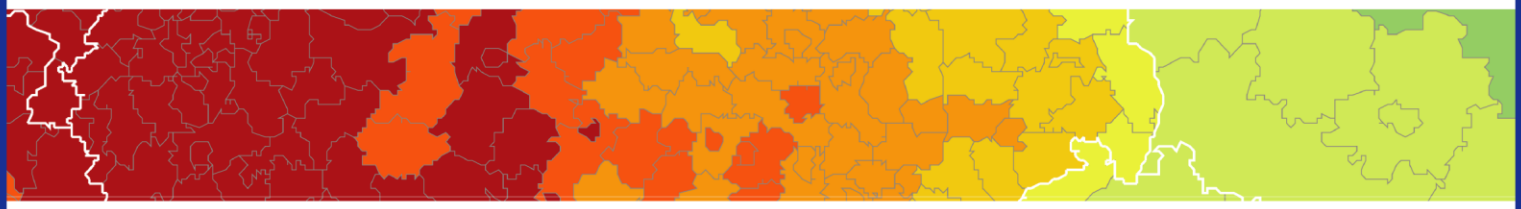

ESPON QoL – Quality of Life Measurements and Methodology

Applied Research

Final Report

30th October 2020

Final Report

This applied research activity is conducted within the framework of the ESPON 2020 Cooperation Programme.

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This delivery does not necessarily reflect the opinion of the members of the ESPON 2020 Monitoring Committee
.

Authors
Carlo Sessa, Giorgia Galvini, Institute of Studies for the Integration of Systems – ISINNOVA (Italy)
Oriol Biosca, Harold del Castillo, Andreu Ulied, MCRIT (Spain)
Herta Tödtling-Schönhofer, Jasmin Haider, Alina Schönhofer, Metis (Austria)
Daniel Rauhut, Teemu Makkonen, University of Eastern Finland – UEF (Finland)
Maarten Kroesen, TUDelft (Netherlands)

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Final Report

ESPON QoL – Quality of Life Measurements and Methodology

30th October 2020

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The final version of the report will be published as soon as approved.

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Abbreviations

AG	Advisory Group
ARCGis	Aeronautical Reconnaissance Coverage Geographic Information System.
ART	Articulation of Territorial Networks
AT	Austria
BCN	Barcelona
BES	Equitable and Sustainable Well-being
CBC	Cross Border Cooperation
CEO	Chief Executive Officer
CLLD	Community-Led Local Development
CO2	Cytochrome Oxidase 2
CPI	Consumer Price Index
DG REGIO	Directorate General for Regional and Urban Policy
DFR	Draft Final Report
DHB	District Health Board
DRR	Disaster Risk Reduction
EC	European Commission
ECE	Electrical and Computer Engineering
ECHP	European Community Household Panel
ECDC	European Centre for Disease Prevention and Control
EEA	European Environment Agency
EEAS	European External Action Service
EFTA	European Free Trade Association
EGRC GO	European Grouping of Territorial Cooperation Gorizia
EIGE	European Institute for Gender Equality
ELA	European Labour Authority
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
EQI	Europeans Quality of Government Index
EQLS	European Quality of Life Surveys
ES	Spain
ESPON	European Territorial Observatory Network
ESPON EGTC	ESPON European Grouping of Territorial Cooperation
ESS	European Statistical System
ESSC	European Statistical System Committee
ERDF	European Regional Development Fund
EU	European Union
Eurofound	European Foundation for the Improvement of Living and Working Conditions
EU LFS	EU Labour Force Survey
EU-OSHA	European Agency for Safety and Health at Work
EU-SILC	EU Statistics on Income and Living Conditions
EU-SPI	EU Regional Social Progress Index
FP7 ITN	Framework Programme 7 (2007-13) Initial Training Network
FI	Finland
FRA	Fundamental Rights Agency
FUA	Functional Urban Area
GDP	Gross Domestic Product
GHS	Global Human Settlements
GNI	Gross National Income
GTLRG	Global Taskforce of Local and Regional Governments
HDI	Human Development Index
ICT	Information and Communication Technology
IPA	Instrument for Pre-accession Assistance
IT	Italy
JRC	Joint Research Centre
LAU	Local Administrative Unit
LC clustering	Latent Class clustering
LGBT	Lesbian, Gay, Bisexual, Transgender
LU	Luxembourg
LIW	Luxembourg Index of Well-being

MIT	Massachusetts Institute of Technology
NCEA	National Certificate Educational Achievement
NDP	National Development Plan
NEET	Not (engaged) in Education, Employment or Training
NGO	Non Government Organisation
NO	Norway
NPM	New Public Management
NSI	National Statistical Institutes
NSO	National Statistics Office
NUTS	Nomenclature of Territorial Units for Statistics
OBA	Outcome-Based Accountability
OECD	Organization for Economic Co-operation and Development
OLAP	Online Analytical Processing
OS	Official Statistics
PCSD	Policy Coherence for Sustainable Development
PM10	Particulate Matter of 10 Microns in diameter or smaller
PM2.5	Particulate Matter (less than 2.5 microns in diameter)
PST	Project Support Team
QoL	Quality of Life
QoLOBA	Quality of Life Outcomes-Based Accounting
QoP	Quality of the Place
RQI	Regional QoL Index
SDG	Sustainable Development Goals
SI	Slovenia
SMEs	Small and Medium Enterprises
SO	Statistical Offices
SPI	Social Progress Index
TED	Technology, Entertainment and Design
ToR	Terms of Reference
TQoL	Territorial Quality of Life
TSS	Trusted Smart Statistics
UK	United Kingdom
UCLG	United Cities and Local Governments
USA	United States of America
UN	United Nations
UNDP	United Nations Development Programme
UN-GGIM	United Nations Committee of Experts on Global Geospatial Information Management
UN-HABITAT	United Nations Human Settlements Programme
UN-HDI	United Nations Human Development Index
UNOPS	United Nations Office for Project Services
UNSCR	United Nations Security Council Resolutions
WBC	Western Balkans Countries
WFG	Well-being of Future Generations

Executive summary

Since the COVID-19 outbreak, we are all living in hard times. Never was so evident that life is a matter of survival, not only growth and flourishing.

We have been used to consider the level of income – and the standard of living that this can enable – the gauge of our personal success and quality of life.

Already with increasing evidence and awareness for climate change and biodiversity loss the equation between growth, prosperity and quality of life has been questioned. Alternative measures have been explored and tested in order to better understand what does count and what has to be counted.

Now, the global pandemic is giving us – to all people on earth – another urgency and the opportunity to learn a new habit: to measure progress by looking into how life survival and flourishing is enabled for all living beings in every liveable place on earth. Our quality of life cannot be maintained or improved any more by reducing the quality of life of other species.

Devising a scientific method to measure territorial quality of life – to support policy implementation – was the purpose of the ESPON Quality of Life (QoL) applied research project.

"Territorial" quality of life is the capability of living beings to survive and flourish in a territorial context. Out of this simple definition, we developed two main concepts and streams of applied research activities:

- Content-wise a scientific perspective: **a conceptual model to measure territorial quality of life in all its facets**. The model encompasses three spheres – the personal life sphere, the socio-economic sphere and the ecological sphere – and three quality of life dimensions for measuring – good life enablers, life survival ("maintenance") and life flourishing. As a result, the conceptual model suggests to gauge territorial quality of life by selecting and measuring appropriate indicators for nine quality of life domains and 22 sub-domains.
- Process-wise a societal and policy perspective: **a deliberative approach engaging citizens, experts and policy makers in co-deciding what, why and how quality of life should be measured to enable good life** – with a "citizen-centric" and place based approach. The term "citizen" is meant in the larger sense of "an inhabitant of a particular place", which can be in reference to a village, town, city, region, region, country or a whole continent (e.g. Europe) depending on the context (OECD, 2020).

Equipped with these concepts, we examined the reality of territorial quality of life measurement and policy making in 10 case studies of different territorial contexts chosen across different countries of Europe: Vienna, Barcelona/Cataluna, Helsinki-Uusima, North Eastern Iceland, Luxembourg, Nova Gorica/Gorizia, Wales, Netherlands, Latvia, Inner Areas Lazio/Monti Reatini. They were selected to investigate current practices in integrating quality of life measurements in national, regional, and local territorial development strategies, and to test the Territorial Quality of Life (TQoL) measurement methodology. The case studies show a wide range of practices, with different QoL definition, policy context, use of data, indicators, and citizen participation. Not surprisingly, concepts are tailored to the needs of each region; there is not a unique approach, nor a single concept that can be applied in all territorial contexts.

As for the content-wise perspective, the results from applying the methodology in the case studies show that the TQoL framework is a very useful guidance as to which pillars, dimensions and sub-domains may constitute QoL, and which are actually used. This TQoL framework can easily be adapted to include further sub-domains if deemed useful by the stakeholders. On the other hand, for the process-wise perspective, the **citizen-centric approach is perceived as**

useful by the stakeholders interviewed in all case studies, but in practice is rarely applied.

The case studies addressed also the new issues raised now by the COVID-19 outbreak for the territorial quality of life measurement and policies. Summing up, although it is too early to draw general lessons about the impact of COVID-19, what emerges as the first evidence from the case studies is the following:

- First, the crisis impacts significantly on all aspects of QoL. Especially factors that enable a good life (first pillar) have proven to be very relevant for overcoming the crisis. Good quality housing, good quality of the residential area, good accessibility of public services, especially health services, high digital connectivity, availability of green infrastructure are all factors that helped to sustain a reasonable QoL during the lockdown, and investment in these sectors is now seen as vital for recovery and to build a safer and better life for all in the coming months and years.
- Second, the crisis is also triggering public and political attention for the need to improve and safeguard a good QoL at territorial level. Our TQoL model shows to a very high degree the domains that are relevant for ensuring a higher resilience of neighbourhoods and territories against health, social and economic crisis situations. These sub-dimensions can be used to establish a dashboard with the factors relevant for overcoming the COVID-19 crisis, either by taking just these sub-domains or by putting higher weights to these.

In addition to the case studies, the other mainstream of applied research was devoted **to the investigation of the availability of data at a more detailed level that can be used to measure the different domains and sub-domains of the TQoL model across all NUTS 3 areas in Europe**, computing indicators for single aspects and composite indices to map quality of life differences. A system for coding quality of life indicators was used to detect which data are available and a **TQoL dashboard tool** was elaborated to compute the selected indicators and composite QoL indices – for the single dimensions of good life enablers, life maintenance, life flourishing and for the overall territorial quality of life.

The dashboard tool is an Excel application that enables the comparison of one region at a reference year, with all other regions in Europe, considering also regional typologies such as urban-rural. In principle, the tool is flexible – as it can be filled with different indicators and use different weighting criteria to compute composite indices, depending on the nature of quality of life priorities in different territorial contexts. It is applicable at different territorial scales as well – European, national, regional and local level – depending on data availability: at NUTS 2/3 data level for the European level, NUTS 3/LAU data for the national level, LAU data for the regional level and sub-LAU data at the local level. Finally, the tool can also be applied to a single territorial context, allowing the monitoring over time of quality of life trends in a region, city, rural area etc. – as we have shown in some case studies where enough data were available to compute meaningful quality of life indicators at local level (Barcelona, Vienna, Wales).

Not surprisingly, **the value of the pilot European quality of life maps elaborated to compare NUTS 3 regions was affected by the limited range and in some cases uneven quality of the statistical data available to measure the 22 sub-domains of the TQoL model.** In some cases, it was not possible to select indicators grounded in a solid scientific reasoning and statistical evidence, but only proxies partially related to the aspect that is intended to measure, as for instance the use of “suicide rates” to measure self-esteem, or “extension of abandoned farmland” as an ecological factor. In general, all data related to the ecological sphere are less mature and of an uneven quality if compared to socio-economic indicators grounded in more traditional and well-established international accounting practices. As a result, the European maps – and especially the composite QoL maps – must be interpreted with caution. **Even so,**

however, the European QoL mapping exercise at NUTS3 level was very valuable to show the potentiality of the method and, as a by-product, to highlight the consequences of data gaps and stimulate data collection improvements to make quality of life comparisons more reliable.

After testing the TQoL model and dashboard tool at European and local level in the case studies, several conclusions and recommendations emerged to help policy makers and citizens to measure and improve quality of life in their territories:

- The **Member States as well as regional and local authorities** need to:
    - **Continuously draw on the experiences and good practices from others** when developing and improving their own system for measuring and monitoring in line with the proposed TQoL framework.
    - **Consider TQoL measurement effort in tandem with the development strategies and targets** (as Wales does) to ensure a good fit between the indicators and objectives, i.e. the targets need to be set in such a way that the progress towards achieving them can be measured and vice versa.
- **Incorporating the TQoL framework to policy evaluation** would be particularly relevant to drive and monitor the impact of EU and national funding on QoL inequality at the regional level:
    - The potential **negative impacts of austerity policies on QoL should be assessed** before implementing them. These policies usually hit good life enablers (e.g. health care, education, transport, digital connectivity and housing) and hence their potentially harmful effects should be carefully considered.
    - **Investments for facilitating economic recovery that are also linked to positive QoL outcomes** should be prioritised.
    - Related to the above, analyses at national or **NUTS 2 levels are too aggregated to identify territorial differences** in QoL. **Adopting the TQoL framework for monitoring purposes** at regional and local levels allows authorities to avoid (at least some of) these pitfalls.
- The inclusion of QoL aspects in the post-2020 Cohesion Policy can play an important role in monitoring territorial development. Hence, the TQoL measurement effort can serve to establish a new baseline, linking the post-2020 Cohesion Policy with the UN Sustainable Development Goals (SDGs) Agenda:
    - In order to link the UN SDGs and QoL together, regional and local governments need a more focused list of relevant indicators (instead of the existing list of 231 SDG indicators). **The TQoL framework should be applied to narrow down the list of relevant SDG indicators**.
    - The process could also be applied the other way around. That is, the TQoL framework could be a very useful tool to be implemented at the very core of the SDGs localization venture. **The TQoL framework should be applied to help define the SDG domains and the technical indicators** that regional and local governments can afford when collecting the necessary data.

- **A better balance between subjective and objective indicators should be achieved,** as the former are under-represented in the current practice. Subjective indicators would provide more insights into TQoL aspects of life maintenance and flourishing, but when a survey including subjective well-being question exists, this is usually based on a national sample, too small to provide information at more detailed territorial level. Big data produced continuously by remote sensing devices at home, in the streets (e.g. using smart street lamps) can also help to trace the behaviour of consumers and citizens with objective indicators of real time use, flows, etc.

- The **Official Statistical System – the EU and national agencies – should aim to provide factual, objective, reliable and comparable information and statistics beyond the EU, national and regional NUTS 2 levels**. These data collection efforts need to be coordinated to ensure comparable regional coverage between the various EU agencies. In this respect, it is recommended to take advantage of the TQoL coding exercises reported in the case studies **to uncover the gaps in existing data**.
- **Collect the data on a sub-regional scale to uncover differences between core, peripheral and remote areas of the region as well as for different socio-economic groups to uncover (hidden) differences between affluent and deprived social groups**. This also will support the definition of QoL in cross-border areas.

- A **citizen-centric approach** is needed**.** It means that we take the needs of citizens as a starting point when discussing QoL. Such approach would increase the relevance of the indicators in terms of their coverage on QoL issues deemed important by the citizens themselves. This can be implemented by small panels of participants who are involved in the definition of constituent elements of the QoL concept, in the selection of indicators – and also in the generation of survey data. It can also take the form of a wider online participation process which is embedded in a communication strategy on QoL in the region. Therefore, we recommend:

    - **To involve the citizens to define what QoL means for them**. At a national level, Iceland has just started an interesting process in which citizens are involved in defining well-being and we recommend that other countries follow this example.

    - **Involving the citizens in the development work of the TQoL measurement schemes** (not just in the data collection phase) would improve the relevance of the indicators for both the regional authorities and the citizens. The work Iceland has started to do in this aspect is worth considering by other countries. Wales too offers a good example of using a citizen-centred approach for QoL measurement in a region. In Wales, there is a significant involvement of public and private sector organisations and local communities in what should be measured and how.

    - The citizens-centric approach could **use existing citizens consultation/deliberation platforms** (e.g. DECIDIM in Barcelona and other large cities in Europe) to be put more easily in practice, engaging citizens at local level in discussing and deliberating about the implementation of indicators for measuring life flourishing and other pillars of the TQoL.

    - Applying **the factfullness approach** would allow the authorities to make a distinction between misconceptions and fact-based evidence in their TQoL measurement. Factfullness tests may show discrepancies between their guesses and the real trends measured by the TQoL indicators, which need to be further analysed.

- Consider applying **the Outcome-Based Accountability approach** (for more detail see Appendix4) as a practical framework in order to organize the process from defining indicators to taking action, monitoring and adjusting. Outcome-based Accountability (OBA) is a disciplined way of thinking and taking action that communities can use to improve the lives of children, youth, families, adults and the community as a whole. OBA is also used by organisations to improve the performance of their programs or services.
- Recently issued OECD highlights on innovative citizens participation and new democratic institutions (OECD, 2020b), based on international evidence collected from 289 case studies, provide good practice principles (purpose, accountability, transparency, inclusiveness, representativeness, information, group deliberation, time, integrity, privacy, evaluation) to ensure sound and effective citizens' engagement in deliberative processes. This can establish a more permanent basis a citizen-centric approach, **promoting a new wave of representative deliberative processes focusing on quality of life indicators selection and use across the EU.**

In relation to the impacts of COVID-19:

- **The TQoL framework should be used as a tool to promote post-Covid scenario building exercises at regional level**. The use of the TQoL framework can play an important role in the scenario exercise identifying what part of the good life enablers (e.g., health care, education, transport, digital connectivity housing, and work) need support to recover. In turn, this kind of information would help the post-COVID-19 recovery efforts.

- **The TQoL framework should be used as a tool to measure the new (post-Covid) needs for QoL goods and services** and to promote the related policy responses.

Territorial Quality of Life Accounting infrastructure:

- A **guiding idea to enable a more permanent implementation of the citizen-centric approach would be to call all relevant actors to build up together a Territorial Quality of Life Accounting infrastructure**, supporting the creation and operation of **Territorial Quality of Life Measurement Labs** in Europe.
- A **Territorial Quality of Life Measurement Lab is a policy innovation milieu where experts from competent institutions (statistical agencies, universities, departments of national, regional and local governments, business associations and NGOs) work together with citizens** (small groups of self-selected active citizens or randomly selected citizens juries) – meeting in a physical or virtual (e.g. ZOOM session) public space – to define Quality of Life priorities, test indicators, monitor and evaluate QoL improvement programmes.
- The **TQoL labs are concrete settings and processes where the TQoL framework and tools are applied in a transparent and participatory way**. Each TQoL lab will develop its own activity and practice depending on the specific scale – European, national, regional, local - territorial context and nature of main QoL challenges on focus, but they will all share a same structure of questions to organise the interaction and contribution of the living labs' participants. The questions are:
    - **What do we want to achieve with a policy strategy?** This question asks policy makers to describe the goals pursued with their policies.

- **Why and to what extent territorial quality of life will be affected?** This question is raised by TQoL accounting managers, inviting participants to assess the expected quality of life impacts of policies and plans.
- **How can we measure the direct achievements of the policy strategies and the broader impacts on quality of life?** This question is for data experts – scientists and statisticians – to deal with, offering a portfolio of data solutions (indicators, weightings, data collection/survey facilities and procedures for delivery) to feed the TQoL dashboard tool.
- **Who should be engaged and how?** Citizens and stakeholders' engagement calls for a careful design and implementation to ensure transparency and effectiveness all along the chain of participants' selection, information, preparation and moderation of the meetings, reporting and communication. This is therefore a question for the TQoL managers to handle appropriately.

- **A side benefit of TQoL labs will be to increase the perceived usefulness of QoL indicators for the general public**. In the labs, the participants will have the opportunity to clarify potential trajectories of the indicators, identify achievable goals, detect interdependencies that are not immediately obvious, identify mismatches between different goals and potential achievements, question mainstream assumption about quality of life, elaborate roadmaps for quality of life improvement and, in general, better understand a system of indicators and the measurement effort applied to improve the territorial quality of life.
- Following the above guiding idea, we recommend **developing a European platform to support the measurement of territorial quality of life and the implementation of a citizen-centric approach across different territories in Europe**. This should take the form of a network of Living Labs in the ESPON space. The ESPON EGTC could play a leading role in launching and facilitating the network development.
- **A first embryo of a European network of TQoL living labs could be established by promoting spin-off activities out of some of the ESPON QoL project case studies**, where we found those of a potential interest to local agents to develop further TQoL measurement and its application. At the moment of writing, five case studies seem the best candidates to promote spin-off activities:
  - **Latvia**, for measuring territorial quality of life at municipal level (the new layer of 42 administrations) with a consistent approach linked to the National Development Plan indicators.
  - **Nova Gorica/Gorizia**, to develop cross-border measurement of quality of life with an Interreg project.
  - **Luxembourg**, to develop the measurement of quality of life with a transnational perspective, considering the quality of life of the Luxembourg inhabitants and the cross-border commuting population.
  - **Inner Areas in Italy**, for measuring the quality of life in peripheral and remote areas.
  - **Barcelona,** to use quality of life measurements to support progress monitoring of upcoming Urban Agenda studies.

1 Introduction

"ESPON QoL - Quality of life measurements and methodology" is a project funded by the ESPON 2020 programme, financed by the European Regional Development Fund (ERDF), by EU Member States, Iceland, Liechtenstein, Norway and Switzerland. The study aimed to produce evidence about the challenges, achievements and development trends of European regions and cities in relation to Quality of Life (QoL) as well as to deliver guidance for local, regional and national level policy makers to promote the integration of QoL in the development and implementation of territorial development strategies. So, different policy questions are addressed by the study:

- How does the concept and measurement of QoL differ in meaning at different scales (national, regional, local)? Which are the common measurement domains?
- What are the possible common indicators, which allow a comparative measurement and how can measurement be adjusted to different types of territories?
- By whom and how the selection of the QoL priorities for measurement (domains), indicators and/or weights will be decided and applied in practice? At which level should the discussion and use of weights take place?
- How can citizens and public participation can be considered in the process of selecting indicators and in the definition of QoL for a certain place or territory?

As a result of the applied research this Final Report includes the following sections:

- **The description of the Territorial Quality of Life (TQoL) measurement methodology** (Section 2), which includes the TQoL framework (Section 2.1), a system for coding indicators to assess data availability for a given territorial context, with a dashboard and a selection of indicators and an application at European level (Section 2.2), a discussion of the latent cluster approach to reveal underlying patterns of QoL and overcome limitations of composite indices (Section 2.3), a presentation of a citizen-centric approach engaging citizens in co-design, implementation and fact-checking activities ("factfulness" tests) (Section 2.4) and reflections on COVID-19 impacts on QoL measurement and the actual use in strategies (Section 2.5)
- **The results of 10 case studies** performed to investigate and compare emblematic experiences of territorial QoL measurement with our yardstick TQoL framework, with the aim to draw lessons for further adjusting and fine-tuning the methodology, and eventually allow for its practical and widespread use for measuring QoL across territories in Europe (section 3 – case study monographies are presented in the Annexes 4 to 13).
- **Tailor made policy recommendations to enhance the quality of life measurement and its influence in policy making** across Europe, with regards to different levels of governance (EU, national, regional and local), post-2020 Cohesion Policy, territorial sustainable development strategies, and including practitioner-oriented advice (section 4);
- **Further ideas for future cooperation between ESPON, EUROSTAT, the OECD and the UN**, to improve the integration of territorial QoL measurement in the ongoing efforts and programmes for measuring progress towards the Sustainable Development Goals (SDGs) (section 5);
- **Recommendations for further research**, based on the ESPON QoL Advisory Group (AG) discussions (see also Annex 1), the analysis of data gaps undertaken in our research (reported extensively in the Intermediate Report) and the results of the case studies.

2 Definition of the territorial quality of life measurement methodology

2.1 Territorial Quality of Life measurement framework

A key milestone in the process of answering the research questions presented in the introduction was to develop **a conceptual model for Territorial Quality of Life (TQoL) measurement**. The conceptual model is grounded in a new paradigm defining "what is life". For any living being – we could say on earth, but the same paradigm is now used to explore the existence of forms of life in other planets – life is survival plus flourishing in a supporting environment. "Territorial" quality of life is therefore to be defined – at its foundation – as the capability of living beings to survive and flourish in a territorial context. The territorial context – or "place" – is any geographical entity where living beings assemble: it could be a house, a building, a neighbourhood, a city, a wider area of land (a county, region, nation or a whole continent as Europe). So, in a nutshell, measuring territorial quality of life means measuring the capabilities of all living beings to survive and flourish in a place, thanks to the economic, social and ecological conditions that support life in that place.

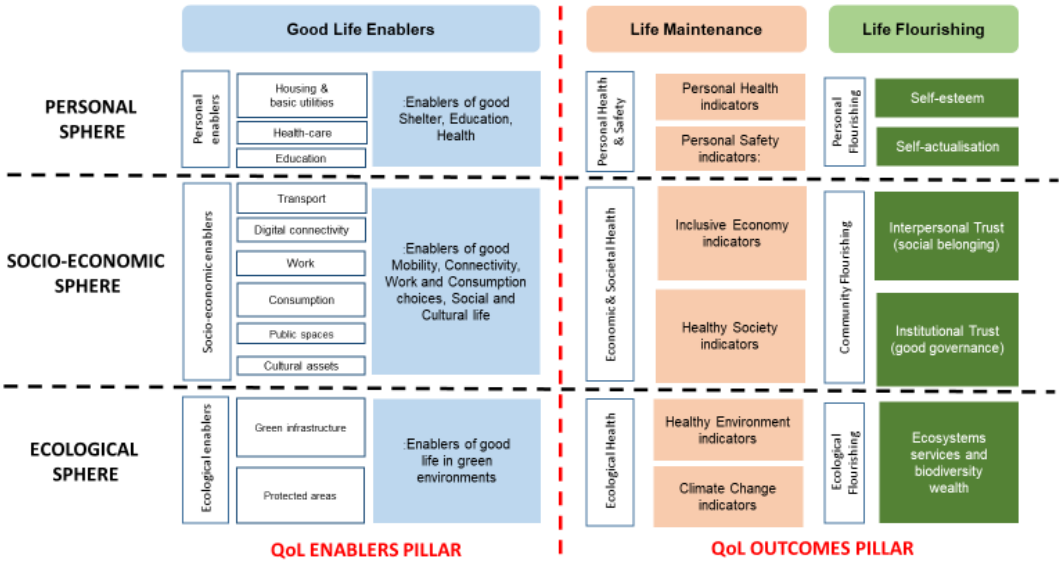
It is important to note that what is to be measured in a place – according to this paradigm – is not only the quality of life of the human species, but of all living organisms. Quality of human beings' life will be measured in the personal sphere – considering personal health and safety needs and flourishing aspirations – and in the socio-economic sphere – considering the economic well-being and social and policy factors that support survival and flourishing of all people living in the place. The quality of life of all living beings – including of course the humans – adds to the picture the ecological sphere, recognising the quality of the environment as a key pre-requisite of the territorial quality of life.

A corollary to this definition of quality of life is the "life-centred" approach to measurement. If we want to measure – and achieve – a good quality of life for all living beings in a place, i.e. to let them to survive and flourish, we need to enable and maintain the conditions of their settlement in the place. It could be a permanent settlement of populations of humans and livestock, or it could be a temporary settlement – for instance when populations of birds migrate following seasonal patterns or populations of humans move to tourist destinations. In any case, quality of life measurement shall include tracing the factors that enable a good life for all populations settled in a place – and we name these "Good Life enablers".

Finally, we need to stress the direct link between this definition of the quality of life and the direction and intensity of humans' migratory flows. People are force of choose to migrate elsewhere if the conditions in a place do not allow them to survive or flourish. In this respect, measuring the rate of population growth or decline linked to migration could be the most powerful and simple proxy for measuring the quality of life in a place.

