this variable to capture the complex phenomenon of health.

**Census 2001 coverage:** Not applicable.

**Census 2011 coverage:** Not applicable.

**Comments:** As statistics are not available on NUTS 3 level, only NUTS 2 level data was used, both for years 2001 and 2011 (in some countries only NUTS 1 or NUTS 0 data was available). National official sources might cover this aspect more broadly, but data was not compiled in ESPON TiPSE due to comparability issues. This dimension was not considered in the composite index.

### Education

**Short description:** Educational attainment is one of the key dimensions of social exclusion. People with lower educational attainment are more vulnerable to social exclusion than people with tertiary education. Additionally, a spatially variegated gender gap of this dimension throughout ESPON space is expected.

**Data availability:** Data on educational attainment is available from the decennial censuses with almost full coverage of people at NUTS 3 level. Other statistics on education are only published in the Eurostat website on NUTS 2 level. ESPON 2013 project EDORA lists educational statistics in its indicator list; this data source covers not all countries on NUTS 3 level, and only for the years 2005–2006. As education is mostly a public service, several official data is collected year-by-year.

As a consequence, Annex 1 listed different indicators to cover this dimension. After further discussion with project partners three variables (pre-school access, primary school access, cultural house / library access) must have been omitted because non-standard statistical sources were not available or not comparable for a majority of ESPON space. Others were collected from Eurostat census datasets and other national official statistical resources, for both 2001 and 2011.

**Census 2001 coverage:** Census data for 2001 is available on the Eurostat website. However, there are limitations of this dataset regarding its coverage. For most of the countries data on population by educational attainment is provided for ISCED levels 0 and 1 (combined), so there was no opportunity to discern primary and pre-primary education (apart from Austria, where there is data only for ISCED 1). ISCED 5 and 6 (tertiary education) is also covered in combination. A serious limitation of the dataset is that for several countries demographic data on age groups is not available for calculating proportions of the population with each educational attainment; thus census data collection also had to tackle this lack of data. Changes in the NUTS system also affect the coverage in several countries (such as Poland). As a result, valid statistical information covers about two-third of the regions (apart from smaller gaps Bosnia-Herzegovina and Germany is fully missing, such as one variable for Finland and one for Turkey).

**Census 2011 coverage:** Regulation 763/2008 lists data on educational attainment as not available on NUTS 3 and LAU 2 levels for the 2011 census round (Regulation Annex, 1.1.1.). They will not be provided in the Hypercubes of Census 2011 (Commission Regulations 1201/2009, 519/2010). National statistical sources had to be consulted in the course of the project. Two indicators were used: one is the ratio of population with low (ISCED 0-2) qualification, the other being the ratio of population not having high qualification (ISCED 5-6). Only NUTS 2 level data was available for 3 countries, and no data could be gathered from Turkey.

**Comments:** Maps revealed significant differences in the spatiality of social exclusion. There are inequalities within countries (such as in Italy, Germany or in the UK in ISCED 0–2 attainment), but in some aspects countries may seem more homogeneous (e.g. Finland in ISCED 5–6 attainment). There are considerable intra-national inequalities in Central and Eastern European countries as well. Following that, this indicator was very useful in operationalizing social exclusion on the regional level in ESPON TiPSE (and was frequently used in the macro-regional chapters of Annex 8). Labelling ISCED 0–2 categories as ‘low qualification’ was reasonable from several aspects. On the one hand, the ratio of people without a basic primary education (ISCED 0–1) is quite small in many EU countries, thus the indicator does not discriminate well. Moreover, this narrower grouping does not count on people with only basic primary or lower secondary education who are actually also greatly vulnerable to exclusion, for example in the labour market, since they have no formal occupation and they might engage themselves only to lower-status jobs (e.g. elementary occupations). On the other hand, in several countries, like Denmark, Finland, Iceland or Serbia published educational attainment data was drawn together into bigger groups (ISCED 2 or below), which had to be taken into consideration in order to have a common classification in the cross-European analysis.

Ratio of population with low qualification was part of the composite index.