Based on the above paradigm, we have formulated a **Territorial Quality of Life conceptual map**. Taking a systemic and multi-faceted approach to quality of life measurement, the conceptual map encompasses three spheres – personal, socio-economic and ecological, – and three quality of life dimensions – Good Life enablers, life survival ("maintenance") and life flourishing. Thus, the conceptual map is articulated in nine quality of life domains and 22 sub-domains, as it is shown in the figure below:

Figure 1 The Territorial Quality of Life measurement framework



The three QoL dimensions are further grouped in two measurement pillars: QoL enablers and QoL outcomes:

- For the first pillar, in the personal sphere, we include enablers of good shelter, education and health, measured by indicators of availability, accessibility and affordability of housing, basic utilities, education and health services in the territory. In the socio-economic sphere, we include enablers of good mobility, digital connectivity, work and consumption choices, social and cultural life in the territory. Finally, in the ecological sphere we include enablers of good life in green environments (availability and maintenance of green infrastructure and protected areas).
- For the second pillar, quality of life outcomes can be measured by means of objectives and subjective indicators. This pillar is further divided in two dimensions, “life maintenance” and “life flourishing”. Thus, territorial quality of life outcomes include aspects that are good for life maintenance (a healthy personal life, an inclusive economy and healthy society, healthy environment) together with aspects that measure life flourishing (the fulfilment of personal aspirations, community flourishing and ecological flourishing).

It is important to note further that:

- **The TQoL framework does not include GDP or local productivity indicators**, and the “inclusive economy” indicators refer only to aspects of distribution, equity, economic cohesion in the territory. Local productivity indicators are obviously important for local/regional development strategies, but the TQoL “inclusive economy” indicators focus on the spill-over of economic progress in terms of benefits for the citizens. In this respect, the TQoL indicators are complementary to GDP measurement – an orthogonal, not a collinear factor.
- **Life maintenance** includes the personal, societal and ecological health conditions that the population enjoy in the place. The term “maintenance” indicates the capacity to remain “regulated within a range compatible with the survival” of the system. The “system” to maintain in the different spheres is respectively the individual organism (the integrity of personal body and mental health), the social system (the social resources necessary for the people living healthy together in one place – village, town, city, metropolitan area) or

the ecological system. Life maintenance is measured by means of objective and subjective outcome indicators, to gauge the quality of personal, socio-economic and ecological health.

- **Life flourishing** domains include personal, community and ecological flourishing. Flourishing is the other component of life homeostasis, i.e. to live in a range of capabilities that are not just compatible with survival now and in the future, "but also conducive to flourishing, to a projection of life into the future of an organism or species". The concept is applicable to the personal sphere and to community sphere as well. Personal life flourishing is also clearly related to the concept of "eudaimonia" and the prospects for improving living conditions in the future, and it is measured mostly by means of subjective outcome indicators (although some objective outcome indicators can be used as proxies of flourishing, e.g. suicide rates as a reverse proxy of self-esteem). Community flourishing is strongly correlated to interpersonal trust (societal belonging) and trust in institutions (quality of governance) indicators, measured at community level. Ecological flourishing is added to take into account the influence that wealthy ecosystems services have as quality of life perpetuation and biodiversity in a territory.

2.2 Territorial Quality of Life indicators

The conceptual map presented above is applied to identify indicators that measure aspects of the different quality of life domains, delivering a **system for coding QoL indicators** that are applied to assess data availability for a given territorial context,

Territorial QoL indicators can be then elaborated using the available data and the **TQoL dashboard tool.** The latter is an Excel application that enables the comparison of one region at a year of reference with all other regions in Europe, considering also regional typologies like urban-rural. The tool can also be applied to a single territorial context, allowing to monitor over time quality of life trends in a region, city, rural area etc.[1]

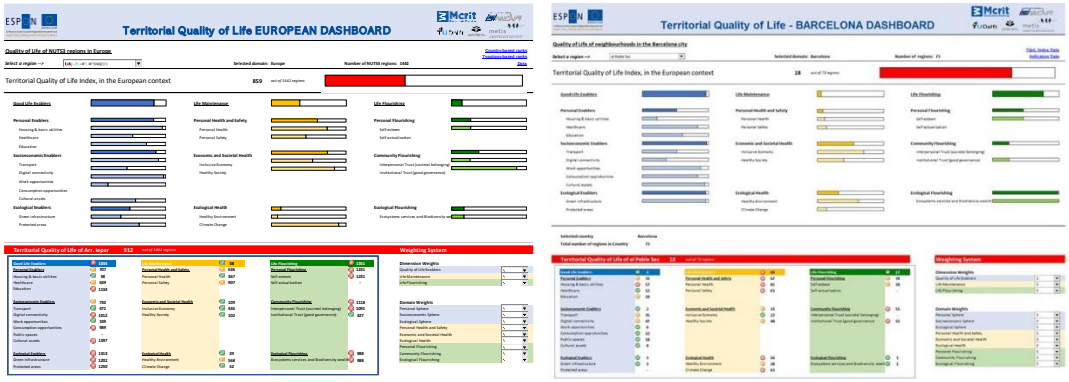
The dashboard tool allows to compute single QoL indicators and composite indices, using for the latter weighting options to combine the indicators sensitive to different territorial needs, i.e. for different typologies (e.g. urban, rural, mountain areas etc.) which affect the way of life. Thus, the tool is flexible, avoiding a "one-size-fits-all" approach to the selection and weighting of the QoL indicators, as the nature of quality of life expectations and priorities differs to some extent for different applications, for example for various territorial typologies (e.g. urban-rural typology, mountain areas, islands, metropolitan regions) and/or in specific local circumstances.

The tool is applicable at different territorial levels as well – European, national, regional and local level - depending on data availability: NUTS 2/NUTS 3 data detail for the European level, NUTS 3/LAU data for the national level, LAU data for the regional level, and sub-LAU data at the local level.

In this project, we have applied the TQoL coding system and dashboard tool to elaborate QoL indicators and delivers quality of life maps at European Level in a European wide exercise covering the ESPON space and the Western Balkans Countries (WBC) at NUTS 3 level, as well as at lower territorial levels in several selected case studies. The approach to measuring QoL is the same across different territorial levels, indicators are just used to define them in each case and are tailored based on data availability for each context.

[1] The TQoL dashboard tool is described in Annex 2, together with operational guidelines for its use.

Figure 2 TQoL Framework applied at European level on the left (example of the Antwerp NUTS 3 region) and applied to Barcelona neighbourhoods on the right.



NB: User friendly Excel based dashboard for result monitoring.

2.2.1 TQoL dashboard methodology

Methodologically, our work builds upon the OECD Handbook on Constructing Composite Indicators. (OECD JRC 2008). The specific methodology for measuring quality of life at regional level, including weighting for different types of territories, encompasses five steps:

Step 1. Selection of QoL indicators. To ensure coherence with current policies and contributions to current state of the art, the indicators should be complementary to the EUROSTAT, OECD and UN datasets measuring progress towards the Sustainable Development Goals (SDG); be able to capture the effects of regional policy interventions, and have a high political, technical and communication utility. Pragmatically, in order to build an operational and complete composite index, indicators have been selected based on their availability at NUTS 3 level, their completeness (estimates are performed extrapolating from parent NUTS 2 regions and exceptionally from NUTS 0 when missing data are limited), and time series availability (considering relatively high inertia of Quality of Life, five- to 10-year intervals between successive estimates are considered enough). Still, the pragmatic approach is only used in the selection to build an operative QoL index based on what exists today, but the definition of the theoretical framework itself is based on what is desirable to measure and not on which indicators are available, as proposed by the OECD Handbook. The difference between both approaches will pave the way to recommend further (coordinated) efforts to fill the data gaps.

Step 2. Data harmonisation. Carried out to render the variables comparable. Outliers in the dataset are identified and excluded. Highly skewed distributions are transformed (logarithmic and power transformations). Indicators are normalised in a range [0-1].

Step 3. Weighing QoL indicators. Weighting currently occurs through the hierarchical organisation of indicators in three dimensions, nine domains and 22 sub-domains. Dimensions are aggregated with a generalised weighted mean of power of 0.5; variables in domains and sub-domains all weight equal. As stated in the OECD Handbook, this approach is the most common when variables are intended to all be “worth” the same in the composite index, or also in the absence of a statistical or an empirical basis allowing for differentiated weighting. However, what the TQoL dashboard tool produced so far allows for changing weights of each indicator within domains and sub-domains, for instance to apply weights after a consultation with groups of experts, stakeholders of citizens.

Step 4. Indicator testing and validation. To test and validate the indicators, we performed a sensitivity analysis of alternative weights and nesting options, a comparison with consolidated

composite indices and other synthetic indicators of well-being (DG REGIO EU-SPI index, Hannel QoL index; Life Expectancy at birth and GDP per capita), an assessment carried out with the ESPON QoL Advisory Group to validate a proposal of indicators based on our own assessment of data availability and partial results at the European level. Finally, we take into account also further insights from case studies, suggesting changes in the TQoL overall framework.

Step 5. Indicator analysis and visualisation. The fifth step is organised in an iterative loop with the previous Steps 3 and 4. Analysis and visualisation lead to a new round of validation, and then to a new round of mapping and analysis until results are sufficiently robust.

2.2.2 Selection of Territorial Quality of Life indicators: the example at European level

Based on the above criteria, around 50 indicators were selected to inform the different domains and subdomains of the TQoL indicators proposed for the European level (ESPON area; NUTS 3).

The synoptic table showing NUTS 3 level data availability and gaps, is shown in Appendix 2, whereas the full list of indicators is provided in Appendix 3, together with a discussion of the limitations encountered in the selection process and ways forward for future improvement. Appendix 5 also provides maps of the TQoL index, its three dimensions (enablers, maintenance, flourishing), its nine domains and its 22 sub-domains, for better understanding of the results obtained in the exercise. A benchmark of different regions in Europe is possible by means of the TQoL Dashboard tool, described in Annex 3 of the report.

Not surprisingly, the value of the pilot European quality of life indicators and maps elaborated is affected by the limited range and in some cases uneven quality of the statistical data available to measure the 22 sub-domains of the TQoL model. In some cases, it is not possible to select indicators grounded in a solid scientific reasoning and statistical evidence, but only proxies partially related to the aspect that is intended to measure, as for instance the use we did of “suicide rates” to measure self-esteem. In general, all data related to the ecological sphere is less mature compared to socio-economic indicators grounded in more traditional and well-established international accounting practices.

As a result, the European maps – and especially the composite QoL maps – must be interpreted with caution, to disentangle real differences in quality of life from those due to the poor quality of the proxies used as a second – unavoidably not best – choice.

Even so, the European QoL mapping exercise is valuable to show the potentiality of the method and, as a by-product, to highlight the consequences of data gaps and stimulate data collection improvements to make quality of life comparison more reliable.

The table in Appendix 3 presents selected indicators for each of the domains and sub-domains of the TQoL index, along with the reasoning underpinning the choices made. The indicators have been selected after a detailed assessment of the QoL related data availability for all NUTS3 regions in Europe, as illustrated extensively in the project Intermediate Report. The table also discusses limitations encountered in the process of selection, together with suggestions of future indicators to be constructed in each case to better describe the different dimensions.

2.2.3 Results for Territorial Quality of Life at ESPON level

The following maps show the results of the TQoL composite index methodology at European level, displaying first the map for the aggregate TQoL composite index (all three dimensions combined), followed by the maps for each dimension separately – good life enablers, life maintenance, life flourishing.

The map below displays the territorial dimension of Quality of Life in Europe, considering altogether the Quality of Life enablers on the one side (conditions that exist in the territory and that facilitate quality of life), Quality of Life Maintenance (as experienced by citizens, in relation to a healthy personal life, healthy economy and healthy environment) and Life Flourishing (as experienced by citizens in relation to the fulfilment of personal aspirations, community flourishing and ecological flourishing).

The results reflect to some extent a centre-periphery pattern, driven in many cases by the situation of the European regions in relation to their economic indicators. Similar core-periphery patterns can be observed in the EU-SPI work by DG REGIO and to some extent in the OECD Better Life Regional mapping. This situation is mainly related to the fact that service availability (quantitative) tends to be higher in more affluent regions, as well as the socioeconomic indicators related to health, education and labour market.

Several peripheral regions and southern regions perform well in the environmental domains (e.g. ecological flourishing, green infrastructure) and subjective aspects of life maintenance and flourishing (e.g. interpersonal trust, self-esteem). Despite this fact, positive performance in these sub-domains does not fully compensate for lower performance in other previously discussed sub-domains more closely related to socioeconomic conditions. All in all, the little availability and lower relative accuracy of environmental indicators and subjective indicators linked to TQoL aspects of life maintenance and flourishing require prudent interpretation of observed trends.

In general, very high quality of life patterns are identified in the Nordic Countries, in particular in Norway, Sweden and Iceland, but also Finland and Denmark rank among top European regions in terms of Quality of Life. Regions located in countries along the “Blue Banana” perform well too, especially regions in southwestern Germany, in Switzerland and western parts Austria, in the Netherlands and several regions in the UK.

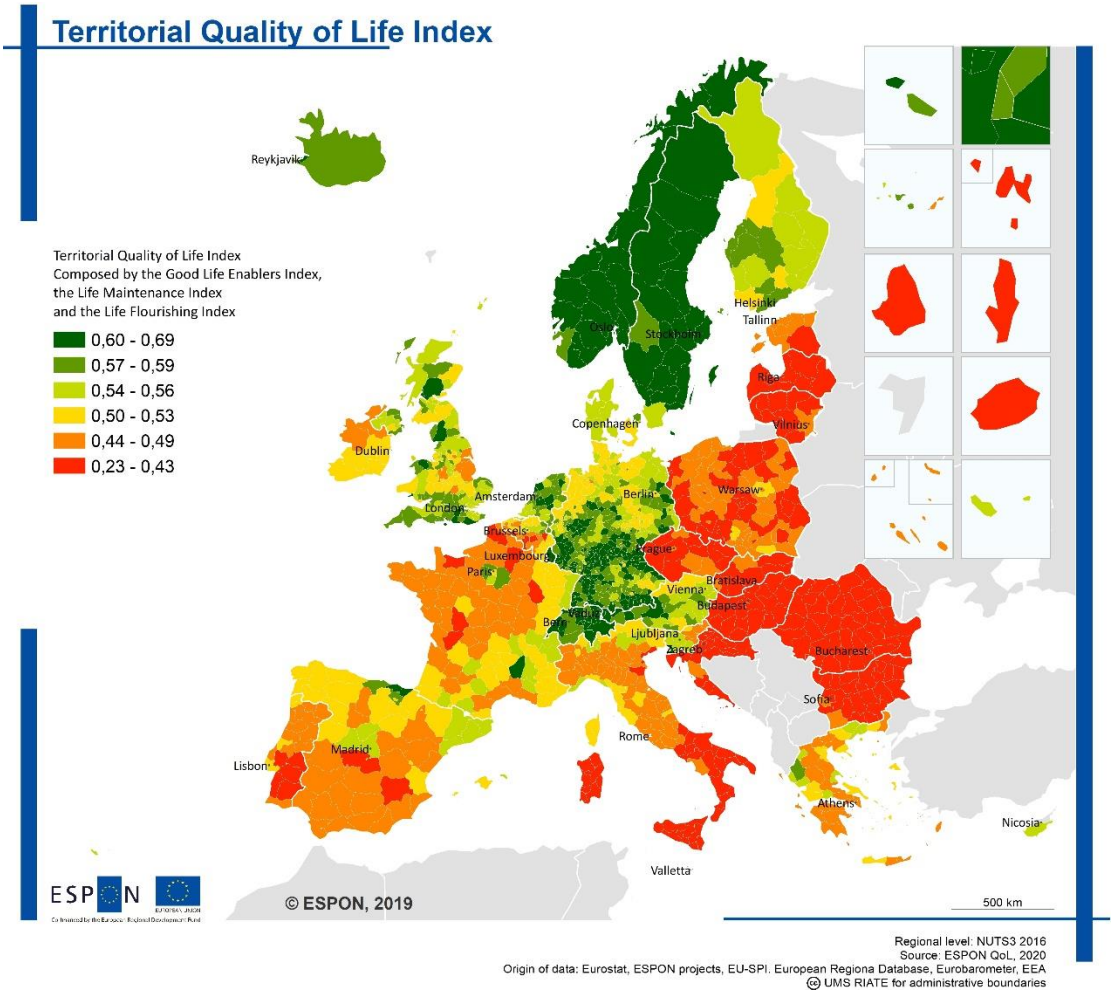
Interestingly enough, we also see relatively high quality of life in several regions in the Mediterranean region, in Spain – the Basque Country and Cantabria, Catalonia, Madrid and parts of Castilla León, in northern and western Greece – eastern Macedonia, Epirus, in Malta and Cyprus, in the northernmost coastal regions of Italy – Liguria, Friuli, Trentino, Slovenia, and in south-eastern France – parts of the Rhone valley, the French Alps, and the Occitaine region.

In general, we see capital regions and large cities showing better performance, with high quality of life indices in Paris and Brussels, but also regions like Warsaw and Krakow performing better than most areas in Poland, Lisbon and Porto in Portugal, Prague in the Check Republic, Bratislava in Slovakia, Vilnius in Lithuania, Zagreb in Croatia.

In some areas, rural and intermediate regions show good overall performance too driven by very good scoring in the environmental domains and holding good socioeconomic conditions in other domains, like the case of Ardège region just south of Lyon or Cantabria in northern Spain.

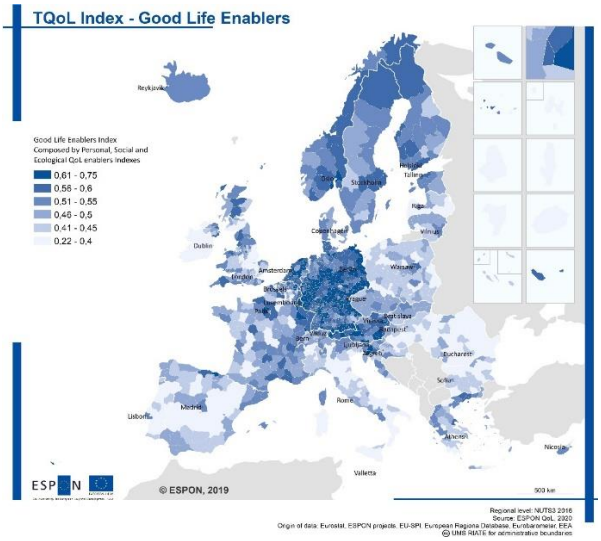
Nevertheless, regions lagging behind prevail in Central and Eastern Europe, and in wide areas of the Mediterranean region.

Figure 3 Global TQoL composite index



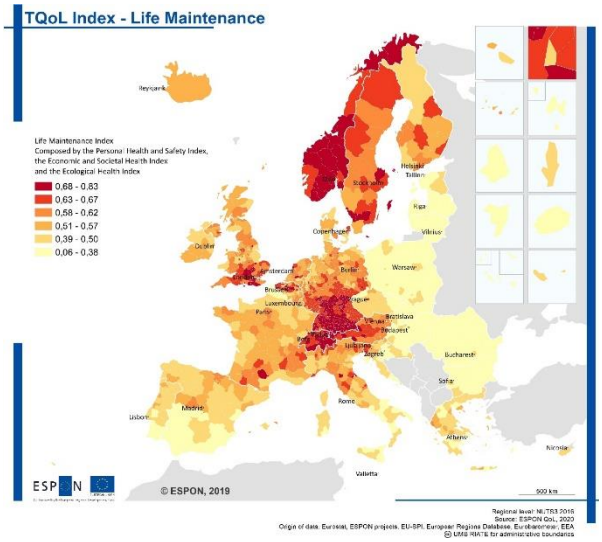
The Quality of Life Enablers dimension broadly follows a pattern of differences in the accessibility *vs* remoteness of regions. Sparsely populated areas, European / inner peripheries and areas with transportation deficits tend to perform worse in Spain, Italy, Romania and Bulgaria, some areas in Greece, France and Poland. Quality of Life Enablers nonetheless depend in many regions on their relative accessibility or remoteness, favouring urban and central regions over peripheral rural and sparsely populated areas. Results from this component respond to different phenomena: whereas some results are directly driven from core periphery dichotomy, like those related to job opportunities or transport services, most indicators show unclear territorial patterns with areas performing well and areas lagging behind in all European countries alike (e.g. access to education, access to shops and retail facilities, access to cultural assets, environmental assets). Exception to this, access to healthcare services shows relatively lower performance in countries like the UK and Ireland, Spain, Portugal and Italy, but also Sweden, Norway or Iceland. Housing conditions and costs are generally poorer in central and eastern European countries and to some extent in the Mediterranean countries.

Figure 4 Life Enablers Index



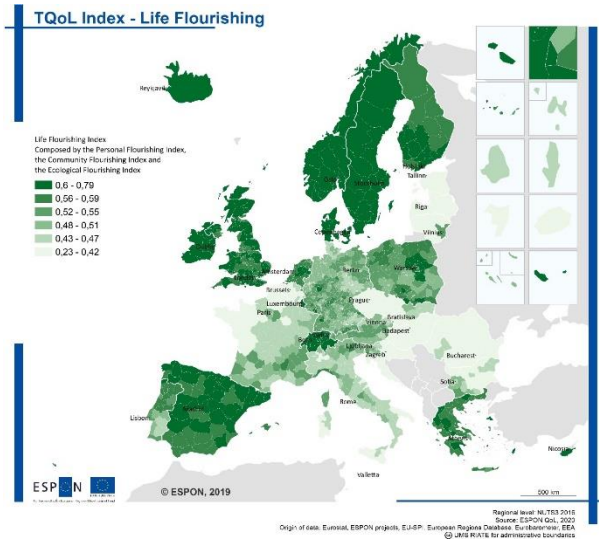
Life Maintenance dimension shows higher contrast between European regions, with top regions located generally in southern Germany, Switzerland and Austria, as well as in southern England (UK), in Norway and in several regions of Sweden -Svealand, Smaland, Scania- and Finland. Low “Personal Health and Safety” patterns are identified in Central-Eastern Europe and the Western Balkans countries, driven from low life expectancy and high death rates by traffic accidents or homicides, but also in Portugal, in relatively large parts of Germany, in Finland and in parts of the Benelux region. Economic and Societal Health seems more driven by regional affluence, being generally lower in central and eastern European countries, in particular in Romania and Bulgaria, and in the Mediterranean, in Spain, Italy and Greece, indicating low levels of economic health (unemployment, gender pay gap and household disposable income) and social aspects (poverty rate, early school leavers and poor education attainment). “Ecological Health” performance driven by the air quality index and the expected impact of climate change, with lagging areas in regions of the Netherlands and the UK, France, Spain and Portugal, northern Italy, and several central and eastern European regions.

Figure 5 Life Maintenance Index

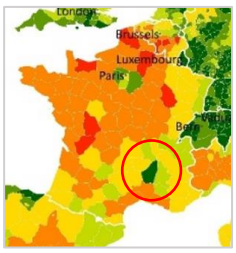


Overall, we see better performance of Mediterranean and Nordic countries under Life Flourishing, as well as remarkable performance of Poland, the United Kingdom and Ireland and Switzerland. Low Personal flourishing patterns are identified in countries like Belgium, north-west France and parts of Italy, also in Germany and Austria to some extent, and widely across central and eastern European countries except for Poland. We see low Personal Flourishing trends driven from low performance in self-esteem (represented by suicide rates and tolerance behaviour toward people with disabilities) in Romania, Hungary, Slovakia and the Czech Republic, and the Western Balkans, but also in Baltic Republics, Finland and Austria. Community flourishing is driven by by interpersonal trust, generally higher in Mediterranean countries but also in Poland and the Nordic Countries, and by trust in the institutions and quality of government, low in most central and eastern European countries and most Mediterranean countries. Low Ecological Flourishing patterns are located mostly in France, Italy and the United Kingdom, also in parts of north-west Germany, described based on value of ecosystems. However, caution needs to be taken in particular for the interpretation of this dimension, as some of the domains which integrate it have low data availability or even no suitable indicators to be used.

Figure 6 Life Flourishing Index

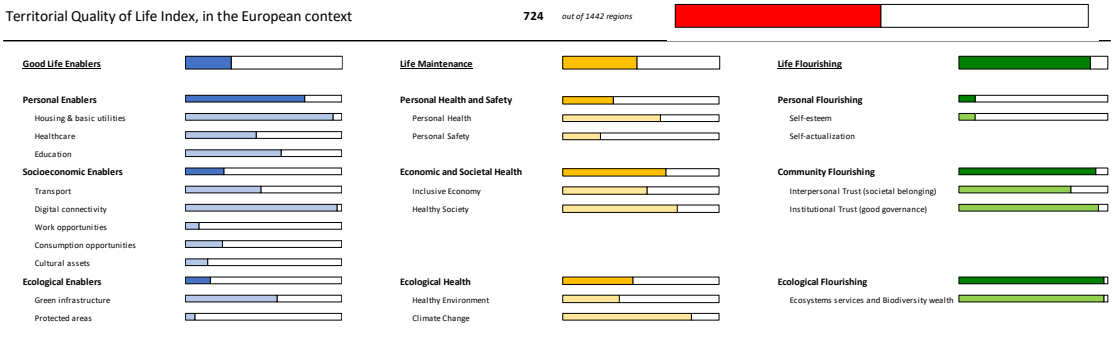


Regional profile example: Ardèche, France



Ardèche is a French region situated in the South-East of the country. It has an outstanding TQoL Index performance ranking 168th among 1 442 NUTS 3 regions. This is due to several factors: it achieves an excellent performance in each of the environmental domains, it presents a notoriously good performance in personal health and safety aspects (low homicides, low traffic deaths), it shows good accessibility to basic services (health, education, housing, transport and jobs), and stands out in digital connectivity and consumer opportunities. On top of that, it performs well in key aspects of socioeconomics like employment or social inclusion.

Regional profile example: Päijät-Häme (Lathi), Finland



Päijät-Häme (Lahti) is a region located in southern Finland. It has an overall good TQoL Index but low performance if compared to other Scandinavian regions, ranked 724th among 1 442 NUTS 3 regions. The region performs notoriously well in aspects related to interpersonal trust, quality of government and environment, but it is penalised due to the low performance on self-steam (high level of suicide death rate) and safety (almost doubling Helsinki's crime levels), by its

low accessibility to long-distance transport, to consumption and cultural assets, and has more limited job opportunities because of it remote location in the European context.

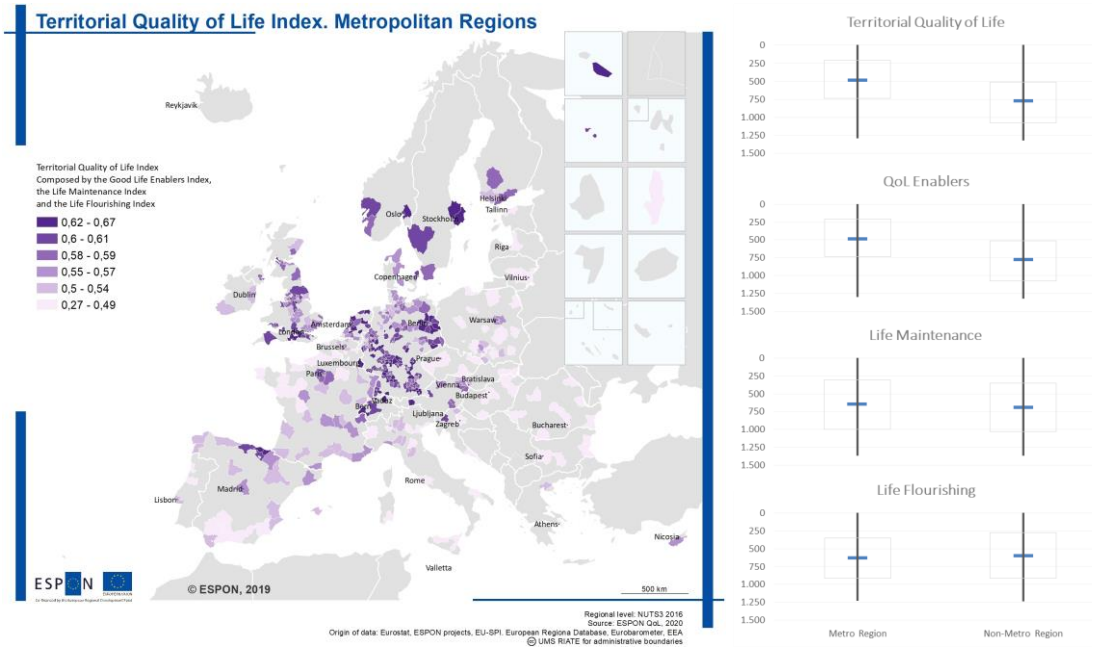
TQoL in relation to key regional typologies

In relation to *the urban dimension of Europe*, we see best performance in metropolitan regions situated in the Nordic countries, metropolitan regions along the "Blue Banana" in countries such as the United Kingdom, Belgium, Germany, Switzerland and to some extent in northern Italy.

Capital cities offer high levels of quality of life (in general), but opposed to other indicators like GDP per capita, we see more balanced systems of cities in terms of Quality of Life. For instance, in Poland, Warsaw offers similar quality of life levels as Krakow and Wroclaw; in France, Paris shows similar performance to Nice/Côte d'Azur and Lyon; in Spain, quality of life leaders are located in the Atlantic rim, and Madrid's performance is similar to Barcelona's.

We see high quality of life patterns across the borders in several European cross-border regions, like Brastislava-Vienna (Slovakia-Austria), Zagreb-Maribor-Graz (Croatia-Slovenia-Austria), the Basque Country (France and Spain), Geneva-Savoy (Switzerland-France) and Basel-Alsace-Baden Württemberg (Switzerland-France-Germany). Overall quality of life in these cross-border regions seems more balanced between the different sides of the borders than GDP per capita, but this observation would require somehow further analysis at local level, which is not always possible given scarcity of suitable data.

Figure 7 TQoL Index of metropolitan regions (left) and dispersion analysis by typology and dimension (right)



If we look at the performance distribution in the top-right figures, we observe that metropolitan regions show a better overall performance than non-metropolitan regions. Performance in the "maintenance" and "flourishing" dimensions are quite similar, and in the "flourishing" dimension, non-metropolitan regions even show slightly higher results. This latter dimension is driven by community belonging and self-esteem, and biodiversity and landscape indicators that tend to have better performance in more rural regions.

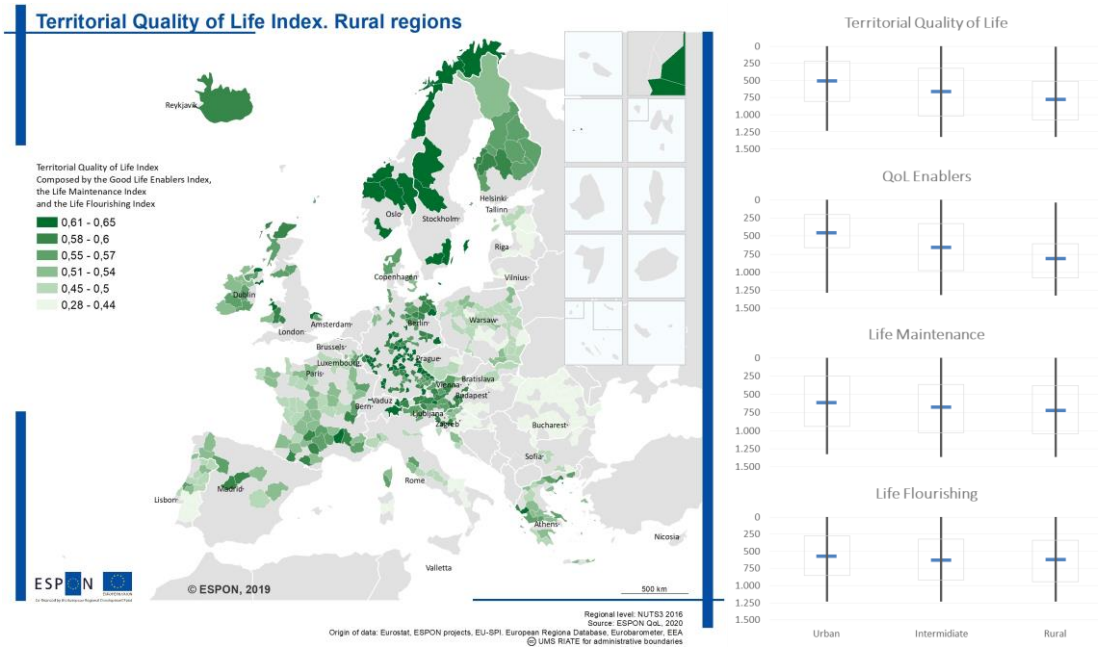
The main gap can be observed in the "good life enablers" dimension where the median rank position of metropolitan regions is 500th and the non-metropolitan around 750th, this gap is due to the higher access to services in metropolitan regions over non-metropolitan regions.

Within rural regions, an East-West and North-South split can be observed, with Northern and Western regions being the ones with higher performance and Southern and Eastern regions tending to lag behind. Highest performances are seen in regions of the Nordic countries mostly in Norway and Sweden, despite the remoteness of many of them. The north-south divide can often be witnessed at a sub-national level as well, in particular in Italy and Portugal.

This higher performance seems to originate from indicators in the Life Enablers domains, whereas more balanced patterns are observed in Life Maintenance (health levels, educational attainment, employment, among others) and in Life Flourishing.

Looking at the dispersion analysis below (box-plots), urban regions still overperform over intermediate and rural regions (occupy higher ranking positions among European NUTS 3), especially when analysing the "good life enablers" dimension where the median rank position of rural regions is 750th and the urban ones around 500th (similar to the metropolitan regions).

Figure 8 TQoL Index of rural regions (left) and dispersion analysis by typology and dimension (right)



Relationship between TQoL and other key socioeconomic components

We elaborated some regression analysis using the composite TQoL indices results and other emblematic indicators such as GDP per capita, Life Expectancy, European Quality of Government Index (EQI) and the Aggregated Impact of Climate Change.

We saw that quality of life is partially explained by GDP per capita, as high GDP per capita regions tend to provide for higher values of quality of life (left diagram). However, when we rank regions in terms of QoL performance (x-axis) and GDP per capita (y-axis) correlation between the TQoL Index and the GDP per capita seems lower. The coefficient of determination is R^2=0.5.

We see less correlation between the QoL index to Life Expectancy at Birth, meaning that there is low correlation between the "quantity of life" and the "quality of life". Despite Life Expectancy being a relevant component to explain quality of life, e.g. it is one of the three components defining the UN Human Development Index (HDI), many more variables explain quality of life besides longevity. The coefficient of correlation is in this case R^2=0.2.

In relation to quality of government (EQI) we see higher correlations than in previous analyses, suggesting that in those regions where public administrations are more transparent, efficient and accountable, better results are obtained in terms of quality of life for their citizens. Better services are provided, and better socioeconomic indicators are observed – health, education, labour market, social inclusion. Regression coefficients are situated at R^2=0.6.

The QoL Index shows in general low correlation to environmental resilience of European regions (inverse of expected climate change impacts by 2070). This reflects that the overall exposure of climate change is notably more geographically driven (North/South) than affluence or life quality driven.

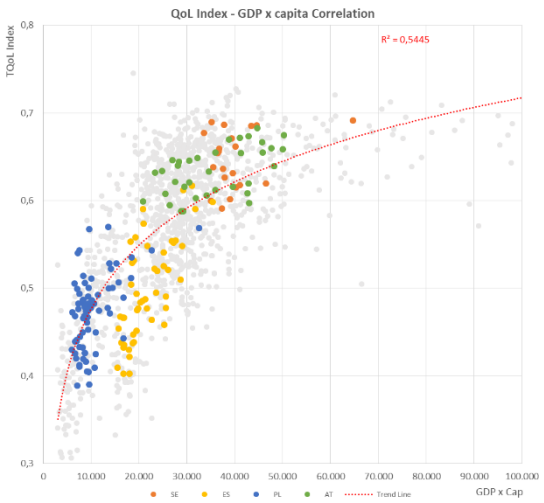


Figure 9 Correlation of Quality of Life (y-axis) to GDP per capita (x-axis). AT, ES, PL, SE indicated in different colours as a reference for analysis. R2=0,5

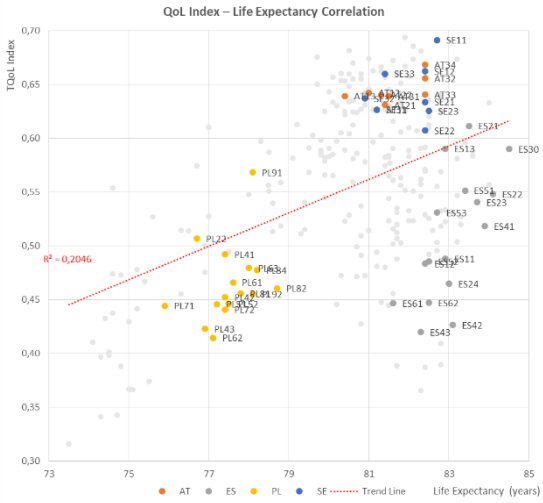


Figure 10 Correlation of Quality of Life (y-axis) to Life Expectancy at Birth (x-axis). AT, ES, PL, SE indicated in different colours as a reference for analysis R2=0,2

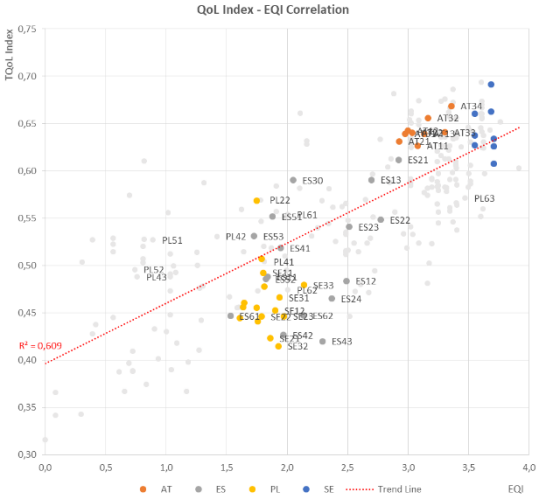


Figure 11 Correlation of Quality of Life (y-axis) to European Quality of Government Index (x-axis). AT, ES, PL, SE indicated in different colours as a reference for analysis. R2=0,6

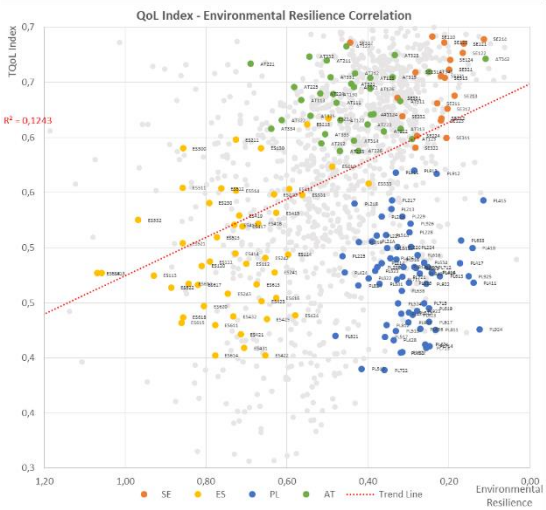


Figure 12 Correlation of Quality of Life (y-axis) to inverse of expected climate change impacts 2070 (x-axis). AT, ES, PL, SE indicated in different colours as a reference for analysis. R2<0,2

2.3 The Latent Class Cluster Approach to reveal QoL profiles

An important limitation of the composite index approach is that, while allowing for comparisons between regions, it represents *quantity* and not *quality*. Hence, the index only allows statements of the kind “region X performs better on the index than region Y”, but the qualitative reasons underlying this statement are obscured because of the aggregated nature of an index. It may even be the case that two regions perform exactly the same on the index, but for very different reasons.

The core of the Latent Class clustering (LC) approach lies in the recognition that Quality of Life does not merely represent a score on a single composite index, but that qualitatively distinct

patterns underlie this score. Therefore, instead of only looking at the aggregate outcome, we argue that an effort should be made to reveal and understand the underlying qualitative patterns of QoL. This calls for a more contextual and region-specific approach, i.e. assessing how regions score on a range of dimensions, and thereby revealing their specific challenges and achievements in terms of relevant QoL dimensions.

To identify commonalities across regions clustering methods may be used, for example, K-means clustering or probabilistic clustering techniques like Latent Class Analysis (which has several advantages over deterministic clustering approaches). By clustering regions with similar Quality of Life patterns into (internally homogenous) groups, these methods are able to parsimoniously capture the heterogeneity in the data, while at the same time revealing the qualitatively distinct patterns. At the end of this sequence the emerging patterns can provide more and richer policy insights than any single composite QoL index can provide.

To illustrate the benefits of the clustering approach empirically the Latent Class clustering approach has been applied on indicators collected at European, national (the Netherlands), regional (the Lazio region – NUTS 2 level in Italy) and local level (Barcelona).

In general, the results of the applications show that, in line with expectations, it is indeed the case that qualitatively distinct QoL profiles may underlie similar aggregate/composite QoL scores. As such, the QoL profiles provide actionable insights to policy makers, revealing which dimensions should be the focus of policy if the aim is to improve (overall) QoL.

The application of the clustering approach to the European NUTS 3 regions indicates the three dimensions of the TQoL framework (good life enablers, life maintenance and life flourishing) are positively correlated with one another and also with subjective well-being. Yet, the correlations are far from perfect, indicating that there are regions with QoL profiles which score well objectively, but relatively poor subjectively and vice versa. The Latent Class clustering approach is able to reveal these (groups of) regions and their specific patterns.

Finally, the clustering approach applied at national, regional and local scales produced the following results:

- For the **Netherlands**, the method was applied for the Sustainability Balance instrument at 355 municipalities. It was used to analyse the effects of declining and ageing population levels on Quality of Life. To assess this regression models have been estimated using the dimensions of the (theoretically grounded) Sustainable Balance Instrument as dependent variables. The results show that population decline and ageing have a significantly negative influence on the social-cultural and economic dimensions of QoL, but not on the ecological one. It is important that Dutch municipalities that face these conditions realise that such developments indeed put pressure on QoL. Finally, the LC analysis reveals that **various distinct Quality of Life patterns** may underlie similar composite QoL scores. Some patterns are quite straightforward (e.g. municipalities scoring average on all dimensions), yet, other classes are quite distinct (e.g. municipalities scoring particularly well on one, but poorly on another dimension). Obviously, understanding such underlying qualitative differences is very important to policy makers aiming to increase Quality of Life in their respective municipalities.

- In the **Inner Areas case**, the LC analysis was undertaken for the whole sample of 378 municipalities of the Lazio Region, based on 14 indicators capturing QoL enablers, including four ecological, five socio-economic and five personal enablers,. In addition, six covariates related to the population composition and dynamics were considered to interpret the cluster profiles. Overall, the analysis shows that the demographic variables are significantly correlated with the QoL enablers. In addition, the demographic variables are themselves strongly correlated. Five clusters have been identified which show different

average profiles of the variables and are interpreted respectively as “rural areas outside the Functional Urban Area (FUA) of Rome”, “rural remote areas”, “small cities” (self-contained), “rural poles”, “urban poles”. The five clusters show different population dynamics and ageing trends, and different endowments of QoL enabling factors.

- For the **Barcelona** case study, the analysis of the effects of QoL enabling indicators across different neighbourhoods of the city, shows that the life enabling dimension is positively correlated with the life maintenance and life flourishing dimensions. The analysis is able to reveal how certain configurations of good life enablers lead to particular QoL outcomes. As expected, the tourism and hospitality sector adds negative pressures on quality of life, which becomes clearly visible in the low scores on health and social indicators and the crowding of health services in the ‘tourism’ neighbourhoods. Overall, the results clearly support the de-concentration policy of the city of Barcelona aimed at spreading tourism services throughout the city.

2.4 Citizens-centric approach to measuring territorial quality of life

Citizens’ engagement is the other key component of the QoL measurement methodology that needs further attention, development, and applied research to become established as a democratic practice across Europe. The first step is to define the directions societies should follow. The choice of the indicators to monitor progress along these directions will necessarily reflect values and priorities. A set of QoL indicators needs to embody, at different territorial levels (EU, national, regional, local), a shared idea of quality of life improvement. This can be achieved only through a democratic process that allows identifying and legitimising values and priorities to be pursued. A democratic process able to grant legitimacy to a measuring tool should involve other stakeholders beyond experts and institutions, with a central and unavoidable role by organised civil society (Rondinella T. et al. 2015).

Such a democratic process is what we call a **“citizen-centric” approach to measuring quality of life** in the European territories. It is to be conceived as a participatory process to engage the citizens in the choice of indicators to guide the place where they live (a nation, a city, a rural area) towards a fair and sustainable quality of life. However, deciding about the indicators to measure QoL is not straightforward. They will reflect the specific set of values and priorities of whoever – institutions, researchers, private business, civil society organisations, citizens – selects them. The involvement of civil society actors is particularly relevant to ensure the freedom of expression and enable citizens’ empowerment in the policy decisions affecting quality of life. Therefore, in order to grant full democratic legitimacy to territorial QoL measurement, a truly citizen-centric approach should consider public participation based on extensive deliberation with civil society actors considered as indispensable.

Indeed, in the framework of participation it is crucial to distinguish consultative processes from deliberative ones. Consultation – listening to different actors and taking into account as far as possible their opinions – is basically achieved through surveys of opinions, which may be considered by a central decision maker, while deliberation consists in the definition of processes or forums enabling discussion among stakeholders in order to let them converge through dialogue and argumentative exchange towards a common decision. Clearly, the consultative approach has less legitimacy than the deliberative one, as it foresees no discursive interaction with a public exchange on the values and priorities which the participating community wants to support and pursue.

Public deliberation – the public information and opinions exchange among citizens aiming at a common decision – is the necessary process through which collective choices are shaped and made. Ideally, it creates legitimised and binding rules fostering free agreements among equals

with no external pressure on individuals, which in turn have to mutually acknowledge themselves as equal and to freely introduce and impartially deal with issues, needs and demands. Essential conditions for public deliberations are: the equality among participants; the inclusion in the decision-making process of all those subjects that are affected by the decisions to be taken; the unfettered, public and equal representation of interests and the pursue of the common good.

The indicators used for measuring quality of life are clearly a relevant topic for public discussion. Indicators and the related statistical information impact on the decisions of both citizens and policy makers. In our private and public life, we measure what we care about and we care about what we measure (Meadows 1998; Innes 1990). If end-users are involved in the indicators' selection or even elaboration, there are better chances that the indicators – based on shared values and knowledge – will be relevant. Thus, the legitimacy of the indicators derives from the shared conviction that these adequately represent all the relevant issues at stake for the different groups of stakeholders involved, from the private (business) and the third (civil society) sectors.

Specifically, the citizen-centric approach can take different forms in different places – from people's juries to deliberative surveys, from physical town-hall type meetings to virtual workshops engaging people in the selection of measurement priorities and/or in a "factfulness" test of QoL indicators. However, to ensure the widespread application of QoL measurement and that decisions are increasingly legitimised, shared and supported by sound reasoning across Europe, an effort is needed to scale up local experience, building a European milieu for QoL policy innovation with the creation of a network of **Territorial QoL Living Labs**.

The concept of Living Lab originated in the business environment, to involve the users of a product or service in an open innovation process. In a nutshell, a Living Lab is a systemic approach in which all stakeholders in a product, service or application participate directly in the development process (Bergvall-Kåreborn et al. 2009).

We suggest applying the Living Lab concept to policy innovation, adapting the concept originally created for the business milieu. Basically, this is equivalent to seeing the measurement of the territorial quality of life as a product, service or application that the public sector – the relevant authorities and the statistical agencies – delivers to the private sector, the third sector and directly to the citizens. Theoretically, the main adaptation concerns the concept of value, which should be merged with the responsibility principle to consider the value created by TQoL living labs as a form of **territorial sustainability value**, i.e., a somewhat more intangible term that includes **all forms of value that determine the health and well-being of a population in the long run**.

2.5 COVID-19 impacts on territorial quality of life measurement

The COVID-19 pandemic started during the case studies' stage of our research project. From March 2020 onwards, essential foundations of the people's quality of life have been shaken by an introduction of government-imposed containment and lockdown measures. It is too early to assess the actual impact of the pandemic to quality of life priorities and the QoL measurement methodology. However, we cannot dismiss to at least consider in a preliminary fashion the impact that the current global pandemic crisis may have on future life and the measurement of quality of life at territorial level. Indeed, measuring quality of life enablers and outcomes, considering life maintenance and life flourishing conditions and trends, is increasingly necessary in light of the COVID-19 crisis.

The potential changes to our way of life are manifold. Just to name a few, the lockdowns caused by the COVID crisis – the largest global experiment in teleworking and home-schooling – could

change our routines and lives more permanently. Working from home and flexible working arrangements could be adopted in a more general way in a “post-COVID” world, as well as distant schooling options. Where the digital transition is possible, this could also mark a watershed moment for workplace inclusivity, especially for people with disabilities or mobility problems. Working from home could have some direct benefits, ranging from cost savings for employers to a collective reduction in millions of miles of unnecessary commutes, with indirect impacts of reducing traffic accidents, pollution and fuel consumption, and increasing mental/social health. But there are of course also implications in relation to who can work from home and who cannot, creating potentially new inequalities and divides. Moreover, the pandemic may fundamentally change the way we gather together and share space, shift the way our cities are designed to be pandemic resilient and, more broadly, change the practice of urban planning. The crisis also offers the opportunity to reset our relationship with nature. This could be a pivotal moment to reflect on and reimagine what conservation and wildlife protection could look like and allow us to respectfully rebuild the broken boundaries with nature that have resulted in the situation we are in today.

It is not only a matter of identifying the most urgent data needs created by the COVID-19 outbreak. It is a matter of reflecting broadly on the impact the pandemics will produce for the quality of life policy and measurement priorities in the ESPON space. This reflection should not only encompass the short-term impacts and how quality of life targets could be included to orient recovery plans, but also the medium-to-log term perspective, considering how the global pandemic shock – compounded with possible future shocks (e.g. from climate change) – may trigger transformation towards increased resilience of territories at all levels. In the following we anticipate the evidence of COVID-19 impact already visible from some of the project case studies and the preliminary conclusions drawn about the “post-COVID-19” challenges and tasks in need for further research.

2.5.1 Evidence of the COVID-19 impacts on quality of life measurement in the case studies

In all the case studies we have investigated the impact that the COVID-19 pandemic may have on measuring territorial quality of life, asking questions on the prospective impact on the quality of life and possible implications for QoL measurement practices and policies. The following is the evidence gathered in some case studies:

- **Luxembourg**: In order to contain the COVID-19 pandemic, the four countries involved in the Greater Region have introduced very different national or sometimes also regional measures that have not been coordinated with the respective neighbouring countries. For people living in territories close to the border, the measures resulted in a massive restriction of their local / regional or national mobility and also of their cross-border freedom of movement, which at the same time brought about deep cuts in their quality of life. Substantial problems were caused by the asymmetric actions between governments, leading to the very different rules and regimes in a territory where usually borders do not matter so much anymore. Also, the recovery seems to be difficult: As the neighbouring countries and regions have very different approaches to the gradual easing of the various restrictions that can also be continuously adapted to new developments, existing rules may frequently change and therefore be confusing for people with daily or frequent cross-border activities. The need for coordination has been picked up at political level in order to find consistent proceedings for several sectors (access to health care, to schools and universities, mobility and transport, social and family life etc.).
- In **Gorizia and Nova Gorica**, the Covid-19 pandemic re-introduced a temporary frontier which has interrupted the smoothness of the communication and cooperation between

administrations, interfering with the process of the joint planning of the metropolitan area. The crisis triggered an astonishing spirit of political activities. The two mayors sat down in Transalpine square with a desk divided by the border continuing the dialogue for managing the twin city. The gesture was a strong political message to both national governments that decided to close the border, and Brussels, whose European spirit faltered during the crisis. The mayors claimed the central role of territories in building the *Europe of people*, demanding a dialogue at national level to harmonise decisions on the cross-border area.

- The **Helsinki-Uusimaa region** has had the highest number of COVID-19 cases in Finland and was quarantined from the rest of the country for a couple of weeks in order to reduce movement and contact to curb the spread of the virus.
- Emergency restrictions remain in force in **Wales.** Although lockdown began to ease in June it was reimposed by September in most areas. However, the debate about the future direction of the post-COVID-19 recovery has already started. In a recent statement, the Future Generation Commissioner called for "visionary ideas and transformative investment" in the recovery plan which "needs to address health, the economy and the ongoing climate and nature crises for the sake of Wales' long-term future. We need a new definition of prosperity, based on well-being, and a fairer, greener way of living." She called for investment in low-carbon affordable housing to improve the QoL, also to improve digital connectivity to allow for working from home, reduce emissions and increase road space for pedestrians and cyclists.
- **Vienna** faced a "soft lockdown", where people were asked to stay at home. Home working, home schooling and spending leisure time in the residential area shed a new light on the importance of QoL in the residential areas. A public discussion on the use of space started and first actions on improving space for cyclists were taken.
- In the **Latvia** case study, the rapid spread of COVID-19 and the measures taken to contain the pandemic have seriously impacted the nation's economic development. The COVID-19 crisis is also a serious test for Latvian society and the state. It also provides a unique opportunity to change habits and behaviour. However, after a first wave followed in summer by low COVID-19 infection rates and life with only light restrictions, the end of September came about with a stark increase in cases which ultimately lead to another emergency situation being declared in Autumn with increasing more severe restrictions being put in place. The relative quick submission of the first wave of infections and the sudden, exponential "return" of the virus has meant a kick to an already weakened economy and society. This has resulted in the denial of the virus by some, who refuse to follow restrictions, as in the light of the first wave they believe that the restrictions are not proportional to the issue. While this group is not a majority, it has meant some split public opinions and a general decline in societal cohesion.
- In the **Italy inner areas** case, three important implications of the COVID-19 outbreak for quality of life in the inner areas have been highlighted:
    - Agile and digital work (smart working) has become for a prolonged period – practically all of 2020 – the dominant way of working in many sectors and services. In general, many facets of social life, such as working, studying, shopping, and general interacting, have started to take place more frequently online than offline during the lockdown, and it is still uncertain to what extent and for how long it will remain necessary to maintain social distancing, by avoiding physical gatherings in many circumstances. Changing habits also has positive aspects, for example, avoiding commuting at rush hours and the over-crowding of public transport, reducing congestion by avoiding unnecessary

meetings and journeys. However, to become permanent, these potential benefits of smart working would require concomitant changes, first of all in the ability of public administrations and companies to (re-)organise the management of their operations. Moreover, smart working will create new causes for inequality, with significant differences between those who are able to work online and those who carry out activities where their presence and physical contact with other people remain essential.

- At a deeper level, the shift to smart working was for many not only a forced change of daily habits, but led to a mind-set change, decoupling “being at work” – at home or anywhere you are – from “going to the office”. This has profound personal, psychological and social implications – primarily regarding the quantity and quality of time devoted to work and that devoted to one's personal and family life. The realisation that it is not necessary to "go to work" in the traditional sense, and that work can be done just as easily, if not more so, from home or another location (where existing internet infrastructure and organisational arrangements allow it), represents a new freedom that widens the range of possible choices for living, settling, producing, and consuming. The office itself remains a place to go to interact with others, and for planning, management, co-creation, and evaluation activities where physical presence remains key for the quality of interaction and outcomes, but it is no more necessarily the place where to go every day to perform individual tasks that can be executed more efficiently from home.
- The spatial implications of all this seem evident. There are opportunities for polycentric development and, in particular, for reversing the trend of a shrinking population in the inner areas, thanks to the resettlement of new types of inhabitants, for instance, young families attracted to move there by cheaper housing or – on a seasonal basis – the owners of second homes who might find it convenient to use them for longer periods. However, the necessary requirements for reversing this trend include not only ensuring access to basic public services (the current goal of the inner areas strategies focusing on delivering sufficient infrastructure and services for mobility, health and education) and supporting the productive development of the areas, but also providing the quality of life levels necessary to attract new population flows. In addition, it is important to facilitate the integration between the needs and expectations of old and potential new inhabitants/users of the inner areas, whose number – in a scenario of digitalisation and widespread agile work – could increase significantly.