### Housing

**Short description:** Lack of accessible and affordable housing is one of the key aspects why people and households are vulnerable to social exclusion. Certain aspects of housing are therefore essential to be included in ESPON TiPSE. There are certain limitations, however, of the comparability of data on the ‘more qualitative’ aspects of housing, as ESPON states have different housing markets (more or less private forms, prevalence of renting apartments etc.) and different social policies on housing.

**Data availability:** In most of the ESPON countries, extensive and comparable housing statistics are provided primarily by the decennial censuses. These will be discussed in the next paragraphs.

Other data sources come from infrastructure datasets, such as population connected to public water supply and to wastewater treatment. This data, however, is only published for NUTS 2 regions by Eurostat (env\_n2\_pws and env\_n2\_pww datasets), so that national statistical sources from censuses (both 2001 and 2011) were consulted for these variables.

Tenure status of households proposed by Annex 1 was omitted because of less meaningful cross-European comparison.

**Census 2001 coverage:** Census 2011 coverage will offer very detailed statistics on housing. Census 2001 data availability is more limited than census 2011 will be, but because of the process-oriented understanding of social exclusion some indicators were collected. These include: Ratio of housing units without water supply system, Ratio of housing units without inside toilet, Ratio of housing units without bath or shower, Ratio of housing units without central heating, Number of occupants per room, Useful floor space per occupants. As a result of the data collection about two-thirds of the regions represent missing cases. Most of the data is missing from the Atlantic and Central European region, from the Nordic and Baltic region the Baltics are better endowed in terms of coverage, for East Central Europe and the Balkans data collection was quite successful, and some data also exist for the Mediterranean region. Macro-zooms are useful for Task 2.8 despite the lack of data.

**Census 2011 coverage:** Regulation 763/2008 lists household status as available on NUTS 3 level for the 2011 census round (Regulation Annex, 1.1.1.). The following categories will be provided by Eurostat (Hypercubes 48, 49, 52), out of which the following variables were identified in TiPSE as an important aspect of vulnerability to social exclusion: ratio of housing units without water supply system, ratio of housing units without bath or shower, number of occupants per room. These variables were compiled using the Eurostat Census Hub and national sources (both census and other national registers). In the housing amenities 7 countries could only be represented at NUTS 2 level, and there is a considerable number of missing cases (such as the United Kingdom, Ireland, Germany, The Netherlands, Belgium). For the density standard variable the coverage is bad and mostly incorporates peripheric countries (Portugal, Ireland, two Nordic countries, plus 8 new member states).

**Comments:** Census 2011 data was indispensable for TiPSE in covering this aspect of social exclusion. Alternative data sources are not available, or are not as detailed as census data. Census 2001 data collection was only partially successful.

The number of gathered housing indicators was reduced for 2011 due to partial overlap of content with better covered co-variates (the case of omitting indicators on the availability of flush toilet or density standard [room]) or to supposed limitations of interpretation (unavailability of central heating).

Ratio of housing units without water supply system was used in calculating the composite index of vulnerability to social exclusion.

### Transport and communication

**Short description:** Social groups and households are facing social exclusion also because they are inaccessible by means of transportation and communication. TiPSE is going to take into consideration this aspect of social exclusion as well. The four provisional indicators covered various ‘material’ aspects: whether people have access to a post office, to broadband internet, are accessible by means of transportation, and are able to access other places by a passenger car.

**Data availability:** Eurostat data is hardly available for covering this dimension. The only aspects for which Eurostat provides statistics on NUTS 2 level is the number of passenger cars (tran\_r\_vehst) and households with broadband internet access (isoc\_r\_broad\_h). NUTS 3 level data is available on freight transport which is not relevant for measuring social exclusion.

Some former ESPON studies addressed accessibility topics in the past. ESPON 2006 database offers the variable ‘time to nearest motorway access, by car’ at NUTS 3 level. This measurement is on the one hand outdated (year 2001, since which significant infrastructural investments have been undertaken throughout Europe), and is not useful because of different geographical endowments (a motorway is not needed in every part of Europe to access places in order to conduct a ‘socially included’ life). Europe-wide accessibility data is irrelevant for TiPSE (as we imply that it does not count for socially excluded people that their region is easily accessible from all over Europe; or this accessibility has already been mirrored in other indicators and dimensions – such as employment opportunities).