Summing up, although it is too early to draw general lessons about the impact of the COVID-19 on the QoL measurement and policies, we can draw the following conclusions from the above evidence:

- First, the crisis impacts significantly on all aspects of QoL. Especially factors that enable a good life (first pillar) have proven to be very relevant for overcoming the crisis. Good quality housing, good quality of the residential area, good accessibility to public services, especially health services, high digital connectivity, availability of green infrastructure are all factors that helped to sustain a reasonable QoL during the lockdown, and investment in these sectors is now seen as vital to recover and built up a safer and better life for all in the coming months and years.
- Second, the crisis is also triggering the public and political attention for the need to improve and safeguard a good QoL at territorial level. The model for TQoL we present in this study shows to a very high degree the domains that are relevant for ensuring a higher resilience of neighbourhoods and territories against health, social and economic crisis situations. These sub-dimensions can be used to establish a dashboard for factors relevant for

overcoming the COVID-19 crisis, either by taking just these sub-domains or by putting higher weights to these.

2.5.2 Post-COVID quality of life measurement: new research challenges and tasks

As a consequence of the COVID-19 crisis, there are at least three aspects worth of further research that we recommend considering in implementing the proposed territorial quality of life measurement framework:

1. How would the TQoL approach in its current structure represent the regions affected by COVID-19? The virus has had a devastating impact on the regions of Europe to a very different extent. It would therefore not be very plausible if Corona hotspots in the TQoL maps were to be shown still with very favourable values, reflecting the situation before the COVID-19 outbreak. However, this shock should be a great opportunity now also to reflect on the vulnerabilities and lack of resilience of the health care system, and other aspects that were not visible before the pandemics, and how to measure life vulnerability and resilience. The latter could be even suggested as a more exact terminology for the "life maintenance" dimension in a next revision of the TQoL framework.

2. But the pandemic also brings directly impacts on social complexes, such as nutrition or mobility, of which we know that the production systems and consumer behaviour associated with them are unsustainable and will require massive change in the coming years. A current example in Germany is the meat industry, where a number of slaughterhouses have been closed due to massive infection rates and now politicians are finally starting to think about legal regulations to protect workers.

3. Like public health, public statistical systems have shrunk over the past four decades by budget cuts and other restrictive constraints aimed at efficiency. With the COVID-19 crisis this is now becoming apparent and it is evident that an excess of efficiency damages the resilience of systems – including also the statistical systems – so that in the event of a crisis or shock there are no reserves to react and adapt. The most pressing risks identified by the World Economic Forum in January 2020 have not simply disappeared because we are now fighting a pandemic: *"Failure of climate-change mitigation and adaptation, extreme weather events, natural disasters, water crises, biodiversity loss and ecosystem collapse, cyber-attacks etc."* The question is therefore to what extent it is possible to design the measures for exiting COVID crisis in such a way that they do not take us back to what was considered normal before, thereby missing the opportunity to make this normality more compatible with the global strategy of sustainable development. This is of course not a statistical debate but a scientific and/or political one. But it must be borne in mind that more substantial changes, extension, or accelerations of official statistics cannot be realised overnight to follow new data needs priorities abruptly. Official statistics are a kind of ocean liner whose course can only be changed with considerable advance planning and preparation. It is therefore time to look far ahead now in order to be able to adapt to the information needs of the future, two to five years from now (see in this respect the discussion of the Trusted Smart Statistics in Section 5 of this report).

3 Results of the case studies analysis

The ESPON QoL research project includes 10 case studies of different territorial contexts chosen across different countries of Europe. All case studies were selected to investigate current practices in integrating quality of life measurements in national, regional, and local territorial development strategies, and to test the Territorial Quality of Life (TQoL) measurement methodology.

The case studies cover a wide variety of regions. We have selected two large capital cities (Vienna and Helsinki), regions with large urbanised as well as rural areas (Catalonia and Wales). North-Eastern Iceland, on the contrary, is a very remote region, with an extremely low population density and extreme weather conditions. Another case study focusing on remote areas is the "inner areas" case in Italy. Two cases highlight a cross-border context, though in very different settings. The case study of Luxembourg presents the highly integrated cross-border regions of Germany, France and Belgium, with a long history of cross-border collaboration and intense commuting, while Nova Gorica – Gorizia are twin cities divided by the national border between Italy and Slovenia (now both in Schengen). Wales is a highly diversified area including urban, rural areas and coastal areas. Several case studies include regions with industrial decline (Catalonia, Wales), some are coastal regions (Wales, Barcelona, Helsinki).

The sources we relied upon were interviews with local and regional stakeholders and desk research of relevant documents and websites. Each case study is presented in a summary in the Appendix 3 and as individual case study reports annexed to this Final Report. The purpose common to all case studies was twofold:

A) To gather knowledge about good practices of QoL concepts and governance, measurement and implementation in policy strategies that can be adopted in other European regions, and

B) To test the TQoL methodology developed by the ESPON project, collect suggestions for adjustments of the methodology itself and recommendations for its use in policy development and implementation.

For objective A), each case study report explores the policy context in which QoL is measured and used in the region. The aim is first to understand for which purpose the QoL concept has been established, in which policy fields it is being used and how different government levels are involved. Second, to investigate the indicators, measurement methods and data that are or can be used for QoL measurement in the case study context.

As for objective B), each case study report discusses to what extent and how the TQoL framework and tools can be applied in the case study context, helping to integrate quality of life measurement in policy processes and in territorial development strategies. This is undertaken in a number of steps:

- The **TQoL framework** (conceptual map) proposed by the ESPON QoL project is matched with the local QoL measurement concept and indicators in use, aiming check to what extent the TQoL framework could work as a "one-size-fits-all" concept, a common yardstick to frame the QoL measurement domains across different territorial contexts.
- The **TQoL system for coding the indicators** is used to explore in greater detail which indicators are utilised or could be elaborated with the available data in the local contexts to measure the different domains of the TQoL framework.

- The application of one or either – or both when the circumstances are favourable – of the **TQoL tools**: the **dashboard** to monitor and compare quality of life indicators and composite indices and/or the **Latent Class clustering (LC) approach** to detect and interpret territorial quality of life patterns.
- The description of any evidence in the case study context of a people/citizen-centric approach to QoL measurement and policy, and the formulation of opportunities to engage citizens in co-design, implementation and fact-checking activities ("factfulness" tests), to make territorial QoL measurement more responsive to the needs and aspirations of citizens to improve their everyday life.

The following sections provide an overview of the main findings of the case studies, presenting the common purpose to all case studies, the analysis of the practices of quality of life measurement, the methodologies and their use in current policy strategies and programmes (Section 3.1), the application of the TQoL framework and tools developed by the ESPON QoL project to the case studies' context (Section 3.2), a discussion of the citizen-centric approach (3.3) and overall conclusions to the case studies (3.4).

3.1 Analysis of the practices of quality of life measurement and their use in current policy strategies and programmes

3.1.1 The use of QoL in national, regional and local territorial development strategies

The actual use of QoL in territorial policies is closely related to the governance context and processes within which QoL is defined and monitored. We see various levels of commitments related to QoL. **In three case studies there are legal provisions to implement QoL** measurement as basis for policy making (Wales, Finland and Barcelona).

- The **broadest and most comprehensive policy concept** is implemented in **Wales**. It covers the full range of **public services and many policy fields**, including land use planning and place making, transport, housing, decarbonisation, skills for the future, adverse childhood experiences, and health and wellness. In all these areas the concept of QoL is used in setting specific objectives and defining and pursuing actions for achieving them and contributing to the seven overarching well-being goals for Wales. Elements of good practice are the speedy introduction of the concept through comprehensive legislation, QoL-specific institutional arrangements and the setting up and operationalisation of a measurement and reporting system. The scheme is particularly rich in legal and institutional provisions (e.g. establishing a Future Generations Commissioner for Wales, a Public Services Board for each local authority area with a collective duty). These have been put into effect fast since 2015 and are almost fully operational. There is a high degree of acceptance of the concept as a policy instrument and multi-actor commitment and major strengths have been identified, such as the forceful championing role of the Future Generations Commissioner for Wales. Shortcomings are identified mainly as the result of systemic obstacles, e.g. public bodies' resistance to adaptation of their approach combined with under-resourcing, as it has been recently the case in the health sector.
- A legal structure is important for the governance of QoL and this can be illustrated in the **Helsinki-Uusimaa region** example. For the case of the City of Helsinki, the Local Government Act is relevant. This settles that municipalities are responsible for advancing the wellbeing of their citizens, and the Health Care Act requires that local authorities identify objectives for welfare promotion based on local conditions and demand and design measures to meet these objectives by using local health and welfare indicators. The City

of Helsinki meets these requirements by having a Welfare Plan that identifies the above-mentioned aspects and a separate Action Plan for meeting the identified objectives. The situation is different for the regional level, where no similar legal obligations exists. Thus, in the Helsinki-Uusimaa regional programme QoL reports are a monitoring and communication tool used by the Regional councils, who oversee regional development and planning. The QoL reports inform the regional administration whether they are on the "right track" concerning social and human wellbeing. However, since the City of Helsinki is one of the stakeholders of the Helsinki-Uusimaa Regional Council, there is avid communication between these two organisations (at governance levels). Links to other territorial levels, thus, mostly relate to information sharing and benchmarking. Indeed, for the Regional programme Helsinki-Uusimaa one of the main objectives was to develop benchmarks with other European capital regions. Therefore, the SPI became part of the Regional Programme (since 2017) and constitutes the QoL framework in the region.

- In the case of **Catalonia**, the "Social Services Law" requests quality standards in order to guarantee QoL for the citizens. An increasing number of municipalities and counties are using the Quality of Life indicators as a central element for policy guidance. Strategic planning documents (like the Barcelona Metropolitan Strategic Plan 2030) and many sectoral strategies (for housing, health, social inclusion, environment, public space, ICT and knowledge) pick up on important elements shaping QoL in the respective territories. For decisions on economic, social or environmental issues, local administrations often use appropriate indicators, based on the information they have available or based on the information they can obtain through their databases and surveys. In none of the other case studies we see so many information systems and dashboards available. The **Barcelona City Council** also measures the living conditions of its citizens at the district and neighbourhood levels for backing the political strategy to improve sustainability conditions. Several indicators are used to measure environmental, economic and social sustainability that contribute to improve people's well-being.

Four case studies show how **implementing QoL measurement and policies may also arise from horizontal planning and coordination tasks** (Vienna), or **is requested and backed by political decisions** (Luxembourg) or **serves the implementation of other policy instruments** (living barometer in the Netherlands).

- The approach towards QoL in **Vienna** is less formal, but still very comprehensive. A horizontal unit in the department for city planning has been tasked with defining and measuring QoL as a supportive action to sectoral and territorial policies. This department commissions QoL studies on a regular basis in approximately regular intervals (starting in 1995). The QoL indicators and reports are used to support and analyse policy decision in urban planning (such as the expansion of the underground metro system and the extension of the short-term parking zone or the private use of internet and the use of e-government system) and are also picked up by various departments and units (e.g. Gender equality monitoring, Smart City monitoring). Analysis, evaluations and results concerning urban development and planning are published by the municipal departments dealing with urban research and development within so called "Werkstattberichte".

- **Luxembourg** is a very specific case: The "PIBien-être" project and the "Luxembourg Index of Well-being" (LIW) aim to measure quality of life in Luxembourg at a nationwide level in order to provide an alternative assessment benchmark for national government policies (i.e. in addition to GDP). There is a strong linkage of the LIW with national level policymaking in Luxembourg. The structures involved in the original conceptualisation are advisory bodies to the national government and departments of public administrations.

However, as Luxembourg is a cross-border metropolitan region where all kinds of social and economic exchange relations across borders have increasingly become intertwined over the past decades, the QoL coverage at national level falls short of capturing the cross-border dimension. So far, there has been little progress in finding a cross-border coordination for defining and measuring QoL.

- In the **Netherlands**, the "living barometer" is strongly grounded in policy. It was developed to select neighbourhoods that performed poorly on Quality of Life in a neighbourhood programme. This includes multi-level governance actions, where local stakeholders (municipalities, housing corporations, and citizens) organise bottom-up initiatives (street coaches, healthy living programmes, neighbourhoods' safety teams, etc.) to improve Quality of Life. The living barometer is used to assess the effectiveness of the implemented plans and policies. An evaluation showed that the programme did not lead to substantial improvements in QoL. However, when looking into interrelations between QoL domains, it became clear, that the relationship between physical and social measures appeared to be an important success factor (e.g. restructuring of housing did lead to a decline in crime levels and increased perceived safety and satisfaction with the living environment of residents). Though the programme is no longer running, the living barometer is still used to inform policies on potential improvement in local QoL. Besides the living barometer, it is worth to mention the development of the "Regional QoL Index" (RQI)**.** This is a stand-alone effort to quantify the Quality of Life in Dutch regions and to benchmark the results against other European regions. Based on the analysis, several policy recommendations were formulated, but the final version of the RQI was not grounded in a particular policy area or cycle.
- In **Latvia** the improvement of QoL is the main goal of the National Development Plan and of the Latvia Sustainable Development Strategy until 2030. Also, the activities of the municipalities, which are governed by the Law on Local Government, are directed at promoting the well-being of the public, with clear functions for employment and local budgeting for public services. Thanks to the ongoing reform of local government, and the support of several studies and research aimed to understand localised factors contributing to quality of life, Latvia is a particularly receptive context for Territorial Quality of Life spin-off activities.

There are also **three cases, where QoL is acknowledged as an important concept, but still needs further consideration and development**:

- The concept of QoL is relatively new in **Iceland** and – as the case study for the sparsely populated North-East shows – the practical application is still being developed. One of the few concrete results from the emerging concepts of "Quality of Life", "well-being" and "happiness" are the government reports defining indicators to measure and survey well-being and quality of life, but without a territorial differentiation for sparsely populated regions. Due to the austerity policies implemented after the financial crisis and the changes in public service delivery (larger units, more centralisation), the territorial dimension of QoL has gained importance. Economies of scale lead to fewer but larger units covering huger areas (e.g., most health care services concentrate to Reykjavík). This leads to a significant deterioration in the QoL of the sparsely populated regions, especially in the "Enabling" domain. This still needs to be reflected in the conceptualising and implementing of a territorial QoL approach.
- In the cross-border region of **Nova Gorica - Gorizia** QoL has been established on both sides. In the Slovenian Development Strategy 2030, the primary objective is to provide a high quality of life for all people in the country. Also, other national (Active Ageing Strategy)

and regional strategies (Regional development plan of Northern Primorska, Municipal Spatial Plan of the City of Nova Gorica) support QoL. On the Italian side, elements of the Territorial Quality of Life for Gorizia can be found in the sustainable development strategies at national (Italy), regional (Friuli Venezia Giulia), and local (Gorizia municipality) levels. However, the only common denominator is the Interreg programme, which supports cooperation. So far, the lack of cooperation and information flows on the quality of life between different institutions and departments has not been overcome yet. But with the EGTC GO a cross-border structure has been established, that is tasked with strengthening the cross-border cooperation in territorial development.

- In the **Italy inner areas** case, the dataset of diagnostic indicators is the richer collection of data available at municipal level and for aggregated areas allowing for the computation of indicators of good life enablers, and in particular indicators of the availability and scope of healthcare services, the availability, accessibility and scope of education services, accessibility to long-distance transport infrastructure (rail, highways, airports, maritime ports), and the presence of work opportunities in the agriculture, industry, service and tourism sectors. Considering the problems of depopulation affecting the inner areas, the diagnostic database includes demographic data to monitor the composition by age and the natural and migratory dynamics of the population in the territories, which are not included in the TQoL framework.

3.1.2 The definition of indicators for measuring QoL and availability of data

The case studies show a wide diversity of data and indicators applied in the different contexts. There are case studies with composite indicators, which are derived from SPI (Helsinki) or from the SDG (Wales). Indicators have been chosen and defined by a comprehensive process (Wales) – or are simply based on a long history of surveys (Vienna). There is a common struggle to get indicators that are most recent and on a reasonable territorial level. Often this influences the use of QoL indicators to a large degree. In most of the case studies objective indicators are more common than subjective ones, Vienna being the only exception.

In order to understand what type of indicators and what data are used, we present some examples that can be conceived as good practice.

- The **Barcelona** case study is the richest in terms of measurement frameworks (reports, dashboards) and data available. First, there is a wealth of data publicly available. In 2010 the Open Data BCN project was created as an innovative model for obtaining, processing and disseminating data of general interest in Barcelona. The Open Data BCN portal includes more than 450 data sets, which are regularly updated, are available in various formats and can be downloaded. In addition, there are several public institutions that also publish data (health, housing, social conditions etc.). Thus, there is a very large data stock available, where much data is also at neighbourhood level. This is the basis for a large number of initiatives that produce indicator frameworks related to QoL. Data are generated through official sources, surveys (including internet surveys), and use of big data. Following this wealth of information, several dashboards (e.g., performance tables per neighbourhood for key indicators, Barcelona Social Observatory, BCN Observatory 0-17 to monitor the lifestyle of children and young people), indicators and reports are available.

- The **Helsinki-Uusimaa Regional Council** has decided to use a list of six indicators (plus the NEETs indicator to reflect the high share of NEETs) to monitor their performance in achieving the targets of the Regional Programme. The region has worked closely with SPI and, thus, has chosen to use to a large extent the indicators provided by SPI in their QoL (or wellbeing) measurement. SPI indicators are outcome indicators that are based on

statistical data or on expert opinions. As such, the approach is still leaning towards objective indicators. Moreover, the data are on aggregate NUTS 3 level and, thus, cannot inform about differences within the region or between groups of people or individuals. Also, some of the variables are not available in a recent version. To sum up, the SPI is not suitable for monitoring the progress in meeting the goals set in the Regional Programme but serves only the purpose of international benchmarking.

- The progress of the **Helsinki Welfare Plan** is mainly monitored using city-level strategic indicators decided by the City Board. The monitoring report also includes a number of additional sector-specific indicators not mentioned in the Welfare Plan (such as bullying in schools, use of e-services by the elderly, number of alcohol-related deaths and casualties of traffic accidents, life satisfaction, etc.). The indicators are mostly disaggregated input and output indicators, some are also composite indices. Further, the Welfare Plan has a separate Action Plan with a detailed list of 29 sub-goals and 110 actions. Each of these actions have their own monitoring indicators. That is, the different city's divisions have more detailed data on the development of their respective sectors than are reported in the Monitoring Report.
- In **Wales** the Well-being of Future Generations (Wales) Act 2015 (WFG) put in place a requirement on the Welsh Government "to establish national indicators and milestones to help assess progress towards achieving the seven well-being goals, and report on them annually." The set of indicators has been developed since 2015 ("The Wales We Want"), culminating in a national consultation on 'How do you measure a nation's progress?'. Each of the 46 indicators is allocated to two or more of the seven well-being goals. The Public Service Bodies are required to take into account the Wales indicators in their local well-being assessments. Many of the Wales indicators are expected to "help tell a story of progress in Wales against more than one of the United Nations Sustainable Development Goals". This is done through the annual Well-being of Wales reports, produced by the Chief Statistician for Wales.
- **Vienna** is the only case study with a dedicated QoL survey concept. Since 1995 a survey is launched with questions on the territorial QoL every few years. The sample size is above 8 000 and is (partly) representative of districts and types of territories and of social groups. The results of the surveys are largely comparable over time. The questions are mostly on an assessment of specific items on a scale between one and five. Continuity is most important, yet changes are made, mostly small ones, and often take the form of add-ons. The ownership of the data lies within the entire municipality which allows for the use of the collected data within all departments for multiple purposes. The raw data is publicly available after a certain vesting period and after signing a cooperation agreement with the municipality, agreeing to make the outcome of the research available to the municipality.

There are also case studies that provide some interesting lessons to learn from, in terms of **weighing indicators** and of dealing with **sparsely populated regions**:

- In **Luxembourg**, the final report of the "PIBien-être" project identified 63 indicators for 11 thematic domains (e.g., income and wealth, occupation, housing, health etc.). All indicators are defined and measured at national level. Data cannot be disaggregated either for lower territorial administrative levels of Luxembourg or for functional areas within the national territory. A time component is included: the LIW compares QoL over a time period and used indicators where time series were available. In its current set-up, the LIW is basically a weighted average of each normalised indicator. The LIW assumes that each domain contributes in the same way to quality of life. As this assumption can be regarded as

arbitrary, sensitivity and reliability of the LIW was tested. Results support the evidence that the ranking of what matters for quality of life has little effect on the LIW.

- In the **Netherlands case,** the RQI is based on nine dimensions and 25 indicators and operationalised at NUTS 2 level, actually for the whole of Europe. The considered nine were loosely based on the eight (+1) framework of Quality of Life dimensions developed by Eurostat (2017). The specific indicators were chosen from the perspective of local people as well as from the perspective of people from foreign companies who (with their families) want to settle in a specific region. For each of the 25 indicators, between two and seven sub-indicators were selected, 100 sub-indicators in total. Objective and subjective indicators, as well as input and output indicators, were used in a mixed fashion. The data were obtained from various sources (OECD, the European Values Survey, Eurofound, ESPON, Worldbank and Eurostat). The sub-indicators were merged into the 25 indicators (using a combination of techniques) and these were normalised to range from one (worst score) to 10 (best score) and then subsequently combined into a composite index using equal weights. A sensitivity analysis showed that the use of other weighing schemes had little impact on the results.
- The **Icelandic** Government proposed a set of 39 indicators to measure well-being in Iceland, with the aim at looking beyond the conventional GDP focused measurements (in autumn 2019). Statistics Iceland have been asked to bridge the data gaps, as important key indicators were missing. However, the territorial dimension of well-being has not been an issue yet. For achieving a realistic image of the QoL in Iceland (with the declining service quality in regions with low population densities), also small sample sizes need to be taken into account in order to get realistic information about TQoL. Currently some proxies are used for presenting territorialised data. Such technical construction of the territorial dimension leads to biased results when monitoring or evaluating the Icelandic health care system in the sense that the results will point at better outcomes and provision for regions outside the capital than it is the case in reality. Consequently, such biased results will impact policy making and enforce spatial inequalities in service provision.
- In the **Italy inner areas** case, the existing diagnostic database includes data at municipal level that is aggregated by inner areas, covering mostly the good life enabler dimension of the TQoL framework, apart from public spaces and green infrastructure. The dimension of life maintenance is not represented, while in the dimension of life flourishing the self-actualisation category includes objective outcome indicators of education and the association of municipalities to provide services in the inner areas, which is an element of good governance. The last update is 2017, but the data are collected and updated systematically. Another useful source of data to measure QoL aspects at municipal level is the Statistical Atlas of Municipalities, issued and maintained periodically by the Italian Statistical Office (ISTAT). This source provides a richer collection of indicators – as compared to the BES source – for the good life enabler dimension, and for the healthy environment and climate change indicators in the life maintenance dimension. The latter include the mapping of low, medium and high hydraulic and landslide hazard areas, an aspect connected to the need to reduce the risks and impacts of disasters caused by increasingly frequent extreme weather events.

Finally, in **cross-border areas** there is the specific problem of asymmetric responsibilities for defining and measuring QoL:

- In the **Nova Gorica - Gorizia** region one main problem – common to both sides of the region – is that detailed data are often not publicly available and it takes time to keep in

touch with the appropriate persons that could provide it. There are also no common indicators to monitor QoL.

- A similar situation is to be found in the Luxembourg cross-border context: any definition and monitoring of QoL would need a collaboration with the respective organisations in France and Germany, which so far has not happened.

3.2 Applying the Territorial Quality of Life framework and tools in the case studies

3.2.1 The methodology for applying the TQoL framework

As mentioned at the beginning of Section 3, one purpose of the case studies is to reflect the conceptual framework and to apply elements of the TQoL methodology developed by the project. Not surprisingly, we have noted very different concepts, policy contexts, data bases and indicators for QoL across the case studies.

While applying the TQoL framework and tools our approach considers this diversity and adapts to the situation in each case. The conceptual framework for TQoL has proven to be very useful to understand and analyse the QoL concept used in the case studies. In each case study we could match the "TQoL framework" with several QoL concepts found on the ground – we called this exercise "conceptual TQoL mapping".

Moreover, as a further step, we have assigned the indicators used in each case study to measure QoL to the domains and sub-domains of the TQoL framework, using the common coding system, to understand, how the conceptual model worked in practice with the data available for the local territorial context. The results of this TQoL framework testing depended on the data availability and other specificities of the case study. A detailed overview on how we applied the TQoL framework, where we could collect additional data, and where we tested the dashboard and the LC clustering tools forms part of Appendix 3.

3.2.2 The results of the applied case studies research

The case studies clearly show that definitions of QoL and the constituent elements vary largely. There is **not one definition that resembles another one**, not one TQoL framework that is identical with the other. In some cases, QoL is a new concept that has been introduced to address shortcomings of other indicators like GDP per capita. It is evident, that the concept matters, but the actual use is often very much tailored to immediate needs and data constraints in each case study context.

As illustrated in the previous sections, the case studies are very diverse, and use different approaches towards QoL. However, the conceptual TQoL map proved to be a very useful framework to deal with this diversity. We gain indeed more insight into the different concepts when looking closer into the spheres, pillars and dimensions that we have identified as constituent elements of QoL.

This systemic mapping – in parallel with the associated system for coding the indicators used or available for each sub-domain – allows for a quick analysis of what approach has been chosen, in what way the indicators are linked to the sub-domains, where gaps occur and where potential overlaps can be detected.

From applying the TQoL framework and coding system we experienced the following:

- First, the **TQoL framework** works in all cases and is easy to adapt. However, for its wider application a guidance should be provided, and small amendments to framework itself might be useful, including for instance:

- The distinction between the enablers' pillar and the outcomes' pillars need to be better explained (for quick use).
- The ecological flourishing is a sub-domain, where the expert team of this study found it hard to identify appropriate indicators in the case studies and distinguish from "healthy environment and climate change" indicators (especially as the indicators in ecological sphere are often scarce). Here improved explanations need to be provided, e.g. following the Finnish Ecosystem services-definition.

- Second, when **coding the indicators**, we also found the overall concept very useable. The coding system has proven to be a very good and flexible framework for allocating indicators. It requires to reflect the substance of what is measured in order to allocate the indicator to the correct dimension.

In detail, by applying the TQoL framework we could observe the following patterns:

- In some case studies **all three pillars and (most of) the three spheres are covered** (Vienna, the Regional QoL index and the sustainability balance instrument in the Netherlands, the Sustainability indicators in Barcelona, in the Inner areas and Luxembourg, though with a gap in Ecosystem services, Wales (with a gap in Ecological enablers).
- A strong focus on the outcome pillars "**Life Maintenance" and "Life Flourishing**" with little to no coverage of the QoL enablers' pillar is in the Barcelona 0-17 observatory. Also, the very comprehensive framework in Wales considers these pillars to a much higher degree than the first pillar, the same is true for the Iceland case study.
- Only a strong focus on the **Enablers Pillar** with little consideration of the outcome pillar is observed in the living barometer in the Netherlands case (with some coverage of the Life Maintenance pillar) and in the Latvian case study of the measurement at national and regional level.
- The **Ecological sphere** is completely left out in both Finnish cases and in the QoL national concept in Latvia and is lowly represented in Nova Gorica - Gorizia.
- Overall, the domain "**Life Maintenance**" is most widely used (e.g. for the Barcelona case study from the total of six monitoring initiatives the majority covered personal health and inclusive economy).
- The "**QoL Enablers**" pillar is covered to a much lower degree. Therefore, from the Barcelona 'basket' four out of the six monitoring initiatives cover this pillar, mostly in the sub-domain of housing, where the other sub-domains are covered to a lower degree.
- "**Life flourishing**" is a pillar with scattered consideration. The Barcelona 0-17 observatory (for children and young persons) has a substantial number of indicators related to self-esteem, whereas all other dashboards in Barcelona hardly cover this pillar. Also, Latvia, the Inner Areas and Nova Gorica - Gorizia leave this largely aside.