Following this, TiPSE partners decided to leave out all transport-related indicators proposed by Task 2.1 from this part of the research.

**Census 2001 coverage:** Not applicable.

**Census 2011 coverage:** Not applicable.

**Comments:** None.

## Social environment

### Age

**Short description:** For capturing the different age-composition of NUTS 3 regions with three proxy variables, the total dependency ratio (number of people aged 0–14 and 65+ combined, divided by the number of people between 15 and 64 years), child dependency ratio (number of people aged less than 15 divided by people aged 15–64) and old age dependency ratio (number of people aged 65 or more divided by people aged 15–64) were calculated for 2001. For 2011 the same dependency rates were included in the dataset.

**Data availability:** NUTS 3 level Eurostat data is available throughout Europe for 2011 (for UK and France: 2010). Task 2.3 also observed the excellent coverage of this dataset. Mapping and discussing changes over time (in line with the process-based understanding of social exclusion) on a longer-term (10 years) was made possible by collecting 2001 census data.

**Census 2001 coverage:** There are only few gaps in the dataset collected by TiPSE partners. For the child dependency rate, data on French and Bosnian regions is missing; for the other two variables only 20 regions lack the valid data (of which 10 regions are from Bosnia and Herzegovina)

**Census 2011 coverage:** Regulation 763/2008 lists age as available on NUTS 3 and LAU 2 levels for the 2011 census round (Regulation Annex, 1.1.1.). For NUTS 3, data in one-year cohorts will be available, LAU 2 level data will be provided by 5-years cohorts (Regulation 1201/2009) (Hypercube 55 for NUTS 3 data, Hypercube 56 for LAU 2 data). Despite this, coverage was not full, and Eurostat Census Hub data was supplemented with data from national censuses.

**Comments:** There is high variance within the dataset throughout the ESPON space. The three variables are quite different, and reveal different aspects of age-related social exclusion. The proxy variables are easily understandable and might be good departure points for social policies. Limitations of cross-country comparison are minimal or non-existent.

Old age dependency rate was used in compiling the composite index.

### Ethnic composition

**Short description and comments:** as this data is almost exclusively found in census statistics, and it was not an obligatory question in the 2011 census round, this aspect is measured by only one variable: ratio of Roma population. The cause of this limited coverage is that belonging to the ethnic minority is not a cause of social exclusion in each and every country (see for example the multi-ethnic character of Switzerland). In addition, ethnicity is a socially constructed category, and is very context-dependent. Individuals have more diverse identities than to reduce their social exclusion to the sole fact that they belong to ethnic minorities. Following that, official census data (if available) is not very reliable and does not tell too much about social realities within different places, because it is not able to capture complex identities of people. Moreover, several articles stress that Western European (or UN) definitions and understandings of ethnicity do not work throughout Europe (for an Eastern European historical perspective on nationalisms, ethnicity and identity see Todorova, 2005). Ratio of the Roma population, however, is a serious social issue – mostly in East Central Europe and the Balkans – so that census data were collected.

**Census 2001 coverage:** For most of the East Central European and Balkan countries relevant data could be collected and interpreted in Task 2.8. There is scarce coverage in other macro-regions.

**Census 2011 coverage:** This dataset was only collected for East Central European countries and the Balkans, and some other countries.

### Immigrants

**Short description:** Immigrants are representing one social group which is vulnerable to social exclusion in European countries. Although the issue is not affecting each ESPON country and region evenly, measuring immigrants’ share in the regions may inform TiPSE on one aspect of social exclusion.

**Data availability:** Census data is the most extensive source to be used for capturing this indicator. The chosen indicator is the ratio of foreign-born population.

**Census 2001 coverage:** Eurostat data on immigrants was not available on its website for the 2001 census round, national sources were consulted. There are about 1150 missing cases from the 1500 NUTS 3 regions, thus the coverage is rather scarce.

**Census 2011 coverage:** Regulation 763/2008 lists country/place of birth, as available on NUTS 3 and LAU 2 levels for the 2011 census round (Regulation Annex, 1.1.1.). Despite this, at the time of the data compilation this dataset was not full in the Eurostat Census Hub, and national sources (both census and register) were consulted to overcome this limitation. For Turkey no data could be collected.

**Comments:** This dimension was not included in the composite index.

### Crime and safety

**Short description:** ‘Revealed criminal cases per 1000 persons’ was anticipated for use as the most important indicator of crime and safety. The implication was that in poorer or more excluded societies/places criminal cases (at least in some crime categories) may be more prevailing than in ‘wealthy’ places.

Further research on the usability of this indicator in ESPON TiPSE raised serious concerns both theoretically and methodologically. Critical social studies underlined in the past years how crime statistics are culturally produced, how through crime statistics ‘socially excluded’ Others are produced for the police practice (cf. Belina, 2009), and how popular criminological theories (such as broken windows and situational crime prevention) use simplistic understandings of social and spatial exclusion (cf. Herbert and Brown, 2006). Other scholars still argue for a consideration of interrelations between crime and poverty, as the ‘debate on crime needs to widen to remember all victims who are unjustly robbed of their possessions, and even of their lives, both here and abroad through the violation of political or moral law’ (Dorling 2006, p. 1993).

As a further methodological problem for ESPON TiPSE, Eurostat metadata reminds us that crime statistics are not comparable across different countries because of five reasons: ‘different legal and criminal justice systems, rates at which crimes are reported to the police and recorded by them, differences in the point at which crime is measured (for example, report to the police, identification of suspect, etc.), differences in the rules by which multiple offences are counted, differences in the list of offences that are included in the overall crime figures’ (<http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/crim_esms.htm>). Eurostat metadata lists two variables which may be used comparatively: homicide rates and prison population rates. Homicide data probably does not capture meaningfully any dimension of social exclusion in ESPON TiPSE. Incarceration, however, may be an important entry point for understanding complex processes of social exclusion (by state policies): a case study by Peck and Theodore (2008) in Chicago vividly shows how the penal state is connected to the new economic and ethno-racial order which causes social exclusion of significant groups of people.

Following that, crime statistics may only be used very carefully by all research projects on social exclusion and by applied research resulting in social policy interventions as ESPON TiPSE.

**Data availability:** Data may be available from non-standard official sources on the regional level.

**Census 2001 coverage:** Not applicable.

**Census 2011 coverage:** Not applicable.

**Comments:** Although this indicator was foreseen for use by TiPSE Task 2.1, this aspect of vulnerability for social exclusion was left out after discussion with TiPSE partners. Cross-European comparisons are not meaningful.

### Municipal revenue from property taxes

**Short description:** property taxes at the municipal/regional level might be one aspect how local governments are socially and spatially excluded from the national economy and governance. In each of the countries where tax systems or revenues of the government sector are somewhat decentralised it is a good measurement of the territorial dimension of social exclusion on the national scale.

**Data availability:** Eurostat does not cover this aspect on regional level.

**Census 2001 coverage:** Not applicable.

**Census 2011 coverage:** Not applicable.

**Comments:** Although statistics on government revenues and expenditures are comparable throughout Europe because of the standardised ESA95 system of national accounts (<http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/gov_a_tax_ag_esms.htm>), the tax systems in European countries are so different that a meaningful comparison along this aspect is not possible. Different economic advantages and endowments of local governments to capture this dimension of social exclusion are more or less reflected in the ‘Earning a living’ domain of social exclusion in ESPON TiPSE (by combining income- and employment-related statistics). Therefore, project partners opted for dropping this variable from the list.

### Social transfers

**Short description:** Statistical data on social assistance is one of the key dimensions and indicators of poverty and social exclusion. Following that, including it into social exclusion dimensions was thought to be important.

**Data availability:** Eurostat data on social assistance is available within the nama\_r\_ehh2s dataset, but only for NUTS 2 regions (cf. Task 2.3 on TiPSE database). Regional economic accounts (reg\_ecobrch) cover some data on NUTS 3 level, but not social transfer-related statistics. Most recent statistics are from year 2009. The same applies for measuring households’ income (see above).