There are a few other details emerging from the TQoL mapping exercise in the case studies, requiring **further clarifications or adaptations of the TQoL framework**:

- The sub-domain "**Housing and basic utilities**" should be extended by including "safety" in the sense of absence from hazards (risk of flooding, or other hazards).
- When including both, housing and basic utilities, any aspects of "having a good flat in a bad neighbourhood" or vice versa are lost. Also, there are – in some cases – too many indicators to be subsumed under this aspect and information gets lost. Therefore, we

suggest splitting this sub-domain into “housing” and “basic utilities” and “absence of hazards”.

- In a few cases we found indicators which could **not be coded** in the framework: these are indicators on GDP, local productivity, average income levels, innovation, which are explicitly excluded in the TQoL framework (as it focuses only on distributional aspects and inclusive economy indicators). Also, educational attainment, unemployment rates are difficult to code in the system. For these indicators an explicit guidance should be added.
- Indicators on the **environmental quality** are sometimes difficult to allocate to the pillars.
- The sub-domain “consumption opportunities” in the Good Life enablers’ dimension of the TQoL framework was meant to include the accessibility (physical or virtual) to consumption opportunities (e.g. retail shops, online delivery, etc.). However, the availability of energy efficiency solutions and distributed energy production (prosumption) and sustainable consumption purchases and lifestyles contribute to improve the quality of the living environment. So, also energy efficiency, saving, prosumption indicators, as well as the purchase of sustainable goods and services – should be included in the “consumption” enabler of quality of life.
- In the description of the sub-domain “**cultural assets**” of the Good Life enablers’ dimension, we currently mention only indicators of availability, accessibility and affordability of cultural assets (e.g. heritage sites, museums, etc.). However, the sub-domain concept could be enlarged to include “**culture and sport**”. Undoubtedly, sport centres and activities, and in general an active lifestyle are key components of quality of life – being both options for leisure time and enablers of personal health and subjective dimensions of quality of life. Sporting activities and exercising are significant factors for a person’s development and his/her integration in the society. They have side benefits for physical and psychological health as well. This aspect is increasingly important – physical activity, exercise and sporting habits should become a basic need in the life of all people (like the need of eating and sleeping), because the technologies and the current way of working and travelling do not secure enough movement for keeping the human body healthy.
- Finally, another important aspect of culture is the average **cultural level of population** (e.g. as measured by media literacy), because it is a pre-requisite for people being aware and prepared to cope with the challenges of an increasingly complex social environment.

The **TQoL dashboard** is very simple to use, as soon as the data are prepared. A very interesting feature of the dashboard is that it provides the relative position of a territorial unit against the others. This allows for comparing different types of indicators (objective and subjective ones), different points in time and indicators generated from different data sets. One can also combine indicators from different sources, as they are normalised. Data gaps do not block the overall functioning of the tool. So, one can use it with whatever sub-domains are covered.

The dashboard requires a limit of two (maximum up to four indicators) per sub-domain. This is a useful restriction as any “overcrowding” of sub-dimensions leads to including indicators that are correlating and measuring similar things. Thus, the dashboard forces the user to assess which indicators cover the sub-domain in the best way, avoiding too much overlap and correlations.

The dashboard also has foreseen the possibility to put weights on each pillar and on each sphere of each domain. This allows stakeholders to put specific emphasis on some of these domains. In the case studies we have not used this so far.

Overall, the possibility to "**play with the tool**" is very useful, as it allows a better understanding of what is measured and how the different sub-domains impact on the overall QoL and on the pillars, domains and sub-domains. With the TQoL index per region and the composite indices per pillar, domain and sub-domain a comprehensive information is provided.

This is an advantage as to the actual use of composite indices. The example of Helsinki shows that the six composite indices used, derived from the SPI are useful for international comparison, but fall short to provide up-to-date information that can be used to monitor the regional strategy.

3.3 Evidence of citizen-centric approaches to QoL measurement

The case studies are very diverse in their approaches. Quite often, consultation is within a wider group of stakeholders, but not by a participatory process. In most case studies the need for a better involvement of citizens is acknowledged but lacks implementation. Obviously, this is a question of managing any form of citizen involvement which is resource intense and requires specific knowledge.

In some cases, concepts and indicators that are based on data collection and monitoring at the level of individuals are considered as a citizen-centric approach. But a full-fledged citizen-centric approach – according to our definition – should include two dimensions: first, the involvement of citizens in the assessment of the QoL (by various forms of interviews, surveys, other interactive methods) and second, the actual definition of what matters for the quality of life (i.e. involving citizens in the design of the framework).

So, overall, we found evidence of the first dimension, but none for the second. An overview of the main findings from the case studies follows:

- One example for this is the **Helsinki-Uusimaa Regional Programme**, which sets the inclusion of citizens at the core of its development objectives. But there is no citizen-centric QoL mapping scheme in use. The data collection is mainly based on aggregate level indicators, which do not describe the local context nuances and dynamics between the core and peripheries of the region or between different socio-economic groups in the region; citizens are not involved in the definition of the QoL.
- The **Welfare Plan of the City of Helsinki** takes a more active role in developing a citizen-centric approach on QoL assessment. The Welfare Plan stresses how it is an outcome of extensive considerations on equality, human rights, equal opportunities, and participation. However, in relation to the strategic indicators used to monitor the Welfare Plan, citizen involvement was not considered as necessary in the development stage of the indicators. The plan includes some elements of citizen involvement (like surveys and feed-back for selecting actions to promote).
- Talking to people and involving citizens to get an assessment of the QoL has been recognised in **Luxembourg and in North-East Iceland** – but not yet implemented.
- In **North-East Iceland** as a sparsely populated region it would be most relevant to get data on the character of QoL in the specific places where the individual lives, as there are huge differences in QoL between the territories. Small sample sizes increase the resources needed to obtain such data.
- The **Viennese** surveys rely solely on data generated by citizens (through the surveys), but the approach cannot be defined as a citizen-centric one. In the QoL survey a stronger participation of citizens is not enhanced as it seems to be difficult to change questions without jeopardising valuable time series. One example is the report on "Quality of Life in newly built up areas". A combination of data from the QoL survey and outcomes from focus

groups, in which residents from the local neighbourhoods were involved, was used for assessing satisfaction in five urban development areas.

- The overall approach in **Wales** has emphasised the principle of "involvement" which is enshrined in the WFG Act and has translated it into various forms of consultations and engagement at regional and local level. These are used throughout the process including in the definition of QoL, local objectives and indicators. This citizen-centric inclination of the QoL approach in Wales is further underlined by the fact that, the indicators framework in Wales is geared towards a mostly people-oriented QoL, rather than a place-oriented one. The QoL mapping and planning in Wales relies to a considerable extent on people-related indicators, almost two-thirds of the total in the indicators' framework. This reliance on people-related indicators helps to represent the local context nuances and dynamics.
- In **Barcelona** QoL data are also generated by websites surveying QoL related items allow the user to assess the city. The website averages all the valuations and compares them with other cities in the world. Several examples exist focusing either on local residents, on tourists, expats, or even businesses.

Experiences with the factfulness approach

When it comes to "factfulness", there is an awareness of discrepancies between facts and people awareness in a few case studies.

- In the **Finnish** case study, the Regional Programme and the Welfare Plan discuss the role of ignorance, misperceptions and fact-based evidence. The Regional Programme states that an adequate level of general knowledge prevents negative attitudes stemming from ignorance. There is also an acknowledgement that the use of composite indicators does not always provide a sufficiently detailed picture (one also needs to look to the contribution of single indicators underpinning the composite indices).
- Within the "PIBien-être" project and the LIW in **Luxembourg**, there is indeed awareness about possible misperceptions. The "PIBien-être" report includes a section discussing the concept of subjective well-being and summarising the evidence on its reliability. One example are gaps between objective and survey-based subjective indicators. This was highlighted during a recent debate on quality of life and the introduction of the LIW in the Luxembourg Parliament, as the subjective "sense of security" might depict a situation that often does not correspond to the objective situation appearing from police statistics.
- In **Vienna**, there is awareness about possible perception gaps, but no actions have been set so far to investigate them further.

A factfulness test was conducted in the case study of Vienna. Here we have a wealth of information by subjective and objective indicators. The methodology used is presented in the toolbox (in Appendix 4). The results of the survey show the following:

- In general interviewees consider the TQoL framework to be complete. Nothing substantial is considered missing. Weighting of the sub-domains is considered as being difficult, as all of them are interconnected and strongly tied to Quality of Life. However, it was mentioned once, that food and pleasure are missing and that all leisure activities (enablers pillar) are reduced to cultural assets.
- Discrepancies within the sub-domains were detected in all sub-domains. For example, within "Personal Safety", as some interviewees think that crime statistics are on the rise, but in fact, they are constantly dropping. As well, most interviewees think, that total registered crimes are higher in the 20th district than in the 2nd, whereas this is the opposite. A similar observation was made for "quality of air", as half of the interviewees believe that

quality of air has decreased, whereas it has improved. Furthermore, “Satisfaction with life in residential area” is widely perceived as very good amongst interviewees and most of them are very content living in their neighbourhood, whereas survey data show that this is rather low compared to other districts in Vienna. The same observation was made in “Satisfaction with housing conditions”. However, interviewees state, that the two last mentioned life spheres have undergone a positive development and this trend will continue.

So overall, the test provides insights on the conceptual map soundness. Furthermore, one gets information on perception gaps – with the potential to explore the reasons in detail. If the final results of the test show these results, we will propose to include this as a methodological tool to identify and analyse gaps between objective and subjective indicators. When the test is used to test the factfulness of survey data, it shows to be useful to detect discrepancies in the details – e.g. the divergence between subjective and objective indicators in some domains. However, it is not only about detecting discrepancies or incongruent patterns, but rather about interpreting the divergences, getting a variety of in-depth answers and research the reason for misperceptions.

3.4 Conclusions – what do we learn from the case studies

The case studies show a wide range of QoL concepts, such as definition, policy context, use of data, indicators and citizen-participation. Not surprisingly, concepts are tailored to the needs in the region. There is not a “one-size-fits-all” approach, not one concept that can be applied in each territorial context. In this section we will pull together the main conclusions from the case studies and summarise how the methodology can be adjusted. A summary in Appendix 3 presents the outcomes of each individual case study related to the good practice identified, the adjustment of the methodology and policy recommendations derived from the case. The do’s and don’ts of applying the TQoL approach are presented in the following Section.

3.4.1 Lessons learnt

The case studies have shown, that hardly one QoL concept is like the other. Nevertheless, we can identify major sources of differences and draw generalised lessons answering to two main research questions:

First, the territorial scale has an impact on how the concept and measurement of QoL differ in meaning:

- At **European and national level** (see the RQI in the case study of the Netherlands) the main purpose is comparing and benchmarking. Here it is very useful to apply methods that are available at international level, like the SPI indicators. However, the case of Helsinki, where SPI was used for international benchmark and monitoring, it turned out that design of SPI (composite indicators with limited regional and timely availability) is not very useful for the monitoring of regional policies. Therefore, the main message from this is that QoL concepts should not be overloaded with tasks, like international or interregional benchmarking and policy monitoring.
- At **national and regional level,** we find several QoL approaches for **policy monitoring**. Often the concepts have a strong focus on welfare and public service provision (e.g. Wales, Helsinki), but to frame comprehensive QoL policies it is very important to develop them together with the definition of QoL indicators and measurements. This should be based on a clear intervention logic, using our TQoL framework to identify the dimensions and sub-domains of QoL. It is important to involve stakeholders in the entire process, not only in the definition of indicators. Data availability restricts regional/local differentiation or time series. Trade-offs between regional and thematic differentiation often are decided in favour of including more sub-domains and less data on local or regional level (Iceland,

Luxembourg). However, for the case of developing TQoL concepts in ultra-peripheral or border-regions fewer indicators with a territorial differentiation would add significant value.

- At **urban or metropolitan level,** we also find QoL approaches that are linked to policies as well, but also have a strong information and communication approach (Vienna, Barcelona, Helsinki). More comprehensive approaches could benefit from involving citizens in the definition of QoL, applying the concept to the functional urban region and introducing territorial planning approaches (as done in Vienna).
- **Sparsely populated regions** are a very special case. As we have seen in the case of Iceland, quality of life in a peripheral, sparsely populated region is very much different from the central region, due to market mechanism leading to a reduced service provision in some sectors. However, only a small fraction of the population is affected. Quality of Life concepts in such a context need to differentiate by regions in order to capture such significant differences in QoL that affect large parts of the territory, though only small percentages of the population.
- Even the mere observation of QoL in a **cross-border context** is very difficult, as there are different policy stakeholders, different statistical systems and different institutional systems. The case studies for Luxembourg and Nova Gorica - Gorizia have shown approaches of how to further develop the systems rather than they were able to analyse best practice. The TQoL concept here should be used as basis for a joint definition of QoL.

Second, the **territorial dimension of QoL** is determined by the type of stakeholder and institutions involved and the respective policy purpose, by the data used or generated and the possibility to show regional differences within the territory, and by the perception people have of their neighbouring areas.

- **Institutions-driven choice of QoL dimensions**: A strong territorial dimension is included in these cases, where institutions at local or regional level are involved. This is the case of the Public Service bodies in Wales or the local authorities in the Helsinki-Uusimaa regional programme. They act as advocates of their respective territory and thus bring in a strong territorial dimension. In most cases this is – in line with the most common responsibilities at the local level – related to the delivery of public services in the social and health sectors.

- **Data-driven choice of QoL dimensions**: The second territorial dimension is the one, where data and indicators are selected to show differences at a lower territorial level. This limits the composition of the QoL measurement, as indicators are often tailored to "what we have" instead of "what we need" to draw up a complete picture. With our approach of the TQoL framework it is then possible to establish the dimensions and sub-domains needed and to find indicators that can be allocated to the sub-domains.

- **People perception-driven choice of QoL dimensions**: The city of Vienna has brought in another type of territorial dimension, which is defined by the perception of the population in neighbourhoods – on the quality of the housing, neighbourhood, amenities and services in the area they live in.

Concerning the **dimensions used in the case studies**, some patterns clearly emerge: Each and every concept investigated uses the sub-domains from the "Life Maintenance" Dimension. The sub-domains "Personal Health", "Inclusive Economy", "Healthy Society" are covered in nearly all case studies. The Pillar "Good Life Enabler" is used mostly in cases where larger and diverse territories are covered (national level, larger regions with different types of regions included). Only for the Vienna case this pillar is fully covered for the type of urban regions, whereas the other urban regions focus on "Life Maintenance". A similar pattern can be identified for "Life Flourishing".

3.4.2 Adjusting the methodology

The results from applying the methodology in the case studies shows that the TQoL framework is very useful as guidance to which pillars, dimensions and sub-domains may constitute QoL, and which are actually used. This TQoL framework can easily be adapted to include further sub-domains if deemed useful by the stakeholders. In the case studies we analysed we found this current framework adequate, with some smaller adjustments as outlined in section 3.2.2 (better explanations, expand the definition of consumption opportunities by prosumption indicators, change “cultural assets” to “culture and sport”, include “safety” in the “housing and basic utilities” sub-domain).

The citizen-centric approach is perceived as useful but implemented only in a very few cases (especially in Barcelona with web-based surveys). This is a feature of QoL that needs further attention. Web-based instruments, small surveys and focus-group are tools that help to better integrate the views of residents in the TQoL framework and measurement.

When developing the approach towards an enhanced participation of citizens in the definition of the components of the TQoL framework, it will also be useful to include a sub-domain of “active citizenship” (in the “Socio-economic Sphere” of the “Life Flourishing” Pillar).

The dashboard is a very flexible tool in translating sub-domains into indicators. The coding of the indicators in some of the case studies show “overcrowded” sub-domains with gaps in other sub-domains. In practice this coding exercise needs to be accomplished by stakeholders in the regions in order to reflect regional specificities. The coding table should help to structure the discussion (what do we measure and why). The dashboard can be used to “play” with different groups of indicators, e.g., comparing dashboards over time to see development in the regions, comparing objective and subjective indicators to acknowledge differences and gaps, focusing on Covid-relevant dimensions to see how the QoL can be improved to better reflect challenges arising from a health crisis. Also, weights can be attributed, but again this needs to be a political process where the stakeholders of the regional QoL concept are involved, but not derived from any cross-comparison and statistical calculation across Europe.

4 Tailor-made policy recommendations

4.1 Different geographical levels and multi-level governance

Ensuring a good QoL for the citizens requires good collaboration between different territorial levels and public, private and semi-public institutions. In recent decades, the marketisation, privatisation and 'NGO-isation' of services related to QoL policies have made governance more complex. In many Member States, the implementation of New Public Management (NPM) into QoL related policies has shifted the responsibility for QoL related policies from national level to lower levels (regional or local). Moreover, the focus of QoL has shifted from society or communities to individuals. NPM governance has further increased the complexity and fragmentation of a multi-stakeholder policy environment and made the coordination of related policy areas much more challenging.

Policy recommendations in this respect are:

- The **EU and the national governments** should continuously monitor the progress in QoL and provide the means (finance and guidelines) for regional and local authorities to provide QoL for their citizens, accordingly. Parameters for good life enablers (e.g. health care, education, transport, digital connectivity and housing) and how these perform – not only at national level, but on regional and especially local levels – should also be monitored. If the performance at local level in some parts of a country is too low, resources can be allocated to ensure an acceptable QoL for its citizens.

- The **regional and local authorities** should retain the responsibility and resources for QoL provision regarding public investments and new regulations to improve QoL.

- The **private and third sector** actors should have the possibility to engage in policy co-creation processes, contributing to the definition of QoL and responding to needs for providing goods and services to improve QoL in close cooperation with the regional and local authorities.

- The **citizens** should also be engaged in policy co-creation processes. Through for example surveys, interviews and/or focus groups citizens can be included in defining QoL needs so as regional and local authorities as well as private and third sector actors can respond to, along with assessing QoL achievements.

The integration of QoL objectives and monitoring indicators while applying the framework presented in this project provides an additional opportunity to organise cross-sectoral multi-level governance and monitor cohesion together with regional, local, private and third sector as well as citizens' involvement. Therefore, policy recommendations for **Member States as well as regional and local authorities** are to:

- **Continuously draw on the experiences and good practices from others** when developing and improving their own system for measuring and monitoring in line with the proposed TQoL framework. This can be achieved by developing peer groups to exchange experiences of regions.

- **Consider TQoL measurement effort in tandem with the development strategies and targets** (as Wales does) to ensure a good fit between the indicators and objectives, i.e. the targets need to be set so that the progress towards achieving them can be measured and

vice versa. This includes designing preliminary terms of conduct if the development trend deviates significantly from the target. That is, **there should be an action plan to be implemented in case of severe negative developments observed via the TQoL framework**.

4.2 Measuring and reducing quality of life inequality

The recommendation by OECD (2019) that inequalities in well-being outcomes should be a key concern for policy is also worth considering in this context. Addressing them will **require a coherent and integrated approach mobilising the national governments of the EU Member States**. Adverse effects of reduced QoL of citizens are not experienced equally within the population. The most vulnerable individuals (low income, low education, etc.) are commonly also the most affected. Hence, policies should ensure the QoL inclusively for all citizens across different socio-economic groups. Therefore:

- **Incorporating the TQoL framework to policy evaluation** would be particularly relevant to drive and monitor the impact of EU and national funding on QoL inequality at the regional level:
    - The potential **negative impacts of austerity policies on QoL should be assessed** before implementing them. These policies usually hit good life enablers (e.g. health care, education, transport, digital connectivity and housing) and hence their potentially harmful effects should be carefully considered.
    - **Investments for facilitating economic recovery that are also linked to positive QoL outcomes** should be prioritised.
    - Related to the above, analyses at national or **NUTS 2 levels are too aggregated to identify territorial differences** in QoL. **Adopting the TQoL framework for monitoring purposes** at regional and local levels allows authorities to avoid (at least some of) these pitfalls.

In relation to the impacts COVID-19 on inequality and territorial cohesion (discussed in Section 2):

- **The TQoL framework should be used as a tool to promote post-Covid scenario building exercises at regional level**. The use of the TQoL framework can play an important role in the scenario exercise identifying what part of the good life enablers (e.g. health care, education, transport, digital connectivity housing, and work) need support to recover. In turn, this kind of information would help the post-Covid recovery efforts.
- **The TQoL framework should be used as a tool to measure the new (post-Covid) needs for QoL goods and services** and to promote the related policy responses.

4.3 Embedding quality of life measurement in the post-2020 Cohesion Policy framework

The inclusion of QoL aspects in the post-2020 Cohesion Policy can play an important role in monitoring territorial development. Recent research (Hanell, 2018) shows that **regional indicators currently in use for evaluating the progress of the Europe 2020 Strategy and for determining Structural Fund eligibility are not shedding light on regional levels of QoL in the EU**. Hence, the spatial patterns of QoL emerging from our disaggregated analysis

bring added value to what has hitherto been observed by means of traditional highly aggregated metrics.

By including QoL in the Cohesion Policy, the TQoL measurement effort can serve to establish a new baseline, linking the post-2020 Cohesion Policy with the UN Sustainable Development Goals (SDGs) Agenda. This agenda cuts through QoL aspects, both horizontally as well as vertically. Therefore:

- In order to link the UN SDGs and QoL together, regional and local governments need a more focused list of relevant indicators (instead of the existing list of 231 SDG indicators). **The TQoL framework should be applied to narrow down the list of relevant SDG indicators**.

- The process could also be applied the other way around. That is, the TQoL framework could be a very useful tool to be implemented at the very core of the SDGs localization venture. **The TQoL framework should be applied to help define the SDG domains and the technical indicators** that regional and local governments can afford when collecting the necessary data.

The Territorial Agenda 2030 proposes a similar idea when trying to bridge place-based and person-based approaches in relation to QoL. Policies – either place-based, person-based or preferably a bridged combination – need to provide a flexible framework so that the heterogeneous number of actors (EU, national, regional, local, private and third sector and individuals) can address the multifaceted aspects of QoL. Quality of life is also explicitly mentioned in the Territorial Agenda as one of the actions needed to increase citizens well-being, by saying literally:

> "All public policies (..) should go beyond economic performance, living standards and purely material aspects to include access to quality public services, freedom of movement and healthy, resilient and high-quality architecture and built environments. They also have a territorial dimension ranging from disparities between neighbourhoods such as social exclusion and urban poverty, to disparities between regions and countries" (European Union, 2020, p. 7).

Two main issues emerge.

First, **QoI data needs and availability**: As shown by the case studies data availability does not usually permit to distinguish differences between the core, intermediate areas and peripheries within the regions. In addition, data sources are commonly outdated. Therefore:

- When planning for cohesion policy interventions, QoL indicators of the respective territories should be taken into consideration.

- Instead of focusing on objective indicators alone, subjective indicators are needed to understand the QoL needs of the population. Subjective indicators would provide more insights into TQoL aspects of life maintenance and flourishing.

Second, a **citizen-centric approach** is needed**.** It means that we take the needs of citizens as a starting point when discussing QoL. Such approach would increase the relevance of the indicators in terms of their coverage on QoL issues deemed important by the citizens themselves. This can be implemented by small panels of participants who are involved in the

definition of constituent elements of the QoL concept, in the selection of indicators – and also in the generation of survey data. It can also take the form of a wider online participation process which is embedded in a communication strategy on QoL in the region. Therefore, we recommend:

- **To involve the citizens to define what QoL means for them**. At a national level, Iceland has just started an interesting process in which citizens are involved in defining well-being and we recommend that other countries follow this example.

- **Involving the citizens in the development work of the TQoL measurement schemes** (not just in the data collection phase) would improve the relevance of the indicators for both the regional authorities and the citizens. The work Iceland has started to do in this aspect is worth considering by other countries. Wales too offers a good example of using a citizen-centred approach for QoL measurement in a region. In Wales, there is a significant involvement of public and private sector organisations and local communities in what should be measured and how.

- The citizens-centric approach could **use existing citizens consultation/deliberation platforms** (e.g., DECIDIM in Barcelona and other large cities in Europe) to be put more easily in practice, engaging citizens at local level in discussing and deliberating about the implementation of indicators for measuring life flourishing and other pillars of the TQoL.
- Applying **the factfullness approach** would allow the authorities to make a distinction between misconceptions and fact-based evidence in their TQoL measurement. Factfullness tests may show discrepancies between their guesses and the real trends measured by the TQoL indicators, which need to be further analysed.
- Consider applying **the Outcome-Based Accountability approach** (for more detail see Appendix4) as a practical framework in order to organize the process from defining indicators to taking action, monitoring and adjusting. Outcome-based Accountability (OBA) is a disciplined way of thinking and taking action that communities can use to improve the lives of children, youth, families, adults and the community as a whole. OBA is also used by organisations to improve the performance of their programs or services.
- Recently issued OECD highlights on innovative citizens participation and new democratic institutions (OECD, 2020b), based on international evidence collected from 289 case studies, provide good practice principles (purpose, accountability, transparency, inclusiveness, representativeness, information, group deliberation, time, integrity, privacy, evaluation) to ensure sound and effective citizens' engagement in deliberative processes. This can establish a more permanent basis a citizen-centric approach, **promoting a new wave of representative deliberative processes focusing on quality of life indicators selection and use across the EU.**

4.4 Practitioner-oriented policy recommendations

The project case studies provide several examples of good practice (described in Section 3) where the national and regional levels have **involved local actors and individuals** to ensure the provision of important QoL services. Overall, the results of the case studies reveal that the impact of the QoL measurement exercises could be improved by integrating them more closely to territorial development strategies and policy implementation and vice versa. This would improve the coherence between the overall goals of regional authorities and their QoL measurement and monitoring efforts. Emerging patterns and trends are most obvious starting points but the complex nature of QoL issues and challenges addressed in territorial policies

and processes call for a cautious approach to untie the knot between problems and solutions, applying the TQoL framework. Therefore, it is not the idea to use and apply the QoL framework in a mechanistic way but rather to see the QoL framework as an opportunity to support dialogue with stakeholders and citizens, policy development and action taking with some relevant information in a more holistic way in order to improve and sustain the quality of (all) life in a given territory. Also, it is not the idea to use the QoL framework as a top down control tool, but rather to empower citizens, stakeholders and the elected to work together towards what counts for the people and a sustainable life. Applicability on different geographical scales can among others support investigation, if quality of life in one place goes on cost of quality of life in another places.

In order to set up a well-functioning QoL framework we recommend implementing the approach in several stages.

4.4.1 Step 1: Developing a conceptual approach towards QoL: setting up a TQoL framework.

The following recommendations are to be considered while setting up the application of the TQoL framework in a territorial context:

- **Applying the TQoL approach is more efficient if there is a political mandate to define the concept and the methodology how to involve the stakeholders**. Obtaining a political commitment is a prerequisite for community participation and preparation of a QoL profile as an evidence base for a strategy, resulting in programmes and policy actions.
- **A specific intervention logic should be established, and the relevant sub-domains need to be defined.** The intervention logic starts from the needs analysis, to which the cohesion policy programmes and measures should respond. In this case, policy response is expected to meet the regional/local needs and reflect the different elements of the intervention logic of a measure. For this purpose, the TQoL conceptual map developed in this project should be used as basis. This conceptual map defines the pillars, spheres and sub-domains of the QoL approach. For each of the sub-domains at least a narrative, but if possible, baseline and target values shall be developed to link the indicators to possible outcomes.
- **The application of the TQoL approach should be purpose driven and not data driven.** This implies that first the sub-domains are identified and second the appropriate data are selected. This should prevent an approach, where QoL is measured by a large number of indicators that covers only a few sub-domains, whereas other relevant ones not considered at all. It is most important that intersections of various policy driven domains are thoroughly considered and supported by measurement, monitoring and tailored communication tools. Missing data or information for individual sub-domains should be covered by surveys.

4.4.2 Step 2: Involving stakeholder towards an evidence-informed policy making.

A good TQoL can be achieved if stakeholder from different territorial levels and different policy fields are involved in developing and implementing these strategies. The Outcome-Based Accounting (OBA) approach is a useful tool for this.