**Census 2001 coverage:** Not applicable.

**Census 2011 coverage:** Not applicable.

**Comments:** The original indicator (proposed by Task 2.1 of TiPSE) for covering this aspect of social exclusion was ‘municipal spending on social assistance’. This measurement is most possibly not comparable throughout Europe, as there are different divisions of labour between municipalities and the nation state in different countries in the sense how they provide social assistance to persons and households. As Task 2.3 observed, disposable income and social transfers may be substitutes for each other, so we left out this variable from our catalogue of indicators.

### Household structure

**Short description:** Task 2.1 envisaged many indicators for capturing the domain ‘Social environment’, most of which could not be operationalized during the data collection phase. As a substitute dimension for this domain the household structure was proposed.

**Data availability:** Household structure is also an indicator which could indicate vulnerability to social exclusion. Data is available from the censuses and is reliable throughout Europe. The four indicators chosen for 2001 represent four sub-groups more vulnerable to social exclusion: Ratio of lone parent households, Ratio of lone parents, Average household size and Ratio of households with 6 or more persons are useful as proxy variables. From the 2011 census round only two indicators were included in the TiPSE project due to the overlapping content: ratio of lone parent households and ratio of overcrowded households (households with 6 or more persons).

**Census 2001 coverage:** Missing cases for the variables are between 470 and 630 regions, most of which are the 429 German regions at NUTS 3 level, and Turkey with 81 (data from Turkey is solely available for the average household size).

**Census 2011 coverage:** For both indicators the coverage is very good across the ESPON space (Turkey being the major country for which data could not be accessed).

**Comments:** Ratio of overcrowded households was used in the composite index of vulnerability to social exclusion.

## Political participation

### Citizenship

**Short description:** Foreign citizens are representing one social group which may be vulnerable to social exclusion in some European countries. As the issue is not affecting each ESPON countries and regions evenly, measuring foreign citizens’ share in the regions may inform TiPSE on one important aspect of social exclusion.

**Data availability:** Census data is the most extensive source to be used for capturing this indicator.

**Census 2001 coverage:** Eurostat data on citizenship is available for the 2001 census round, for other countries national data sources were consulted. There are only 151 missing cases from the ESPON space which means a good coverage.

**Census 2011 coverage:** Regulation 763/2008 lists country of citizenship as made available on NUTS 3 and LAU 2 levels for the 2011 census round (Regulation Annex, 1.1.1.). NUTS 3 level data on country of citizenship outside the reporting country can be extracted from Hypercube 46 (Commission Regulation 1201/2009). Despite this, there were missing data in the Eurostat Census Hub. National sources (both census and register data) were used to ensure a better coverage across the ESPON space.

**Comments:** Spatial patterns of foreign citizens in other countries and foreign-born population often overlap. The two indicators may have a quite strong relationship, but they reflect to different aspects of social exclusion. Foreign-born inhabitants can be citizens of a given country. In this context, this measure is a proxy of immigrant minorities, who often have to face different risks of exclusion due to their disadvantages coming from for example their labour market status or educational attainment, particularly if they come from different social environment than the rest of the population. Nevertheless, not being a citizen of a given country implies other types of disadvantages too. These people can directly be excluded from political participation, for example they do not have the right to vote. Non-citizens also have restricted access to different institutions and services: for instance in several countries they may be in danger of losing their residence permits or cannot make use of services if they become unemployed.

Ratio of population not citizens of the country was considered to use in the composite index.

### Voters

**Short description:** Voting is one of the most important political rights in today’s European democracies. In ESPON TiPSE it is implied that lack of political participation makes people more vulnerable to social exclusion. To measure political participation several indicators may be used, one of which is the voter turnout in national or EU-wide elections.

**Data availability:** Voter turnout in EU and parliamentary elections is listed among Eurostat’s indicators on the national level (tsdgo310). Metadata, however, reminds users that in Belgium, Luxembourg and Greece, voting is compulsory, and it is a civic obligation (with no penalty) in Italy. As a result, statistics are on the one hand not comparable across European countries (another limitation of the comparability is that the population with the right to vote may be slightly different in each of the countries). On the other hand, one may interpret compulsory voting as the nation state’s effort to minimise this dimension of social exclusion through obligatory political participation.

**Census 2001 coverage:** Not applicable.

**Census 2011 coverage:** Not applicable.

**Comments:** As data is not comparable across Europe, the dimension of Voters was dropped.

### Civic engagement

**Short description:** Civic engagement is one of the means by which people and groups of people become more included in the society. Following that, it would have been an important aspect in conceptualising social exclusion for our project.

**Data availability:** Cross-comparable Eurostat data is not available on this aspect of political participation. Official non-standard sources (e.g. on number of NGOs per 1000 inhabitants) could not be collated meaningfully for the ESPON space.

**Census 2001 coverage:** Not applicable.

**Census 2011 coverage:** Not applicable.

**Comments:** The implied indicators by Annex 1 have been the number of NGOs per 1000 inhabitants, as well as members of NGOs per 1000 inhabitants. Cross-European comparability of data (including issues like definitions of NGOs, relevance of NGOs in the legal structure of the countries, available statistical sources on the issue etc.) could not have been ensured.

# Discussion and preliminary policy implications

## Indicators list – possibilities, limitations and comparability issues

Mapping different dimensions of social exclusion is one of the main outputs of the ESPON TiPSE project. This methodological paper showed how the project used a deductive framework to delimit different domains, dimensions and indicators for the project, and how the mapping exercise was undertaken.

Multi-dimensionality of social exclusion will be elaborated on in other tasks using the deliverables from this work package (such as the set of maps). At this stage of TiPSE, the main conclusions on possibilities, limitations and comparability issues of the indicators are as follows.

* Eurostat covers some dimensions of social exclusion with comparable data. For some variables, there are certain limitations regarding which countries are covered and which not. Overcoming these data availability problems was possible in the majority of the cases.
* Census data is indispensable for some of the social exclusion dimensions, as they are collected only in the decennial censuses (or other data sources are not as reliable as censuses). Standard realms in this group are demographic data (age, employment, country of birth), educational attainment, employment, housing and country of citizenship.
  + Several variables are available from the 2011 census round on NUTS 3 level (such as immigration, housing, country of citizenship). However, comparable Eurostat data was still not available as data collection for the TiPSE project ended (Census Hub was only accessible on an experimental basis with limited data content). In the majority of the cases, national statistical offices already published NUTS 3 level data which were collected by TiPSE partners.
  + Several variables are not available from the 2011 census round on NUTS 3 level from Eurostat (such as the education and employment dimensions). This resulted in a problem for ESPON TiPSE, as data might have only been collected from national statistical sources which have different policies of publishing territorial data on NUTS 3 level.
  + After the submission of the Interim Report, TiPSE partners decided to collect census data from 2001. This exercise was useful, because – together with data from 2011 – for many aspects cross-European (or at least cross-macro-regional) comparisons were made possible. Collecting 2001 data is also indispensable for interpreting changes over time (between the two censuses), underlining the process-based understanding of social exclusion.
* For some ‘census’ dimensions, non-census Eurostat data is available, as in the employment dimension. For employment, standardised data using LFS methodology is available for a longitudinal comparison as well, but only at NUTS 2 level.
* ‘Non-standard’ official or non-official statistical sources on the national level were not considered for use by ESPON TiPSE. The most important concerns here were the availability of data and the geographical cross-comparability (not only methodologically, but also whether these variables capture social exclusion in a same way throughout Europe – cf. the Voting dimension discussed before). Case studies of the TiPSE project reflect on these omitted dimensions in some aspects.
* Some indicators were listed in Annex 1, but further considerations in Task 2.6 opted for leaving them out, mostly because theoretical-ethical issues (dimension of crime and safety) or because of limited geographical cross-comparability of data (such as municipal revenue from property taxes). Some indicators have been reformulated or refined in Task 2.6 (such as household structure).

## Learning from other ESPON projects

The TiPSE research team studied various ESPON projects in order to have an insight into their applied indicator structure and find linkages to their potential coverage on poverty and social exclusion. Key projects included:

* DEMIFER, dealing with demographic and migratory flows in Europe,
* ECR2, analysing the resilience of European regions against the economic crisis,
* SIESTA, setting up a structure of indicators related to the Europe 2020 goals,
* EDORA, on the development opportunities in European rural regions,
* SeGI dealing with perspectives for services of general interest in territorial cohesion,
* and SEMIGRA which is about the (gender) selective migration in rural regions.