Linking QoL policies to universally accepted concepts would level the risk of misunderstanding or misperception between the various stakeholders involved. Thus, for improving the governance of QoL **in the EU and in the Member States**, the policy recommendations we propose are to:

- **Strengthen multi-level and multi-sectoral collaboration** between the Member States and the EU in different policy areas for coordinated and improved use of their respective powers, clarifying their roles and responsibilities to better coordinate QoL related policies.

- For specific cases, to engage in a process of stakeholders' mapping, identifying their respective potential role and contribution to achieve a good TQoL.

4.4.3 Step 3: Implementing the TQoL-methodology in practice.

The proposed **TQoL framework** offers a modular approach to help regions in developing more sound QoL monitoring practices. The **system for classifying indicators according to the TQoL nomenclature of sub-domains – briefly, the "TQoL coding system" -** developed in this project helps regions to match between what should be measured and what can be measured. The developed **dashboard** is an easy-to-handle tool to show territorial dimensions of the indicators and potential impact on the overall QoL in a neighbourhood/locality. Overall, presenting TQoL in a clear and visually attractive way (by dashboards, charts, maps) would ease dissemination and increase awareness. Thus, the main policy recommendation emerging is that;

- ESPON should provide the TQoL framework accompanied by guidance on how to apply it, in the Members States, regions, cities and different typologies of territories across Europe. It is worth to consider of establishing a sort of a **contact point for facilitating implementation of the TQoL method into practice**. It should be helpful for stakeholders and other users of the TQoL method in regions. It should enable the exchange of problems and experiences in implementing of the TQoL concept what would help to promote the TQoL method and to improve the method in the future.

More in detail, the following sub-steps are given as a practical guidance l to apply the TQoL methodology in a territorial context:

- **Sub-step 3.1: Develop the conceptual map for the TQoL framework:** The conceptual map needs to be developed, defining the relevant spheres and sub-domains, on the basis of the QoL framework and the national or regional strategies (result of Step 1) and the involvement of the relevant stakeholders (identified in step 2), Though we have a blueprint[2], fine-tuning is necessary in respect to the actual type of region and regional needs. Especially sub-domains of "Good Life Enablers" might be conceived differently in urban areas (with housing and basic utilities, public spaces, green infrastructures of higher importance) than in rural areas (with more emphasis on accessibility of health care, education, transport, and cultural assets).

- **Sub-step 3.2: Coding the indicators:** For each of the sub-domains we suggest considering up to maximum four indicators, taking care that there is little correlation between the indicators within a sub-domain. Indicators may cover subjective and objective dimensions, and they may be computed for various points in time. They need to be on the same territorial level. These indicators then are normalised to fit in the dashboard tool.

- **Sub-step 3.3: Fill the dashboard:** The dashboard is an Excel based tool, with a structured spreadsheet format for data entry by territorial units and indicators classified for the different QoL sub-domains. Details of the dashboard are presented in Annex 2. In case studies

[2] See figure XX at page XX.

where we had access to data for different points in time (Vienna, Wales), we developed a dashboard application for the most recent base year and one or more for previous dates. There is also the possibility to put weights to sub-domains. This might be relevant when the territory includes different types of regions where sub-domains are of varying importance.

- **Sub-step 3.4: Present the result in maps:** Outcomes of the dashboard are relative positions of territorial units related to sub-domains, domains, pillars or overall TQoL ranks. In order to assess the usefulness of the indicator and analyse the outcomes of the TQoL methodology, it is necessary to present the results in maps.
- **Sub-step 3.5: Play with the dashboards:** There are many ways to change the results of the dashboard like changing indicators, adding new sub-domains, putting different weights to domains etc. Further options to "play with" may include comparing dashboards from different points in time, or results for objective *vs* subjective indicators. This is also the stage, where stakeholder contributions can matter most (e.g., questioning about how the QoL map might change, if one introduces a weight, or changes the composition of indicators).

4.5 The contribution of Official Statistics

A solid statistical system is a matter of trust: we need to be able to trust the information. Three key aspects need to be fulfilled: **what** (statistical products, quality profile), **how** (methods) and **who** (institutions). This is however not as simple as it may seem.

Looking to the current landscape of the Official Statistics System in Europe, the **EUROSTAT is at the centre of the network of National Statistical Offices (NSOs)**, implementing official statistics programmes and harmonised surveys in several fields – the most notable for QoL measurement purposes being the EC Social Survey. In addition, several different **EU agencies,** – e.g. European Agency for Safety and Health at Work (EU-OSHA); European Foundation for the Improvement of Living and Working Conditions (Eurofound); European Environment Agency (EEA); European Monitoring Centre for Drugs and Drug Addiction (EMCDDA); European Centre for Disease Prevention and Control (ECDC); European Institute for Gender Equality (EIGE); Fundamental Rights Agency (FRA) European Labour Authority (ELA); etc. – gather information on different dimensions of QoL.

Although the EU has no formal discretion in the QoL areas, the role of EU agencies in providing empirical evidence for policy making is pivotal to cater for the data needs of **cross-country as well as cross-regional EU comparisons to provide input for an evidence-informed policy making**. However, as repeated in this report, in order to "truly" impact the QoL of citizens, this data needs to be available at local, or at least regional, level. Therefore, the main recommendation for EU agencies involved with QoL related issues (such as improvement of living and working conditions, drug addiction, gender equality, etc.) is to:

- **Provide factual, objective, reliable and comparable information and statistical beyond the EU and national levels**. In other words, to measure the QoL of citizens EU agencies responsible for data collection and provision should aim at going beyond the NUTS 2 level which is not detailed enough. These **data collection efforts need to be coordinated to ensure comparable regional coverage** between the various EU agencies.

The aim of **Member States and their NSOs** must be to ensure that statistical information is suitable for facilitating the policy debate by eliminating the need to argue about the facts and only about the conclusions to be drawn from them (Radermacher 2020). In this respect, the

quality and availability (beyond national averages) of data and indicators needs to be improved by:

- Taking advantage of the TQoL coding exercises (as demonstrated in the case studies) to **uncover the gaps in the existing data.**

- By **evaluating how to utilise emerging data sources**, such as big data, **and ensuring their public availability** after checking their reliability and ethical aspect**.**

Finally, **regional and local authorities** need to address QoL measurement in such a way that it gauges both objective and subjective indicators on finer scale than regional averages. Ready-made statistics are commonly a suboptimal solution for this end, but on certain instances the fit between the indicators and QoL can be reasonable. Additionally, universities and research institutes collect a variety of data for research purposes and could be very eager to participate in regional development (as a "third" mission of the university, beyond research and education). For these reasons it is advisable to:

- Go beyond measuring the mere presence of good life enablers (e.g., health or education services) by gauging the actually experienced QoL of citizens, specifically to assess the quality of these enablers in the territory (i.e., the perceived level of health, education, transport services etc.). For this end, **taking advantage of data sources based on big data**, **surveys or interviews** (the European Social Survey includes data on subjective well-being) is a good starting point in cases where the geographical coverage of the data fits the needs of the region.

- **Collect the data on a sub-regional scale to uncover differences between core, peripheral and remote areas of the region as well as for different socio-economic groups to uncover (hidden) differences between affluent and deprived social groups**. This also will support the definition of QoL in cross-border areas.

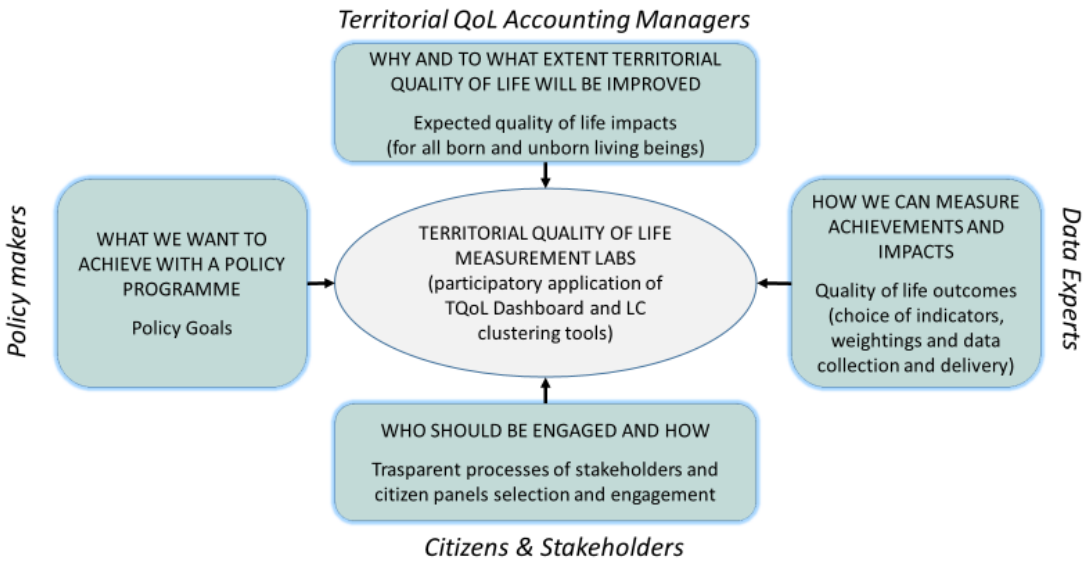
- **Cooperate with regional and local knowledge producing institutes** (universities, research institutes, etc.) in data collection and analysis.

5 Further ideas for future cooperation between ESPON, EUROSTAT, the OECD and the UN

A main guiding idea for future cooperation between ESPON and other international agencies, emerging from the project results and recommendations presented in the previous sections of the report, would be **to call all relevant actors to build together a Territorial Quality of Life Accounting infrastructure**.

This should be implemented using a citizen-centric approach, as illustrated in Figure 13 below:[3]

Figure 13 Territorial Quality of Life Accounting infrastructure



The key nodes of the TQoL Accounting infrastructure are the **Territorial Quality of Life Measurement Labs**. These are living labs, engaging in one process and real (e.g. town hall type meeting) or virtual (e.g. ZOOM) meetings of small groups of citizens selected for the purpose, stakeholder representatives, data experts and policy makers under the coordination of TQoL Accounting managers.

The TQoL labs are the concrete settings and processes where the TQoL tools – primarily the dashboard and the LC clustering tool, the latter required when the analysis of underlying QoL patterns could help to frame more precisely the territorial QoL measurement and monitoring effort – are applied in a transparent and participatory way.

Each TQoL lab will develop its own activity and practice depending on the specific scale – European, national, regional, local - territorial context and nature of main QoL challenges on focus, but they will all share the TQoL framework and tools to frame the measurement and a

[3] The idea is partially inspired by Outcome-Based Accountability (OBA) framework, which introduces outcomes indicators for measuring the quality of life for the whole population living in or visiting a territory. The measurement is referred to the whole population, so from the citizens everyday life perspective, not only that of the users of a certain service or facility. More details of the concept are presented in Appendix 4.

same structure of questions to organise the interaction and contribution of the living labs' participants. The questions are:

- **What we want to achieve with a policy programme?** This question asks policy makers to describe the policy goals pursued with their policies.
- **Why and to what extent territorial quality of life will be affected?** This question is raised by TQoL accounting managers using the conceptual framework described in detail in Appendix 1, inviting participants to assess the expected quality of life impacts of the policies and plans under scrutiny.
- **How can we measure the direct achievements of the policy programmes and the broader impacts on quality of life?** This question is for the data experts – scientists and statisticians – to deal with, offering a portfolio of data solutions (indicators, weightings, data collection/survey facilities and procedures for delivery) to feed the TQoL dashboard and LC clustering tools application.
- **Who should be engaged and how?** Citizens and stakeholders' engagement calls for a careful design and implementation to ensure transparency and effectiveness all along the chain of participants' selection, information, preparation and moderation of the meetings, reporting and communication. This is therefore a question for the TQoL managers to handle appropriately.

Following the practical recommendations for implementing the TQoL methodology presented in Section 4.4.3 above, we recommend **developing a European platform to support the measurement of territorial quality of life and the implementation of a citizen-centric approach across different territories in Europe**. Establishing an ESPON contact point for facilitating the implementation of the TQoL methodology into practice could be of great help, e.g. to launch calls for spin-off applications led by ESPON network members and universities, providing a supporting environment for the access to the TQoL dashboard tool, the exchange of experiences and the continuous improvement of the method. The whole thing could eventually take the form of a network of Living Labs in the ESPON space, as sketched out in the table below.

Table 1 Concept of Territorial Quality of Life Living Lab

Definition and Purpose	
A Living Lab is a user-centric innovation milieu built on every-day practice and research, with an approach that facilitates user influence in open and distributed innovation processes engaging all relevant partners in real-life contexts, aiming to create sustainable values. *The purpose of a Territorial Quality of Life Living Lab is to build a policy innovation milieu where experts from competent and trustworthy institutions (statistical agencies, universities, departments of national, regional and local governments, business associations and NGOs) work together with citizens (small groups of self-selected active citizens or randomly selected citizens juries) – meeting in a physical or virtual public space – to define Quality of Life priorities, test indicators, monitor and evaluate QoL improvement programmes. A TQoL Living Lab combines the knowledge of competent and trustworthy experts and decision makers with the wisdom of the crowds.*	
Key components	**How to implement them**
ICT & Infrastructure outlines the role that new and existing ICT technology can play to facilitate new ways of cooperating and co-creating new innovations among stakeholders	Build-up, develop and maintain a European platform to support the measurement of TQoL and the exchange of good practice among institutions (e.g. statistical agencies) and practitioners (e.g. the

	community of ESPON network members, universities etc.).
Management representing the ownership, organisation, and policy aspects of a Living Lab; a Living Lab can be managed by e.g., consultants, companies or researchers.	Appoint a TQoL manager selected from a competent and trustworthy institution (e.g. university, NGO) and a council with representatives of statistical agencies and public bodies involved in the TQoL measurement and policies.
Partners and Users bring their own specific wealth of knowledge and expertise to the collective, helping to achieve boundary spanning knowledge transfer.	Bring in all relevant stakeholders at EU, national, regional, local level with a place-based approach. Open and enable the active participation of groups of citizens or target users.
Research symbolises the collective learning and reflection that take place in the Living Lab and should result in contributions to both theory and practice.	Use the TQoL framework, dashboard tool, LC clustering applications to support the analysis and monitoring of quality of life for the context and topics of interest of the Living Lab. These research tools are open source available for local experts, universities, etc. engaged in the local TQoL living labs.
Approach stands for methods and techniques that emerge as best practice within the Living Labs environment.	Use an Outcome-Based Accountability approach to organise and structure the interaction with the citizens in the Living Lab, to check QoL trends (factfulness tests) and impacts of policy programmes and interventions on sustainable well-being of the population.

A key factor for a successful implementation is **to invest in capacity building activities to train the TQoL labs managers and to support the other living labs counterparts in their activities**. The “trainers” could be pioneer members of the ESPON network, starting for instance with local universities or equivalent institutions engaged in pilot implementation of the TQoL method in their local contexts, which could design and include as a by-product capacity building programmes in their portfolio of “third mission” activities. This could be more easily implemented if the initial ESPON impulse is coupled with a broader initiative for revising the statistical capacity of the EU member states at country level, strengthening especially the capacity to produce data at regions and cities level in Europe.

In this respect, a collaboration could be envisaged between the European Statistical System (EUROSTAT and the NSOs) and the European Investment Bank, to apply at regional and local level in Europe the same approach the World Bank is implementing at international level to monitor progress on global undertakings such as the Sustainable Development Goals (SDGs), which require high-quality data that must be produced consistently across different national statistical systems. The **World Bank’s Statistical Capacity Index (SCI)** is a capacity assessment tool that has been widely employed by several international and national agencies for measuring progress in statistical capacity building and related investments. The SCI uses publicly available data, focusing on a set of easily observable and verifiable indicators to provide internationally comparable, objective, country-level assessments across the globe. We propose to “localise” the SCI to assess the statistical capacity for measuring territorial quality of life in the European regions, verifying the coherence of what is measured, policy purpose, data desiderata (i.e. essential characteristics to ensure their reliability and use), appropriate variables and aggregation procedures, and practicability.

The ESPON EGTC can play a leading role to trigger and foster the real implementation of the proposed TQoL labs infrastructure, by promoting spin-off activities out of some of our project case studies, those where we found a potential interest of local agents to develop further TQoL measurement and its application to serve local policy strategies. At the moment of writing, five case studies seem the best candidates to promote spin-off activities:

- **Latvia**, for measuring territorial quality of life at municipal level (the new layer of 42 administrations) with a consistent approach linked to the National Development Plan indicators.
- **Nova Gorica/Gorizia**, to develop cross-border measurement of quality of life with an interreg project.
- **Luxembourg**, to develop the measurement of quality of life with a transnational perspective, considering the quality of life of the Luxembourg inhabitants and the cross-border commuting population.
- **Inner Areas in Italy**, for measuring the quality of life in peripheral and remote areas.
- **Barcelona,** to use quality of life measurements to support progress monitoring of upcoming Urban Agenda studies.

The ambition of such pilot spin-off activities would be to become a first embryo of a European network of TQoL living labs.

Finally, the same approach could be extended to frame the cooperation between institutions, networks and agencies in the Western Balkans and the ESPON. This has always been dependent on the willingness of ESPON for extending its research beyond the Member States area. Hence this is merely a policy decision. The financing mechanism and institutions of ESPON as a programme should decide to extend the scope of work of ESPON beyond the territorial boundaries of member states, including the Western Balkans. There could be a specific department on Western Balkans, or simply each project could have its section of Western Balkans analysis. This would be a significant step forward, enabling integration at the level of evidence-based policy, supporting bottom-up societal integration, instead of merely stating governments' obligations on integration.

6 Recommendations for further research

Additional research is recommended to develop further the Territorial Quality of Life measurement methodology and to improve the data necessary for its sound application at a greater level of territorial granularity.

6.1 TQoL theoretical foundations

Further research would be needed at theoretical level to ground the Territorial Quality of Life methodology presented in this report on solid philosophical reflections and visions of transition away from our still dominant economic – GDP-driven – approach to measure progress, which is ignoring so many aspects of quality of life.

The idea of measuring quality of life by means of the "capabilities to survive and flourish of all living beings in a place" (Section 2.1) was inspired by the **Antonio Damasio**'s view of how living beings work, as observed in his own neuroscience investigation of "why and how we emote, feel, use feelings to construct ourselves … and how brains interact with the body to support such functions" (A. Damasio, 2018)

The keyword to describe how living beings work along this approach is **homeostasis**, for which Damasio offers a number of definitions, the clearest of which is the following: homeostasis is the force that ensures that **life is regulated within a range that is not just compatible with survival but also conducive to flourishing, to a projection of life into the future of an organism or a species**.

Another philosopher recently putting life and living beings at the centre of his reflection is **Andreas Weber**, whose radical vision can trigger a field of further research on how to come to a real transformation of our economical approach, which is destructing our cultural and natural heritage, and how measuring and gauging territorial quality of life improvement can contribute towards a fundamental shift in cultural, social and policy practice.

As Weber explains, an ongoing paradigm shift in the life sciences is providing us with a new picture of biology (A. Weber, 2013). It is moving away from a *reductionist worldview* that sees nature as a deterministic machine whose parts and processes can eventually be understood by rational, "outside" human observers, to an *enlivened worldview* that situates human beings deeply in a web of dynamic, living and unfolding creative relationships. Discarding a mechanical perspective of nature, science is beginning to see that the great, unexplored territory is the nature of life itself. Subjectivity, sentience, agency, expression, values and autonomy lie at the centre of the biosphere. This conclusion is not a matter of mere opinion or speculation; it is increasingly being validated by empirical evidence.

In this respect, Weber's reflection is aligned with the Damasio's thinking as well. The crucial point both of them share is that we all – all of us living beings, from the most modest bacterial cell in our guts to you, the reader – share the experience of a meaningful core self that is concerned with what happens to it and strives to keep itself alive. Any living being intentionally – if mostly unconsciously – strives to exist, grow and give and receive. The scientific measurement of "objective" physical or social reality should not allow such observable but subjective living realities to be marginalised or ignored.

Another particularly exciting aspect of Weber's thinking is his exploration of resilient enlivenment-based models around the world today: the "commons". These are self-organised communities of people that are bypassing the dominant market model by inventing their own, novel forms of self-provisioning and governance. These are practices announcing a new sort of economy that honours people's personal needs and intrinsic interests, enhancing their sense

of aliveness and in the process, intensifying the aliveness of underlying ecosystems. The commons speak to everyone's need for meaning, participation, social connection and identity.

The idea of the commons is transformational, too, because it redefines "wealth" as something much more than money. "Commoning" – a neologism meaning the everyday practice of managing commons – is an attempt to redefine our very understanding of the economy, answering to a simple, but often ignored, question: "How can the economy be shaped to meet our needs and make us feel more alive?" The *commoning* answer reconfigures our roles so that we are not simply "producers" and "consumers" with narrow economic, material interests, but participants in a physical and meaningful exchange with multiple material, social and sense-making needs.

The above theoretical reflections bring us to recommend two directions of research to consolidate the theoretical foundations of territorial quality of life measurement, relating the TQoL framework to:

- The "**matrix of human needs**" conceived by Chilean economist Manfred Max-Neef as a pivotal argument in the concept of his "bare-foot economics" (Manfred Max-Neef, 1992). Max-Neef's goal was to design economic models that could care for the real needs for the poor of the global South. His work amounts to a novel establishment of a "first-person-economy" because it identified embodied human needs that can be objectified and put into useful relationship to one another: subsistence, protection, affection, understanding, leisure, creation, identity, freedom. Max-Neef's idea of the barefoot economy introduces into economic reasoning new, empirical dimensions of need, meaning and feeling in a non-trivial and non-esoteric way.
- The Weber's vision of "**sustainability as a poetic process**". According to him, sustainable actions mean actions that over the long run make the continuity of life processes possible. Sustainability is not just about assuring the simple replenishment of supply; it is about generating more life, creating new possibilities of development and meeting needs in novel ways. "More life" cannot be defined in either material or psychological terms only. It means a life that produces more meaning and participatory experience, and even more beauty – and it is able to grant material supply of needed resources.

These concepts are worth of further consideration and research, especially to strengthen the life flourishing pillar of the TQoL framework and to stimulate the production of subjective measurements catching "first-person experience" of quality of life, as well as of indicators for measuring community and ecological flourishing.

6.2 Updating the TQoL measurement framework and data collection

With reference to the single dimensions, domains and sub-domains of the TQoL framework, further research is needed to implement and allow the measurement system to reflect the evolution of measurement needs by one side and data availability and statistical processes (e.g. new surveys with a greater granularity) by the other.

More in detail, and with reference to the TQoL coding system and indicators identified at the European scale (NUTS 3 level):

- For the housing and utilities domain, it could be worth adding an indicator on drinking water. It could be the quantity of water supplied to billed users, or it could be a ratio between supplied and non-supplied families. The previous is easier perhaps to generate (at municipality level and then aggregated at NUTS 3 level), while the latter may be more appropriate to show the level of enabling QoL regarding drinking water.

- "Good Life Enablers" indicators should measure not only the quantity of services and opportunities (jobs, shops, etc.) available or accessible in the place, but also their quality by means of performance indicators (e.g., waiting times for health-care interventions, quality of educational programmes, etc.). This will require further efforts to collect harmonised data, for example following the practice to collect health and education diagnosis indicators at municipal level in Italy. Moreover, some accessibility indicators are by default higher in central/urban than in peripheral/rural areas (e.g., accessibility to jobs, transport, services etc.), and simply using them to compare QoL across urban and rural areas would be misleading. To offset this, a more articulated formulation of accessibility indicators will be needed to consider obviously different targets in urban and rural areas, and provide indicators tailored to the different territorial contexts.
- Further research is needed for strengthening the measurement of ecological factors by shifting from production-based to consumption-based indicators of CO2 reduction and footprints. In this respect, the sub-domain "consumption" in the good life enabler pillar – now measuring the range of consumption choices available in the territory (i.e. presence and opening time of shops, leisure centers, etc.) – should be extended to measure the typology of consumption prevailing in the place (e.g. share of sustainable goods and services, plastic use, etc.) and the ecological footprint of these local consumption activities - the latter to be more properly classified as climate change related indicators in the life maintenance pillar.
- Better indicators should be developed for measuring the self-esteem domain, e.g., using data related to personal or minorities' dignity and respect.
- A more general approach and research is needed to consolidate the indicators used to fill the TQoL at different territorial levels. The concept of "tiers" to judge the level of methodological development and data availability across the world, introduced for the UN sustainable development indicators, should be adopted for the TQoL indicators at European level. This further methodological development is especially needed to improve the indicators used for some domains at the European level (NUTS 3), in particular: the indicators of work and consumption opportunities in the "good life enablers" dimension, to measure not only the presence of workplaces and shops or services, but also their dimension (number of jobs or other indicators, such as the average number of visitors of shopping centres), the indicators of cultural assets (e.g. using the number of libraries, not only the presence of cinemas), personal health indicators (e.g. healthy life expectancy at birth would be better than life expectancy at birth), and the indicators of biodiversity and ecosystems services.
- Given the relevance of the citizen-centric approach in measuring territorial quality of life, it would be absolutely necessary to find and include indicators to monitor citizens' engagement, in the institutional trust/good governance domain. In this domain, besides measuring trust and corruption, and the Quality of Governance index, it is indeed worthwhile to look at the participation of people in participative consultation and/or deliberation processes influencing decision making. As data on this are most probably not available, again further research to develop a consistent methodology would be needed.
- Both the exact meaning, boundaries, and indicators of "ecological flourishing" need further research to be improved. Currently this category of the TQoL includes only invasive alien species, which is not sufficient to measure ecological flourishing. A clear distinction should be made between ecological vulnerability and resilience concept and indicators included in the "life maintenance" dimension, and what is measured in the "ecological flourishing" dimension. The boundary is fuzzy.

Finally, quality of life perception surveys should be administered across Europe, making an effort to achieve a greater granularity with larger samples, to eventually get few more subjective indicators in the maintenance and flourishing dimensions of the TQoL framework. New data collection procedures should be also implemented to provide the information needed for the full application of the TQoL framework. This is particularly true for **the ecological flourishing indicators and environmental concerns which cannot be adequately covered by currently available statistics and environmental accounting frameworks.**

In this respect, we recommend an alternative "mission-driven" approach of statistical research and collection of data. This is exemplified below for the TQoL domain "ecosystems services and biodiversity wealth" (Radermacher 2020).[4] To enhance data collection in this domain, we recommend **to start much more quickly, less ambitiously and more pragmatically with a programme tailored to European policy: the European Green Deal and one of its main components, the EU Biodiversity Strategy**.[5] Now one would expect that for such an important topic a certain amount of financial resources would also be used to obtain evidence for the decision-making and monitoring processes. There is not much time ahead to comply with these new data needs – and surely less time than that usually necessary to develop fully fledged Satellite Economic and Environmental Accounting (SEEA) frameworks.[6]

Taking a mission-driven approach, we should ask ourselves: What can we do for European ecosystems, their resilience and the biodiversity that lives (or dies) with them? So, the focus is firstly on the EU and Member States policy levels, before breaking down to the regional and local level which is the primary focus of ESPON. Such a definition of the target policy level and a mission – "what for" question – is crucial if one wants to achieve a quick result. A statistical-ecological reporting system should be set up with a rapid implementation, addressing different data collection levels:

a) *Census level (remote sensing)*: statistics of land use/cover repeated regularly (proposal every two years) for a defined grid of appropriate granulation (proposal 1 sq. km), of course for whole Europe.

b) *Sample level (aerial photograph/fieldwork)*: A stratified sample of the census grids/points between 0.5% and 5% sampling rate (depending on land use/cover), in which ecosystem features are collected periodically (e.g., every two years).

c) *Sub-sample (fieldwork/crowd sourcing)*: In another, even smaller sub-sample between 0.005% and 0.01% (stratified, depending on the ecosystem and its features) selected variables are collected to quantify biodiversity, e.g., the biomass of insects.[7]

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[4] Similar "mission-driven" statistical research and data collection programs could be proposed and implemented to address other environmental concerns, e.g., plastic pollution or the data needed to support Disaster Risk Reduction (DRR) policies across Europe. Here we concentrate on providing the biodiversity data collection as an example of practice that could be adapted for other missions as well, with obvious changes which is however beyond the scope of our study to analyse in depth.