It is hoped to incorporate selected indicators provided by these projects into the TiPSE social exclusion mapping exercise, although opportunities may be restricted by several factors. Many of the indicators applied in other ESPON projects are already covered by TiPSE, while others were only considered rather than fully implemented. In the conceptual framework of TiPSE understanding of social exclusion the derived domains and dimensions and the set of indicators compose a coherent system. Definition of indicators, methodology of data gathering both served to make the cross-European comparability of social exclusion factors to be reliable. One solution supporting this criterion was using data mainly from harmonised sources, in this case from European censuses which are regulated by several directives and recommendations. This consideration led to an own TiPSE data collection and database building rather than relying on secondary sources (e.g. from other projects).

Moreover, favouring census data was reasonable, because it provided NUTS 3 coverage of data on vulnerabilities to exclusion in most of the cases which was in the focus of aims of TiPSE project. NUTS 2 data was also used by TiPSE, but only if a dimension was difficult or unable to cover by NUTS 3 data (for example income, health). In generally speaking, by following this principle it would have been able to extend data collection to ESPON databases too. Nevertheless, several interesting indicators from other ESPON projects have no coverage at a lower territorial level than NUTS 0-2 or it is hard to gather them for other reasons. Furthermore, those indicators which are available at NUTS 3 level and are related to social exclusion in other ESPON projects, they were already (and almost fully) incorporated by TiPSE.

Some interesting and potentially useful indicators like accessibility measures from EDORA or SeGI are available at NUTS 3 level, but they are not used by TiPSE, because they are not up-to-date. TiPSE data compilation refers to 2001 and 2011. Data collection from the latest censuses was carried out just right after the (quite recent) publication dates of these datasets, so the mapped and analysed indicators can show an actual image on social exclusion patterns in Europe. Since indicators referring to 2001 were also used in analysing changes over time, it was important to ensure the comparability of the two compiled datasets (2001 and 2011), which was only feasible by gathering data from the same sources and by following the same principles. In this case it also led TiPSE to favour census databases from national statistical sources or community collections (like Eurostat CensusHub), and renounce the benefits of using the results of other ESPON projects.

A selection of indicators (not used in TiPSE analysis of social exclusion but related to the phenomena) is presented in the Table 5. Most of the indicators relate to the ‘Earning a living’ and ‘Access to basic services’ exclusion domains.

Table 5 Selected poverty and social exclusion indicators from other ESPON projects

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DEMIFER** | **ECR2** | **SIESTA** | **EDORA** | **SeGI** | **SEMIGRA** |
| Long-term unemployment rate  Labour force participation (55-64) rate  Economic old age dependency ratio  Labour market dependency ratio | Low work households.  Household disposable income (other than the TiPSE indicator)  Level of self employment. | Long-term unemployment rate  Ratio of young people not in work, education or training NEET (15-24)  Participation rate of adults in education and training  Ratio of early school leavers (18-24)  Broadband internet access ratio  Ratio of individuals who have never used a computer  Ageing index | Long-term unemployment rate  Participation rate in life-long learning  Broadband internet access ratio  Accessibility to hospitals, schools  Transport accessibility (airport, railway station, motorway) | School enrolment ratio (primary, secondary, tertiary)  Broadband internet access ratio  Ratio of individuals who have never used a computer  Accessibility to hospitals, schools  Transport accessibility (airport, railway station, motorway) | Average household income  Long-term unemployment rate  Ratio of young people not in work, education or training NEET (15-24) |

Some of the indicators presented in the table can be derived from census databases (far not fully possessing by TiPSE ) by extra calculations, for example labour force participation rate, economic old age dependency ratio, level of self-employment or ratio of NEETs, if classification is detailed enough. National statistical databases and Eurostat compilations of census data often unfortunately do not support that. Other interesting indicators like long-term unemployment rate or school enrolment ratios (or drop-out rates) also suitably reflect to social exclusion. At the same time, more indirect measures of exclusion used by TiPSE which cover similar aspects of the phenomenon are also adequate to identify, classify and analyse basic patterns of social exclusion in Europe. Other, alternate measures would only shade off the presented image.