[5] The strategy makes it clear that avoiding biodiversity loss is very high on the political agenda; it is planned to "unlock 20 billion EUR/year for biodiversity through various sources, including EU funds, national and private funding. Natural capital and biodiversity considerations will be integrated into business practices." (https://ec.europa.eu/commission/presscorner/detail/en/fs_20_906)

[66] This is the work primarily pursued by EEA, see https://seea.un.org/ecosystem-accounting

[7] https://www.sciencemagazinedigital.org/sciencemagazine/24_april_2020_Main/MobilePagedReplica.action?u1=60178528&utm_source=newsletter&utm_medium=email&utm_campaign=TXSCI2200423004&utm_content=gtxcel&pm=2&folio=368#pg36

Of course, the above is only an indicative example to illustrate the order of magnitude of the data collection issues at stake for this field. To better design such data collection, survey specialists and sampling experts would have to work closely with those who have to decide on the required accuracy of results and their representativeness. The costs of such a reporting system would then have to be calculated so that a budget could be revised in the short term. All in all, a cooperation between ecologists (classification, variables, fieldwork, etc.) and statisticians (survey design, quality management, tabulation, data-warehouse, communication etc.) would be a necessary and promising approach for sharing a mission-driven research and innovation effort. Such a statistical-ecological reporting system could be implemented in the short term, i.e. in two to three years – if there is sufficient political will at EU and Member States level, and the technical support of EUROSTAT, the NSOs and other relevant EU agencies (namely EEA).

Another important framework condition to boost the topic of QoL is making results of surveys, dashboards and other maps **available and accessible for the wider public**. Barcelona has established an open data basis for more than 400 indicators that can be used and provides several dashboards and other forms of visualisation. This has boosted the perception of the importance of using QoL in many contexts. Thus, another clear recommendation is to present QoL in a **clear and visually attractive way** (by dashboards, charts, maps) and make the data base available to the public.

Appendix 1 – Definition of Territorial Quality of Life domains and sub-domains

Domain	Sub-domain	What is measured and Why (impact on QoL)
PERSONAL ENABLERS	**Housing and basic utilities (energy, waste, water)**	**WHAT**: Indicators of availability and affordability (market prices, social housing) of houses and housing space. Indicators of quality of the housing stock and built environment (e.g. respect of planning standards). Indicators of availability and affordability (prices and taxes) for energy, water supply and sewage, and waste collection and treatment services. **WHY**: The availability and affordability of good housing and basic utilities is a pre-requisite for choosing to settle/live in a place.
	Healthcare	**WHAT**: Indicators of availability, accessibility, and affordability (prices and taxes) for health infrastructure and services. Indicators measuring the quality of the infrastructure and services. **WHY**: The availability or accessibility within a reasonable time threshold of hospitals and other health care facilities is a basic need for life.
	Education	**WHAT**: Indicators of availability, accessibility, and affordability (prices and taxes) for education infrastructure and services. Indicators measuring the quality of the infrastructure and services. **WHY**: The availability or accessibility in a reasonable time threshold of primary, secondary, high schools is a basic need for the households with children to settle/live in a place.
SOCIO-ECONOMIC ENABLERS	**Transport**	**WHAT**: indicators of availability, accessibility, and affordability (prices and taxes) for transport infrastructure and services. Indicators measuring the quality of the infrastructure and services. **WHY:** Transport infrastructure and services are a pre-requisite for the people to move around and travel from/to their places.
	Digital connectivity	**WHAT**: Indicators of availability and affordability (prices) of ICT connection. Indicators measuring the usage and quality of the ICT connection. **WHY**: Good broadband connections are a pre-requisite to access to the Web and online interaction opportunities.
	Work opportunities	**WHAT**: Indicators of availability and accessibility of jobs (workplaces). Indicators measuring the quality of the workplaces (e.g. safety and comfort, respect of urbanistic standards, maintenance) **WHY**: The availability or accessibility in a reasonable commuting time of job opportunities is a pre-requisite to participate in the labour market. The quality of the workplaces influences the quality of employers'/employees' life.
	Consumption opportunities	**WHAT**: Indicators of availability and accessibility of shops and other services (e.g. entertainment) and online delivery. Indicators measuring the quality of the consumption places (e.g. safety and comfort, respect of planning standards, maintenance) **WHY**: The availability and accessibility in a reasonable time threshold of shops and service facilities influence the range of consumption choice. The same for the availability of fast online deliveries.
	Public spaces	**WHAT**: Indicators of availability and accessibility of public spaces. Indicators measuring the quality of the public spaces' maintenance.

Domain	Sub-domain	What is measured and Why (impact on QoL)
		WHY: Good public spaces facilitate social life.
	Cultural Assets	**WHAT**: Indicators of availability, accessibility, and affordability (prices) of cultural assets (e.g. heritage sites, museums etc.). Indicators measuring the usage and the quality of the cultural assets' maintenance. **WHY**: The availability and accessibility in a reasonable time threshold of cultural assets and options widen the range of quality of life experiences.
ECOLOGICAL ENABLERS	**Green Infrastructure**	**WHAT**: At a wider territorial scale, this includes indicators of connectivity of green areas (woods, meadows) and the preservation of the agricultural mosaic. At city level, indicators of Urban Green (urban parks, street trees, gardens....) **WHY**: Availability of and access to green spots is key for health, sport and relax activities in the city, and to host biodiversity in the environment
	Protected areas	**WHAT**: Indicators of availability and accessibility of natural protected areas (i.e. areas where flora, fauna, landscape is preserved, which makes protected areas different from other green infrastructure). **WHY**: Accessible protected areas augment the opportunities to live in contact with nature.
PERSONAL HEALTH & SAFETY	**Personal Health Indicators**	**WHAT**: Objective and subjective outcome indicators of status of personal health, nutrition, physical activity. **WHY**: Being in and perceiving a good health – body and mind – status is a fundamental quality of life ingredient
	Personal Safety Indicators	**WHAT**: Objective and subjective outcome indicators of personal security, safety against accidents. **WHY**: By the same token, living in and/or perceiving to live in a safe place is also fundamental for people's quality of life.
ECONOMIC & SOCIETAL HEALTH	**Inclusive Economy Indicators**	**WHAT**: Mostly objective outcome indicators related to unemployment and employment rates, gender employment and salary gap, job security, work dignity, disposable income distribution, inequality of financial/real estate wealth of households (personal saving, house ownership, etc.) **WHY**: An inclusive economy, low unemployment and high work security and dignity are a key ingredient for people's quality of life. The sub-domain does not include GDP or local productivity indicators, only aspects of earning and wealth distribution, equity, economic cohesion in the territory. Local productivity indicators are obviously important for local/regional development strategies, but the TQoL "inclusive economy" indicators focus on the spill-over of economic progress in terms of benefits for the citizens. They are complementary to GDP measurement – an orthogonal, not a collinear factor.
	Healthy Society Indicators	**WHAT**: Mostly objective outcome indicators related to social disparities (population at risk of poverty, working poor families, social security coverage, work-life balance). **WHY**: A healthy and not too unequal society influences the quality of life by reducing sources of stress and tensions

Domain	Sub-domain	What is measured and Why (impact on QoL)
ECOLOGICAL HEALTH	**Healthy Environment Indicators**	**WHAT**: Objective and subjective outcome indicators related to the status of the environment (air quality, water quality, noise pollution, soil contamination) **WHY**: A healthy environment prolongates life expectancy, reducing morbidity, and influences the subjective well-being of people
	Climate Change Indicators	**WHAT**: Objective and subjective outcome indicators related to greenhouse gases emissions, decarbonisation of the economy (economic activities, public and individual transport, housing, etc.), vulnerability, presence and persistence of risks, adaptation and access to Disaster Risk Reduction (DRR) policies and means (resources, plans, protection infrastructures), awareness and climate-friendly behaviour. **WHY**: Less greenhouse emissions contribute to reduce the climate change risks for the present and future generations. Resilience to extreme events is fundamental to reduce people vulnerability and exposure to the harmful effects of climate change. Climate-friendly awareness will bring more sustainable consumption habits and lifestyles.
PERSONAL FLOURISHING	**Self-esteem**	**WHAT**: Mostly subjective outcome indicators related to recognition and respect from others and of self-respect. Social tolerance (e.g. respect for minorities, disabled, LGBT). **WHY**: Self-esteem is a pre-requisite for living a good life
	Self-actualisation	**WHAT**: Mostly subjective outcome indicators of self-realization of one's full potential (e.g. life satisfaction with jobs, mate acquisition, parenting, utilising, and developing abilities and talents, pursuing goals). Objective labour markets indicators of jobs matching with skills and competences **WHY**: A purpose-full life is also a key ingredient of a good life.
COMMUNITY FLOURISHING	**Interpersonal Trust (societal belonging)**	**WHAT**: Objective and subjective outcome indicators of inter-personal trust (social capital). **WHY**: The sense of belonging to a community and interpersonal trust influences the quality of life perception and experience.
	Institutional Trust (good governance)	**WHAT**: Objective and subjective outcome indicators of institutional trust (governance). This category includes also active citizens participation as a mean to build or re-build trust in policy making. **WHY**: Trust in institutions is a key factor for the quality of community life.
ECOLOGICAL FLOURISHING	**Ecosystems services and biodiversity wealth**	**WHAT**: Indicators measuring the quantity and variety of ecosystems services in the territory sustaining quality of life perpetuation for all living species (biodiversity). **WHY**: The quantity and quality of ecosystem services is key to ecological flourishing, and indirectly to preserve people health and reduce the risks of pandemic outbreaks. The world of living subjects offers a web of dynamic, living and unfolding creative relationships for constant development.

Appendix 2 – Synopsis of European NUTS 3 level data availability and gaps

Indicator	Source	NUTS 0	NUTS 1	NUTS2	NUTS 3	Sub-domain	Time series	Completeness Highest NUTS level	EFTA	WBC	Used TQoL Index
Mortality rate before age 65	EU SPI, EU-SILC			x		Personal Health	Average 2011-2012	High	no	no	no
Infant mortality	EU SPI, EU-SILC			x		Personal Health	Average 2011-2012	High	no	no	no
Unmet medical needs	EU SPI, EUROSTAT			x		Personal Health	Average 2011-2013	High	no	no	no
Insufficient food	EU SPI, EU-SILC			x		Personal Health	Average 2011-2013	High	no	no	no
Lack of toilet in dwelling	EU SPI, EUROSTAT			x		Housing & basic utilities	Average 2011-2013	High	no	no	no
Uncollected sewage	EU SPI, EEA			x		Housing & basic utilities	2010	High	no	no	yes
Sewage treatment	EU SPI, EU-SILC			x		Housing & basic utilities	2010	High	no	no	yes
Burdensome cost of housing	EU SPI, EU-SILC			x		Housing & basic utilities	Average 2011-2013	High	no	no	yes
Satisfaction with housing	EU SPI, EU-SILC			x		Self-esteem	2012	High	no	no	no
Overcrowding	EU SPI, EU-SILC			x		Housing & basic utilities	Average 2011-2013	High	no	no	yes
Lack of adequate heating	EU SPI, EU-SILC			x		Housing & basic utilities	Average 2011-2013	High	no	no	yes
Homicide rate	EU SPI, EU-SILC			x		Personal Safety	Average 2008-2010	High	no	no	no
Traffic deaths	EU SPI, EUROSTAT			x		Personal Safety	Average 2011-2013	High	no	no	no
Secondary enrolment rate	EU SPI, EU-SILC			x		Healthy Society	Average 2011-2012	High	no	no	no
Lower secondary completion only	EU SPI, EUROSTAT			x		Healthy Society	Average 2011-2013	High	no	no	no
Early school leaving	EU SPI, EU-SILC			x		Healthy Society	Average 2011-2013	High	no	no	no
Internet at home	EUROSTAT & SPI			x		ICT connectivity	2008-2019	High	yes	yes	yes
Broadband at home	EU SPI, EUROSTAT			x		ICT connectivity	2013	High	no	no	no
Online interaction with public authorities	Eurostat			x		ICT connectivity	2010-2019	High	yes (CH, NO, IS)	yes	yes
General health status	EU SPI, EU-SILC			x		Personal Health	Average 2011-2013	High	no	no	no
Premature deaths from cancer	EU SPI, EU-SILC			x		Personal Health	Average 2008-2010	High	no	no	no
Premature deaths from heart disease	EU SPI, EU-SILC			x		Personal Health	Average 2008-2010	High	no	no	no
Unmet dental needs	EU SPI, EUROSTAT			x		Personal Health	Average 2011-2013	High	no	no	no
Air pollution-pm10	EU SPI, EEA, DG Regio			x		Healthy Environment	2011	High	no	no	no
Air pollution-pm2.5	EU SPI, EEA, DG Regio			x		Healthy Environment	2011	High	no	no	no
Air pollution-ozone	EU SPI, EEA, DG Regio			x		Climate Change	2011	High	no	no	no
Pollution, grime or other environmental problems	EU SPI, EU-SILC			x		Healthy Environment	Average 2011-2013	High	no	no	no
Protected land (Natura 2000)	EU SPI, EU-SILC			x		Protected areas	2012	High	no	no	no
Trust in the political system	EU SPI, EUROSTAT			x		Institutional trust/good governance	2013	High	no	no	yes
Trust in the legal system	EU SPI, EUROSTAT			x		Institutional trust/good governance	2013	High	no	no	yes

Indicator	Source	NUTS 0	NUTS 1	NUTS2	NUTS 3	Sub-domain	Time series	Completeness Highest NUTS level	EFTA	WBC	Used TQoL Index
Trust in the police	EU SPI, EUROSTAT			x		Institutional trust/good governance	2013	High	no	no	yes
Quality and accountability of government services	EU SPI, EU-SILC			x		Institutional trust/good governance	2013	High	no	no	yes
Teenage pregnancy	EU SPI, EUROSTAT			x		Self-actualization	Average 2011-2012	High	no	no	no
Young people not in education, employment or training	EU SPI, EUROSTAT			x		Self-esteem	Average 2011-2013	High	no	no	no
Corruption	EU SPI, EQI, DG Regio			x		Institutional trust/good governance	2013	High	no	no	yes
Impartiality of government services	EU SPI, EU-SILC			x		Institutional trust/good governance	2013	High	no	no	no
Attitudes toward people with disabilities	EU SPI, Eurobarometer			x		Self-esteem	2014	High	no	no	yes
Gender employment gap	Eurostat			x		Healthy Economy	2005-2019	High	no	no	yes
Tertiary education attainment	EU SPI, EUROSTAT			x		Healthy Society	Average 2011-1013	High	no	no	no
Tertiary enrolment	EU SPI, EUROSTAT			x		Healthy Society	Average 2011-2012	High	no	no	no
Lifelong learning	EU SPI, EUROSTAT			x		Self-actualization	Average 2011-2013	High	no	no	no
Labour force with at least secondary education	OECD			x		Healthy Society	2014	High	no	no	no
Employment rate	OECD			x		Healthy Economy	2014	High	no	no	no
Unemploy-ment rate	OECD			x		Healthy Economy	2014	High	no	no	no
Household disposable income per capita	OECD			x		Healthy Society	2013	High	no	no	no
Homicide rate	OECD			x		Personal Safety	2013	High	no	no	no
Air pollution (level of PM2.5)	OECD			x		Healthy Environment	2013	High	no	no	no
Voter turnout	OECD			x		Institutional trust/good governance	2014	High	no	no	no
Broadband access	OECD			x		ICT connectivity	2014	High	no	no	no
Number of rooms per person	OECD			x		Healthy Society	2014	High	no	no	no
Perceived social network support	OECD			x		Institutional trust/good governance	average 2006-2013	High	no	no	no
Self assessment of life satisfaction	OECD			x		Self-esteem	average 2006-2013	High	no	no	no
Median equivalised disposable income	Hanell			x		Healthy Society		High	no	no	no
Share of employees with a temporary contract, aged 15-64 that could not find a permanent job	Hanell			x		Healthy Society		High	no	no	no
Share of the EU population aged 25-64 with a high level of educational attainment	Hanell			x		Healthy Society		High	no	no	no
People getting together with family and relatives, at least once a week	Hanell			x		Institutional trust/good governance		High	no	no	no

Indicator	Source	NUTS 0	NUTS 1	NUTS2	NUTS 3	Sub-domain	Time series	Completeness Highest NUTS level	EFTA	WBC	Used TQoL Index
Share of the population unable to face unexpected financial expenses	Hanell			x		Healthy Society		High	no	no	no
Active participation in civil society	Hanell			x		Institutional trust/good governance		High	no	no	no
Exposure of the urban population to PMx	Hanell			x		Personal Health		High	no	no	no
Daily Accessibility	EuRe_DB			x	x	Work	2015,2020,2030,2040,2050	High	yes	yes (AL, MK, RS)	no
Age Dependency (<15 and over 65) ratio	EuRe_DB			x	x	Healthy Society	2014-2018	High	yes	yes (AL, ME, MK, RS)	no
Young Age (<15) Dependency ratio	EuRe_DB			x	x	Healthy Society	2014-2018	High	yes	yes (AL, ME, MK, RS)	no
Old Age (over 65) Dependency ratio	EuRe_DB			x	x	Healthy Society	2014-2018	High	yes	yes (AL, ME, MK, RS)	no
People at Risk of Poverty	EuRe_DB			x		Healthy Society	2003-2018	Low	yes (CH, NO)	no	no
Early Leavers from education (18-24)	EuRe_DB			x		Healthy Society	2000-2018	High	yes (CH, NO, IS)	no	yes
Secondary Educational Atteinment (Total)	EuRe_DB			x		Healthy Society	2000-2018	High	yes (CH, NO, IS)	yes (AL, ME, MK)	no
Tertiary Educational Atteinment (25-64)	EuRe_DB			x		Healthy Society	2000-2018	High	yes (CH, NO, IS)	yes (AL, ME, MK)	yes
Tertiary Education 30-34	EuRe_DB			x		Healthy Society	2000-2018	High	yes (CH, NO, IS)	yes (AL, ME, MK)	no
CO emissions	EuRe_DB			x	x	Climate Change	2015, 2020, 2030	High	no	no	no
CO2 emissions	EuRe_DB			x	x	Climate Change	2015, 2020, 2030	High	no	no	no
Cooling Degree Days	EuRe_DB			x	x	Climate Change	2017, 2018	Medium	no	no	no
Total modelled emissions of Volatile organic compound	EuRe_DB			x	x	Healthy Environment	2015, 2020, 2030	High	no	no	no
Heating Degree Days	EuRe_DB			x	x	Climate Change	2017, 2018	Medium	no	no	no
NH3 emissions	EuRe_DB			x	x	Personal Health	2015, 2020, 2030	High	no	no	no
NOx emissions	EuRe_DB			x	x	Personal Health	2015, 2020, 2030	High	no	no	no
PM10 emissions	EuRe_DB			x	x	Personal Health	2015, 2020, 2030	High	no	no	no
PM2.5	EuRe_DB			x	x	Personal Health	2015, 2020, 2030	High	no	no	no
SO2 emissions	EuRe_DB			x	x	Personal Health	2015, 2020, 2030	High	no	no	no

Indicator	Source	NUTS 0	NUTS 1	NUTS2	NUTS 3	Sub-domain	Time series	Completeness Highest NUTS level	EFTA	WBC	Used TQoL Index
Employment - Nationals (15-64)	EuRe_DB			x		Healthy Economy	1999-2018	Medium	yes (CH, NO, IS)	no (ME, XK, RS)	no
Employment - Foreigners (15-64)	EuRe_DB			x		Healthy Economy	1999-2018	Medium	yes (CH, NO, IS)	no (ME, XK, RS)	no
Total Employment (ARDECO)	EuRe_DB			x	x	Healthy Economy	2000-2020	High	yes (NO)	yes (MK)	no
Total Employment (Eurostat)	EuRe_DB			x	x	Healthy Economy	1995-2017	High	yes (NO)	no	no
Total Unemployment (15-64)	EuRe_DB			x		Healthy Economy	1999-2018	High	yes (CH, NO, IS)	yes (ME, MK, RS)	no
Unemployment of Nationals	EuRe_DB			x		Healthy Economy	1999-2018	High	yes (CH, NO, IS)	yes (ME, MK, RS)	no
Unemployment of FOREIGNERS	EuRe_DB			x		Healthy Economy	1999-2018	High	yes (CH, NO, IS)	yes (ME, MK, RS)	no
Households with broadband access	EuRe_DB			x		ICT connectivity	2006-2018	Low	yes (CH, NO, IS)	no (MK)	no
Individuals who have never used a computer	EuRe_DB			x		ICT connectivity	2006-2017	Low	yes (NO, IS)	no (MK)	no
Network Efficiency	EuRe_DB			x	x	ICT connectivity	2015,2020,2030,2040,2050	High	yes (CH,NO,LI)	yes (AL, MK, RS)	yes
Intramural R&D Expenditure (Total)	EuRe_DB			x		Institutional trust/good governance	2000-2019	Medium	yes (NO, IS)	no	no
Intramural R&D Expenditure by Sector - business enterprise	EuRe_DB			x		Institutional trust/good governance	2000-2019	Medium	yes (NO, IS)	no	no
Intramural R&D Expenditure by Sector - government	EuRe_DB			x		Institutional trust/good governance	2000-2019	Medium	yes (NO, IS)	no	no
Intramural R&D Expenditure by Sector - Higher education	EuRe_DB			x		Institutional trust/good governance	2000-2019	Medium	yes (NO, IS)	no	no
Intramural R&D Expenditure by Sector - Private non-profit	EuRe_DB			x		Institutional trust/good governance	2000-2019	Medium	yes (IS)	no	no
Cars per thousand inhabitants	EuRe_DB			x		Consumption	1990-2017	High	yes (CH, NO, LI)	no	no
Killed in road Accidents (per million inhabitants)	EuRe_DB			x		Personal Safety	1990-2017	High	yes (CH, NO, LI)	no	no
Injured in Road Accidents (per million inhabitants)	EuRe_DB			x		Personal Safety	1990-2017	High	yes (CH, NO, LI)	no	no
NEET 15-24 (Total)	EuRe_DB			x		Self-actualization	2000-2018	High	yes (CH, NO, IS)	yes (AL, ME, MK)	yes
Potential Accessibility	EuRe_DB			x	x	Transport	2015,2020,2030,2040,2050	High	yes (CH, NO, LI)	yes (AL, MK, RS)	no

Indicator	Source	NUTS 0	NUTS 1	NUTS2	NUTS 3	Sub-domain	Time series	Completeness Highest NUTS level	EFTA	WBC	Used TQoL Index
Transport Performance	EuRe_DB			x	x	Transport	2015,2020,2030,2040,2050	High	yes (CH, NO, LI)	yes (AL, MK, RS)	no
Utility Vehicles	EuRe_DB			x		Consumption	1990-2017	High	yes (CH, NO, LI)	no	no
% of abandoned land	EuRe_DB			x	x	Protected areas	2015,2020,2030,2040,2050	High	no	no	yes
Land use - % of Agriculture Land	EuRe_DB			x	x	Healthy Environment	2015,2020,2030,2040,2050	High	no	no	no
Land use- % of Built-up Areas	EuRe_DB			x	x	Healthy Environment	2015,2020,2030,2040,2050	High	no	no	no
Land use - % of Forest	EuRe_DB			x	x	Healthy Environment	2015,2020,2030,2040,2050	High	yes (CH, LI)	no	no
RIS - Relative Performance to EU28 in 2011	EuRe_DB			x		Healthy Society	2011,2013,2015,2017,2019	Low	yes (CH, NO)	no	no
People at risk of poverty or social exclusion	EuRe_DB			x		Healthy Society	2003-20218	Low	yes (CH, NO)	no	no
Severe Material Deprivation	EuRe_DB			x		Healthy Society	2003-20218	Low	yes (CH, NO)	no	no
People at risk of poverty rate	ESPON_DB_C			x		Healthy Society	2005-2016	High	yes	yes (MK)	yes
Disposable income of private households	ESPON_DB_C			x		Healthy Society	2003-2013	High	yes (CH, NO)	yes (ME)	no
Life expectancy	ESPON_DB_C			x		Personal Health	2002-2015	High	yes	yes (ME, MK)	yes
Long-term unemployment (12 months and more)	ESPON_DB_C			x		Healthy Economy	1999-2016	High	yes (CH, IS, NO)	yes (MK)	no
People at risk of poverty or social exclusion	ESPON_DB_C			x		Healthy Society	2003-2016	Low	yes (CH, NO)	no	no
Aggregate impact of climate change on Europe's regions	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (NO)	no	yes
Change in annual mean number of days with heavy rainfall	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (CH, NO, LI)	no	no
Change in annual mean number of days with snow cover,	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (CH, NO, LI)	no	no
Change in annual mean number of summer days	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (CH, NO, LI)	no	no
Change in annual mean temperature	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (CH, NO, LI)	no	no
Change in exposure to coastal storm surge events	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes	no	no
Change in exposure to river flooding	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (CH, NO, LI)	no	no
Proportion of Protected Areas	ESPON_DB_K			x	x	Protected areas	2017	High	yes	no	no

Indicator	Source	NUTS 0	NUTS 1	NUTS2	NUTS 3	Sub-domain	Time series	Completeness Highest NUTS level	EFTA	WBC	Used TQoL Index
Relative change in annual mean evaporation	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (CH, NO, LI)	no	no
Relative change in annual mean precipitation in summer months	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (CH, NO, LI)	no	no
Relative change in annual mean precipitation in winter months	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (CH, NO, LI)	no	no
Potential vulnerability to climate change	ESPON_DB_K			x	x	Climate Change	2071-2100	High	yes (NO)	no	no
Total length of major land transport networks by type - railway & roads	ESPON_DB_K			x		Transport	1994-2014				no
Area of Protected Area	ESPON_DB_B			x	x	Protected areas	2017		yes	no	no
Potential accessibility by road and rail 2014 (NUTS-3)	ESPON_DB_B			x	x	Transport	2001, 2006, 2011, 2014	High	yes	yes (BA, ME, AL, RS, MK)	no
Natura 2000 sites	ESPON_DB_B			x	x	Protected areas	2018				no
European Quality of Government Index	Others			x		Institutional trust/good governance	2010, 2013, 2017	High	no	no	yes
Daily accessibility by fastest mode (road or train)	ESPON_TRACC			x	x	Work	2011	High	yes	no	no
Access to MEGA Travel Indicators	ESPON_TRACC			x	x	Transport	2011	High	yes	no	no
Access to high-level passenger transport infrastructure	ESPON_TRACC			x	x	Transport	2012	High	yes	no	yes
Availability of urban functions by road and rail	ESPON_TRACC			x	x	Work	2011	High	yes	no	no
Crimes recorded by the police	Eurostat			x	x	Personal Safety	2008-2010	Medium	yes (CH, NO, LI)	no	no
Estimated soil erosion by water, by erosion level, land cover	Eurostat			x		Healthy Environment	2000-2010-2016	High	no	no	no
Hospital beds	Eurostat			x		Basic Health	1993-2017	High	yes	yes (AL, ME, MK)	yes
Spatial distribution of Green Infrastructure	ESPON_GRETA			x	x	Protected areas	2012	High	yes (CH, IS)	yes	no
Contribution of hubs to potential GI network at landscape level	ESPON_GRETA			x		Protected areas	2012	High at NUTS2	yes	yes	no
Total number of material cultural heritage objects (Low completeness)	ESPON_HERITAGE			x		Cultural Assets	2016	Very Low	yes (NO)	no	no
Number of dwellings constructed before 1919 (Low completeness)	ESPON_HERITAGE			x		Cultural Assets	2016	Very Low	yes (NO)	no	no
Domestic Extraction	ESPON_CIRCTER			x		Healthy Environment	2006, 2014	Medium	yes (CH, NO, IS)	yes (MK)	no