## Mapping the socially excluded – possibilities and limitations

Mapping practices, and particularly mapping social phenomena has been in the focus of social scientific practice for several decades, in order to understand, explain, monitor and change social realities. In this last section of the report, some theoretical and methodological concerns will be raised about mapping social exclusion.

In the past 2-3 decades, a research strand has been developed in critical social theory which tries to understand research practices of mapping, and explores issues under the label ‘critical cartography’. This group of research mixes post-positivist theories (such as social constructivism or post-structuralism), uses new practices (such as reflexivity – cf. Bourdieu 2004) and new methodologies stemming from them.

These new approaches understand maps as both a social product (also reflecting the world-views of its producer), as well as an active agent in the processes of communication and governmentality (Ball and Petsimeris, 2010; Michel, 2010). Mapping poverty and social exclusion has had the intellectual baggage of constructing poverty and interpreting poverty in a certain, univocal and powerful way for the past more than a century (cf. Ball and Petsimeris, 2010). The Chicago School’s heritage, for example, established ‘spaces of exclusion’ through its research methods and practices culminating in mapping social classes. Delimiting, researching and living in spaces and places have therefore become an integral step in the chain of events that results in scientific facts (cf. Gieryn, 2006). In addition, early works at intersections of poverty, wealth distribution and its spatiality have suggested that poverty is somehow inherited (Dorling and Pritchard, 2010), thereby conceptualising space as an important actor of social processes.

Critical studies on mapping social phenomena have referred to the power of maps in producing and distributing uncontested meanings, thereby excluding, marginalising and stigmatising different groups of people (cf. Belina, 2009). These researches have referred to false abstractions (Belina, 2009) in the mapping practice, and have denied the objective and neutral practices of visualisation using maps (Michel, 2010).

In the critical cartography literature, a distinction can be made between two strands. One of them is an approach which tries to understand (using mostly a framework of discourse analysis) how maps are produced, which power relations and geographical imaginations are coded in the map, how the interrelations of signifier and signified are constantly reproduced by researchers and in the everyday practice (see for example Mose and Strüver, 2009). The other not only tries to understand mapping practices, but also aims at offering alternatives to them in order to change the world for better. These latter approaches have been more or less informed by the Marxist critique (Belina, 2009), or have applied a diverse theoretical entry point, such as Gibson-Graham’s action research (cf. Gibson-Graham, 2008) which merges feminist, post-structuralist and Marxian understandings.

This latter, ‘more active’ approach has also some implications for ESPON TiPSE, as some articles in the past decades also called for alternative representations of the spatiality of poverty, social exclusion, vulnerability of exclusion, or related social phenomena. Fahmy et al. (2008) on the one hand opted for a visualisation of poverty which uses tracts with the same number of population, which is a more ‘democratic’ representation of people offering everyone the same space on the map (see also the Online Census Atlas: Durham et al., 2006). St. Martin (2009) on the other hand, argues for countermapping strategies in order to reclaim resources for the dispossessed people, to constitute new imaginaries of places and to remap spaces and resources as common(s). St. Martin calls for mixed-method researches with combining ‘traditional’ mapping practices (of mostly official statistical data) with qualitative – primarily ethnographic – studies, so that alternative realities may be constructed together with marginalised groups of people. Within this research practices, mapping is not only a way of understanding spatial patterns of the reality, but also offering the entry point for proposing new or alternative realities. This approach is in line with other action researches which aim at dislocating different ontologies, such as ‘the poverty’, ‘the social exclusion’ or ‘the economy’. J-K. Gibson-Graham (2008), for example, used action research in order to offer new and more inclusive understandings of ‘the economy’, and thereby change the lives of people who were partaking in these action researches for the better.

The practice of St. Martin and Gibson-Graham also had some conclusions to be drawn for research practices in ESPON TiPSE. For example, it was elaborated on, how research outputs of Tasks 2.3 and 2.6 on the social exclusion database and the mapping exercise are to be used as an entry point for discussions on policy relevance. Using this approach, differences of the macro-level mapping and people’s place-based perceptions on social exclusion could be compared. This research practice could result in a more nuanced understanding of social exclusion and more inclusive social policies put forward by the TiPSE research project.

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