Indicator	Source	NUTS 0	NUTS 1	NUTS2	NUTS 3	Sub-domain	Time series	Completeness Highest NUTS level	EFTA	WBC	Used TQoL Index
Total waste generation, excluding major mineral wastes	ESPON_CIRCTER			x		Healthy Environment	2006, 2014	Medium	yes	yes (ME, MK, XK)	no
Circular economy material providers (employment)	ESPON_CIRCTER			x		Healthy Society	2010, 2015	Medium	yes (NO)	no	no
Circular economy technology Providers (employment)	ESPON_CIRCTER			x		Healthy Society	2010, 2015	Medium	yes (NO)	no	no
Circular economy business models (employment)	ESPON_CIRCTER			x		Healthy Society	2010, 2015	Medium	no	no	no
Number of sites in the World Heritage List	ESPON QoL			x	x	Cultural Assets	2020	High	yes	yes	yes
Share of regions overlaid by pharmacies	ESPON_PROFECY			x	x	Basic Health	2016	High	yes	yes	yes
Share of regions overlaid by doctors	ESPON_PROFECY			x	x	Basic Health	2016	High	yes	yes	yes
Share of regions overlaid by hospitals	ESPON_PROFECY			x	x	Basic Health	2016	High	yes	yes	yes
Share of regions overlaid by primary schools	ESPON_PROFECY			x	x	Education	2016	High	yes	yes	yes
Share of regions overlaid by secondary schools	ESPON_PROFECY			x	x	Education	2016	High	yes	yes	yes
Potential accessibility by mode transport	ESPON_PROFECY			x	x	Transport	2016	High	yes	yes	no
Share of regions overlaid by train stations	ESPON_PROFECY			x	x	Transport	2016	High	yes	yes	no
Share of regions overlaid by UMZ (jobs)	ESPON_PROFECY			x	x	Work	2016	High	yes	yes	yes
Share of regions overlaid by shops	ESPON_PROFECY			x	x	Consumption	2016	High	yes	yes	yes
Share of regions overlaid by banks	ESPON_PROFECY			x	x	Consumption	2016	High	yes	yes	yes
Share of regions overlaid by cinemas	ESPON_PROFECY			x	x	Cultural Assets	2016	High	yes	yes	yes
Cohesion GDP indicator	ESPON QoL			x	x	Healthy Economy	2015	High	yes (CH, IS, NO)	yes (AL, MK)	no
Air Quality Index	ESPON QoL			x	x	Healthy Environment	2015, 2020, 2030	High	no	no	yes
Sanitation Index	ESPON QoL			x		Housing & basic utilities	2010	High	no	no	no
People being rarely or never happy	Eurostat	x				Interpersonal trust/societal belonging	2013, 2018	High	yes (CH, IS, NO)	yes (RS)	no
Satisfaction with the meaning of life	Eurostat	x				Interpersonal trust/societal belonging	2013	High	yes (CH, IS, NO)	yes (RS)	no
Standarised suicide death rate	Eurostat			x		Self-esteem	2013, 2014, 2015, 2016	High	yes	no	yes
Solar radiation	ESPON QoL			x	x	Healthy Environment	2020	High	yes	yes	no
Proportion of Protected Areas	ESPON Monitoring Tool			x	x	Protected areas	2000-2019	High	yes	yes	yes
Proportion of Natural Areas	ESPON Monitoring Tool			x	x	Green infrastructure	2000, 2006, 2012, 2018	High	yes	yes	yes
Standarised homicide death rate	Eurostat			x		Personal Safety	2013-2016	High	yes (CH, IS, NO)	no	yes
Standarised traffic accident death rate	Eurostat			x		Personal Safety	2013-2016	High	yes (CH, IS, NO)	no	yes

Indicator	Source	NUTS 0	NUTS 1	NUTS2	NUTS 3	Sub-domain	Time series	Completeness Highest NUTS level	EFTA	WBC	Used TQoL Index
Unemployment rate	Eurostat			x		Healthy Economy	2000-2019	High	yes (CH, IS, NO)	yes (ME, MK, RS)	yes
% Population that believe voluntary work is very important	Eurobarometer	x				Interpersonal trust/societal belonging	2014	High	no	no	yes
% Population in associative life	Eurostat	x				Interpersonal trust/societal belonging	2000, 2010	High	yes (NO)	yes (RS)	yes
Worst Invasive Alien Species (IAS)	EEA	x				Biodiversity Wealth	2010	High	yes (CH, IS, NO)	yes (Al, BA, ME, MK, RS)	yes
Land covered by artificial surfaces	Eurostat			x		Biodiversity Wealth	2009, 2012, 2015	High	no	no	no
Disposable income of private households	Eurostat			x		Healthy Economy	2007-2018	High	yes (NO)	no	yes

Appendix 3 – Synopsis of ESPON QoL cases studies

This appendix includes complementary and more detailed information on the case studies. It first presents summaries of the specificities and lessons learned from the case studies, shows which elements of the methodology have been applied in each of the case studies and provides an overview table of the outcomes of the case studies related to the notable good practice, learnings on the adjustment of the methodology and the policy recommendations.

Specific features and best practice of the ESPON QoL cases studies

Each of the cases analysed in the project has a special story to tell and lessons to be learnt about the actual use of QoL measurement approaches. There are four different groups of case studies.

First, there are **urban and metropolitan regions** that we chose for the case studies, with some tradition in monitoring QoL and supporting planning and social policies:

- **Vienna** is a city that internationally ranks very high in QoL and has a long-standing practice in monitoring and applying their concept of QoL. Particularly noteworthy is the fact that there is a survey on QoL that has been conducted in regular intervals since the mid-1990s. The urban planning department is in charge of the surveys, which are conducted by an opinion research centre and supervised by a scientific institute. Several departments of the city make use of the results (e.g. gender equality monitoring, smart city strategy monitoring). The unique data stock generated since 1995, the focus on subjective data and the wide use for planning purposes can be considered good practice. There is a strong focus on a territorial approach, as questions take into account the QoL in the respective neighbourhoods. However, no comparative data are generated for the surroundings of Vienna, therefore the information is confined to the administrative borders, but does not cover the FUA.
- **Helsinki and the Helsinki-Uusimaa region**: The Finnish capital region shows a satisfactory performance in various global and European QoL rankings. QoL is a principal issue at the level of the Regional Programme (Helsinki-Uusimaa Regional Council) and the municipal Welfare Plan (City of Helsinki) and mainly used for monitoring, communication and dissemination. The Regional Programme builds the monitoring on synthetic indicators based on SPI data, which has advantages (international comparison), but also significant disadvantages (lack of timely and territorial data). The City of Helsinki has a strong welfare-oriented framework and is intricately linked with the monitoring of the Welfare Plan. Indicators are composed in a rather eclectic way, following availability, combined from diverse sources. They are well presented (visualised) and acknowledged by the stakeholders of the City Welfare Plan. Problems occur in interpretation due to different points of time and various sources. So, in both cases there is a commitment from the stakeholder to monitor QoL related indicators, but the approaches actually used could benefit from a stronger conceptual framework.

Second, completely different examples are the North-East Iceland and the Inner Areas in Italy case studies. These are **rural and remote regions**, characterised by a very peripheral location and very low population densities:

- **North-East Iceland**: Iceland, and especially ultra-peripheral parts of the country outside the metropolitan capital area, faces extreme conditions. Still, different surveys show, that the Icelanders appear relatively happy with their QoL. In this case study we get some insight into the challenges of this very specific territorial situation: The concentration of approximately 80 per cent of the population residing in the functional urban area of the

capital city creates a bias in the national results of QoL, well-being or happiness, as the remaining 20 per cent of the population are statistically neglected. The examples of the health and housing sector show, that privatisation and increasing market-driven service provision impact on QoL in sparsely populated regions. Thus, a territorialised concept for measuring QoL is necessary to give those few people that live in remote areas a voice, even if their numbers are very low.

- **Inner Areas in Italy**: The Inner Areas Strategy in Italy is based on a multi-level governance approach that involves different national and regional institutions working together with local territories (i.e. associations of municipalities), and combines several investments, regulatory and planning schemes in one coherent frame. The case study considers the methodology and the indicators used to identify and measure development features in the inner areas, with the aim of exploring the extent this could be combined with the methodology and indicators used to measure equitable and sustainable well-being in Italy ("Benessere Equo e Sostenibile" – BES) – currently delivering data aggregated at NUTS 3 level – to measure and deliver a quality of life picture in the inner areas. The study considers the inner areas strategy for the whole Italy, with a focus on the Lazio Region and the most remote inner area in that region, the Monti Reatini area.

Third**,** we have selected two **cross-border regions** that pose specific challenges in developing a concept for QoL, in defining indicators, and in implementing strategies. Two case studies are devoted to the cross-border aspects, though from very different perspectives:

- In the **Luxembourg** case study, the objective is to explore how the national "Luxembourg Index of Well-being" (LIW)-concept could possibly also take into consideration the country's pronounced cross-border dimension. The case study provides new insights into how the national perception of quality of life should be re-interpreted (or even re-conceived) for the cross-border dimension and explores possible indicators and data sources (e.g. survey, individualised data etc.). The analysis complements the Territorial Quality of Life (TQoL) approach developed by the ESPON QoL-project, since exploring a cross-border dimension of quality of life might also be interesting for other cooperation areas located at the internal or external borders of Europe.
- The **Nova Gorica-Gorizia** region is rich in economic and social exchange between diverse cultures, identity, and political perspective. QoL has become a topic with increasing importance for the Italian and Slovenian part of the region. Even so here is no common measurement of QoL at municipal level for both Nova Gorica and Gorizia, despite the availability of many relevant indicators that are actually being monitored by various strategies and programmes. The coordination of integrated strategies for improving the QoL faces severe obstacles in both parts of the region, which is mainly due to asymmetric institutions and unclear roles and responsibilities at territorial levels and weak institutional capacities. The main driver for improving cross-border cooperation in QoL is the Interreg programme, but progress in this field is slow. So, this case study is a showcase to illustrate how to develop and establish a cross-border conceptual framework and indicator system for monitoring QoL.

Finally, four case studies that **cover larger territories**, where three of them show approaches with substantial activities in terms of using QoL in policy strategies form our fourth group.

- With the Well-being of Future Generations Act (WFG) 2015 **Wales** has established well-being goals and institutional arrangements that are uniformly applied both at regional and local level; accompanied by an extensive monitoring system. Among our case studies, this is a unique case, where policy implementation of QoL is very advanced. A broad range of

governance mechanism has been implemented (see Section 3.2.2.). The indicator framework is impressive, but when looking into the TQoL concept used we find noteworthy biases.

- In **the Catalonia region** (including the Barcelona metropolitan area), there is a high perception of the QoL by the population and a scattered, but intense use of the concept of QoL in the empirical policy practice and also in conceptual investigations. Though there is no systematic link between the different approaches, all government levels are involved in monitoring QoL and use it as benchmark for policies, mostly with different approaches and indicators. One enabling factor for the wide use of QoL indicators is the Open Data BCN project, which includes more the 450 data sets that are regularly updated. Implemented within the Barcelona Digital strategy more and more data have been created, integrated and processed.
- In the **Netherlands** three approaches to measure QoL have been developed, namely the Regional Quality of Living Index (RQI), the Living Barometer, and the Sustainable Balance Instrument. The **RQI** is an attempt to quantify the Quality of Life in Dutch regions and to benchmark the results against other European regions and derive policy recommendations. The **Living Barometer** is used for the selection of neighbourhoods and monitoring of the neighbourhood programme. The **Sustainability Balance Instrument** supports individual municipalities to assess their strong and weak points in QoL by benchmarking their results to the national average or similar municipalities. Often such benchmarks yield unexpected findings, leading to relevant lessons for municipal authorities.
- In **Latvia** the recent administrative reforms aim to enhance the size and capacities of local authorities and development centres. The National Development Plan 2021-2027 provides a favourable context to foster QoL measurement in the country. The case study findings show the strong correspondence between the TQoL domains and the NDP2027 directions, allocating the NDP2027 indicators to the 22 subdomains of the TQoL framework. The effort to monitor with the set of about 100 indicators the NDP2027 is expected to push the production and delivery of statistical data at the national level and on a yearly basis. Moreover, combined with the now approved administrative reform aggregating the 119 municipalities in larger (42) local governments, the NDP2027 measurement effort should be localised, organising the collection of data and determining the indicators base year and target values at regional and local level.

Application of the TQoL methodology

For each of the case studies we applied elements of our methodology. The table below provides an overview of how we applied the TQoL framework, where we could collect additional data and where we tested the dashboard, and the LC clustering tools is part of the appendix to the main report. It supplements the information in section 3.2.1.

Table 2 Testing of the TQoL methodology in the case studies.

MS	Region	TQoL framework and coding system	Quantitative elements of the methodology to be tested	Other elements of the methodology to be tested
AT	Vienna	For the QoL surveys and reports implemented by the city of Vienna	Extensive data preparation of the data stock (Vienna QoL surveys) to establish dashboards at the level of 23 districts for several points in time, additional data collection to establish a dashboard for	Factfulness test – interviews with 14 test persons

MS	Region	TQoL framework and coding system	Quantitative elements of the methodology to be tested	Other elements of the methodology to be tested
			survey data combined with additional data for 2018	
ES	Barcelona/ Catalonia	Coding of Barcelona Monitoring initiatives[8]	Dashboard (based on indicators available at local level), mapping the composite TQoL indicators; Application of LC-clustering	
FI	Helsinki-Uusima	For the Helsinki-Uusimaa Regional Programme and the Helsinki Welfare Plan	Dashboard (based on indicators available at local level)	Reflection on the impact of COVID-19
IS	North Eastern Iceland	For the QoL approach of the Icelandic Government	No data at regional level available, therefore no dashboard[9]	Strong focus on analysing governance in relation to QoL in sparsely populated regions
LU	Luxembourg	For the national-level project "PIBien-être" and the related LIW[10]	No data at regional level available, that can be compared across the border, therefore no dashboard	Definition of indicators[11] to measure QoL in a cross-border dimension. Impact of the COVID-19 pandemic situation on QoL due to the closing of the borders
SI/IT	Nova Gorica-Gorizia cross-border region		No data at regional level available, therefore no dashboard	Definition of indicators to measure QoL in a cross-border dimension; Impact of the COVID-19 pandemic situation on QoL
UK	Wales	QoL system based on the WFG Act[12]	Compilation of a data sample used for the QoL system and development of the dashboard for two points in time	Reflection on the impact of COVID-19
NL	Netherlands	For the Regional Quality of Living Index, the living barometer, the sustainability balance instrument	Application of LC-clustering for the sustainability balance instrument	
LV	Latvia	For the QoL measurement at national level and at regional level, and for the Objective Well	Data available at regional and municipal level are not enough for a meaningful test of the TQoL dashboard	The TQoL framework is proposed to help localising the National Development Plan indicators, engaging the Ministry of Regional Development and the new

[8] Five Monitoring initiatives: Sustainability, Urban Heart, Social Observators, Observatory 0-17, Housing Observatory

[9] For time being, a survey collecting data for all Icelandic regions is made, but the results will be available after the closure of this project. When the Northeast Iceland was chosen as a case study region, this was unknown to us. When we became aware of this, most of the case study work was already done.

[10] Luxembourg Index of Well-being

[11] Developed in close collaboration with regional stakeholder and a Steering group member

[12] Well-being of Future Generations (Wales) Act 2015

MS	Region	TQoL framework and coding system	Quantitative elements of the methodology to be tested	Other elements of the methodology to be tested
		Being Index at municipal level		local governments (42 municipalities), reflection on the impact of COVID-19
IT	Inner Areas	For the BES indicators, Statistical Atlas of municipal indicators, the Inner Areas set of diagnostic indicators	Latent Class clustering applied to analyse QoL patterns for the 378 municipalities of the Lazio Region (Italy)	The TQoL framework is proposed to help harmonising the access to available municipal datasets and designing a BES/QoL survey tailored to the inner areas, rural context and QoL priorities; reflection on the impact of COVID-19

The following two tables provide a synopsis on the TQoL framework used in the case studies and the major outcomes of the case studies.

Table 3 Summary of the outcomes of the case studies

MS	Region	Specificity of the good practice	Adjustment of methodology	Policy recommendations
AT	Vienna	Emphasis is on the territorial quality of life, TQoL as horizontal approach to monitor development at the level of districts and neighbourhoods, based on surveys that are regularly conducted since 1996, mainly subjective assessments of residents; QoL survey constitutes a very important data base, which is used by several policy departments of the City Administration	Several sub-dimensions have been changed, Small adjustments in the definition of sub-domains ("Housing and basic utilities" should be extended by "safety" in a sense of absence from hazards (risk of flooding, or other hazards) Several attempts to expand the dashboard (comparison over time – successful; comparison between objective and subjective sub-domains – not successful due to data gaps)	A dedicated QoL survey concept with a large sample to cover different social groups and types of neighbourhoods is a very should basis for measuring QoL. Long-term observations (by coherent surveys at different points of time) are very useful for monitoring change; the territorial aspects need to be captures by subjective and objective indicators. The most important improvement would be the inclusion of the functional urban area of Vienna (which covers another Bundesland/regional authority), but this would require a comparable survey in the territories of the Umland
ES	Barcelona/ Catalonia	Generalitat of Catalonia provides resources for extensive monitoring of QoL domains. Regional and local administrations frequently use systems for evaluating the quality of life in their territories, The Barcelona city Council measures QoL at district and neighbourhood level; wealth of data, indicators and dashboards that is publicly available. The Open Data BCN portal includes more than 450 data sets that are regularly updated and publicly available.		Promote the application of QoL concepts at regional and local level by providing QoL-related data, indicators, dashboards at regional and local level, where the data are maintained at central level. Make them available to the public and promote them. This will allow for a wide usage.
FI	Helsinki-Uusima	Helsinki-UUsimaa Regional Council: approach includes both "dimension" of QoL: objective (centred on service provision) and also subjective (centred on experienced QoL and the sense of security and community). It is also used to develop benchmarks	The methodology is too fine granulated (with the spheres, dimensions and sub-domains), so that it cannot be used by composite indicators.	Legal provisions are an important pre-condition for using QoL in national, regional and local strategies, as well as institutional links between different government levels on monitoring well-being. Using indicators that allow international comparison (SPI)

MS	Region	Specificity of the good practice	Adjustment of methodology	Policy recommendations
		with other European capital regions by using (composite) indicators based on SPI.		produce pitfalls in the timely availability, regional granularity and definitions of indicators, this leads to reduced flexibility and adaptability compared to using data that are tailored to local and regional policy contexts. Thus, international benchmarking and monitoring progress of regional and local policies are two purposes that should not be mixed.
	Welfare Plan of Helsinki	Welfare plan of the City of Helsinki: targeted at a strategic dimension at city-level and at specific sectors; complemented by a detailed action plan; Legal provisions specify responsibilities of local authorities for well-being of their citizens and for service provision; indicators are jointly selected by the City Board; data are from various sources; the main purpose is monitoring (not assessing) progress	The conceptual map needs to allow for further dimensions that fit the purpose of the QoL concept (e.g., inclusion of specific sub-domains like “inclusive schools”); target groups can be captured as part of the current sub-domains (or with the addition of new ones)	Legal and organisational provisions that specify responsibilities of local authorities; it is important to link indicators to goals and actions and define targets. QoL concepts rather should monitor than assess the progress
IS	North Eastern Iceland	QoL, “well-being” or “happiness” are concepts applied in Iceland, but without any differentiation. Austerity policies have thinned out public services in sparsely populated regions. Thus, QoL in such regions is not adequately captured by the national concept. 39 indicators were defined to measure well-being beyond GDP, but not all of them could be covered by data.		The QoL concept needs to differentiate between different regions and also focus on sparsely populated regions, even if this captures only a fraction of the population. Also, small sample sizes need to be taken into consideration in order to achieve a realistic picture.
LU	Luxembourg	Index of Well-being (LIW) is the key outcome of a government-initiated national project called “PIBien-être” that aims at monitoring well-being and QoL in Luxembourg, as alternative assessment benchmark for national government policies. It includes 63 indicators in 11 thematic domains and a time-component. Due to this detailed coverage of	As LU is a cross-border metropolitan regions with high interlinkages with neighbouring countries, the QoL coverage at the national level falls short of capturing the cross-border dimension. So far, there has been little progress in finding a cross-border coordination for defining CB indicators. The	Measuring QoL needs to focus on functional regions. In a cross-border context it is important to focus on 2 perspectives: from within to outwards and from outside to within. The nature of the functional need to be identified (in this case: work, leisure, shopping, education), as well as the

MS	Region	Specificity of the good practice	Adjustment of methodology	Policy recommendations
		thematic domains, no regional differentiation is possible.	case study proposes a set of indicators that should be used for CB-monitoring of QoL, which has been elaborated with involvement of relevant stakeholder.	determining factors (practices and behaviour of people, passive elements like intergovernmental agreements and public services). All this impacts on QoL in a CB-context.
SI/IT	Nova Gorica-Gorizia cross-border region	QoL are targeted in various strategies (planning, sustainable development, local development), but only covering territories at the Italian or the Slovene side of the border. Only the Interreg programmes covers the entire border region, but so far, the lack of cooperation and coordination could not be overcome.	None of the tools could not be applied so far due to the very different types and territorial coverage of indicators.	Use the Interreg programme to promote the development of a joint QoL approach, policy framework and joint indicators
UK	Wales	The most comprehensive approach based on a law, which covers many QoL dimensions and includes goals, institutional arrangements (e.g., a Future Generations Commissioner, Public Service Board for each local authority), as well as planning, monitoring and reporting procedures and tools. The core of the concept is to guide public service provision, close link of the indicators to the SDG.		Clear link to public policies, sound legal basis, overarching well-being goals, sound implementation structure at different territorial levels
NL	NL – Living Barometer	Strongly grounded in policy – for selecting neighbourhoods with poor QoL for a social programme. Evaluation shows small success.	The living barometer covers a long time period (2002- present) which makes it a powerful tool to assess changes in QoL over time.	To capture the effects of policies it is necessary that the indicators used to construct the QoL index are available over time, but such indicators (at least in the case of the Netherlands) are generally related to the QoL enablers (basic functions) as opposed to the higher-order dimensions. While the Regional Quality of Living Index and the Sustainable Balance Instrument do cover these dimensions of the TQoL framework, their availability over time is more limited compared to the living

MS	Region	Specificity of the good practice	Adjustment of methodology	Policy recommendations
				barometer. In general, this points to a trade-off between data availability and the theoretical breadth of the developed index, which is a relevant consideration for policy.
	NL – Sustainable Balance instrument	The Sustainable Balance instrument is strongly theoretically grounded. In addition, for each indicator, a specific norm is established. Based on this norm it is calculated to what extent the current level of the indicator achieves this norm. Hence, each actual indicator score is expressed as a percentage of the sustainability goal achieved. This makes interpretation very intuitive, as the resulting scores can be interpreted both in a relative and absolute sense. And thirdly, when Telos makes a sustainability balance for a specific municipality, local stakeholders are also involved in the selection of indicators.	The latent class approach illustrates that distinctive profiles may underlie similar overall QoL index scores and that it is thus necessary to reveal the underlying profiles for a better understanding of Quality of Life in any specific region. As such, application of the LC analysis to the TQoL framework is relevant from a policy viewpoint.	The results of the case study showed that population decline and aging significantly negatively influence the social-cultural and economic dimensions of QoL, but do not (negatively) affect the ecological one. A recommendation for future research would be to study the empirical links between aging and population decline and the dimensions of the TQoL.
	NL - Regional QoL Index	A stand-alone effort to quantify the Quality of Life in Dutch regions and to benchmark the results against other European regions. Based on the analysis several policy recommendations were formulated, but the developed RQI was not grounded in a particular policy area or cycle. The RQI is based on 9 dimensions, 25 indicators (merged from 100 sub-indicators) and covers perspectives of local people and those of people from foreign companies.	The dimensions of the RQoL index overlap strongly with the TQoL dimensions. The correspondence between our TQoL framework and the RQI may be explained by the fact that both are (strongly) theoretically grounded.	The purpose and target group for the measurement of the QoL needs to be clearly identified.
LV	Latvia	In Latvia there is a rich collection of QoL related indicators used to monitor the National Development Plan goals. The new NDP2021-2027 strategy and indicators are a good practice of monitoring grounded in policy at national level, while at regional level (six NUTS 3 regions) a Territorial Development	The TQoL framework was judged suitable to help measuring QoL at regional and the new municipalities level as well, in the context of a strategy localising NDP2027 goals. Some adjustments are suggested to the “cultural asset” domain, to include also sport and	Combined with the now approved administrative reform aggregating the municipalities in larger local governments, the NDP2027 measurement effort should be localised, organising the collection of data and determining the indicators base year

MS	Region	Specificity of the good practice	Adjustment of methodology	Policy recommendations
		Index is used to support the elaboration of the regional development programme. The TDI covers only a very limited number of QoL domains, and only very few data are available at the level of municipalities (LAU). However, the opportunities for localising QoL measurement and the NDP strategy at local level are improving with the recent administrative reform which created a new layer of larger municipalities (42 instead of 119).	leisure activities as an important QoL element, and to include sustainable consumption and energy efficiency indicators in the consumption domain.	and target values at regional and local level – for the six statistical regions (NUTS 3), the development centres of national and regional significance, and the small towns and rural areas aggregated together. In this context, the TQoL dashboard tool – could be used as shared resource by all actors involved in the NDP2027 data localising effort.
IT	Inner Areas	The Italian Agency for Territorial Cohesion (IATC) maintains a database of diagnostic indicators with data for all the municipalities included in the inner areas in Italy, covering most of the Good Life Enablers dimensions of the TQoL framework. The Italian Statistical Agency administer the Equitable Well Being survey with data covering most of the life maintenance and flourishing domains, but the survey sample allow to compute QoL outcomes indicators only at NUTS 2 level, and partly at NUTS 3 level (not sufficient to monitor QoL within the inner areas). The IATC data are currently used in the Strategic Inner Areas policy, at the national level and in regional (Lazio) and inner area (Monti Reatini) selected for the case study.	Although not included explicitly in the TQoL framework of indicators, the cost of local services is clearly a complementary aspect to consider. Delivering health, education and other services of general interest to inhabitants of rural and urban areas is becoming more challenging because of demographic pressures of ageing societies. Here, geography also matters, as the cost of public service provision increases with the degree of remoteness and sparsity due to transportation costs, loss of economies of scope and economies of scale, and greater difficulty in attracting and retaining professionals (e.g., health care professionals). It is not suggested however to include the cost of services directly in the TQoL framework and dashboard tool, but only to accompany the QoL indicators with the analysis of the costs of public services that are essential to maintain equitable living standards across different typologies of territories	Two directions are suggested to improve the measurement of QoL in the inner areas' context: • First direction: Detect different quality of life patterns and needs within the inner areas**,** using the LC-clustering approach to identify clusters of rural remote areas, rural and urban poles, analyse the quality of life levels and fine tune policies and strategies to fill the quality of life gaps for different typologies of municipalities within the inner area. • Second direction: Provide the ESPON Territorial Quality of Life dashboard as a toolkit to support the measurement and monitoring of quality of life in the inner areas, based on new BES surveys and indicators elaborated at municipal level and tailored to the needs of the local municipalities and population.

Appendix 4 – Citizens engagement toolkit: Outcome-Based Accountability and factfulness test

This section includes several tools that can be used to implement the TQoL methodology. For supporting the implementation of a citizen-centric approach we propose to use the Outcome-based Accountability framework. The details are presented in the following. A further add-on in a citizen-centric approach is to apply a factfulness test. We include the methodology we have applied for the Viennese case study.

Outcome-Based Accountability framework

The quality of services provided to users in a territory is obviously one component of the quality of life – as it affects directly the standard of living at least of the part of population using those services – but it is not all what matters. There is the quality of life of non-users to be considered as well – it could for instance be affected indirectly due to the presence of externalities (e.g. air pollution and noise from transport activities). And more in general, there are several aspects of the quality of life that need to be considered from the perspective of the everyday life of the citizens, and their needs and expectations of some form of "good life" ideal – going beyond the satisfaction with goods and services delivered to them by single public or private agents.

The latter perspective claims for introducing **outcome indicators for measuring the quality of life for the whole population living in or visiting a territory**. The measurement is referred to the whole population, not only to the users of a certain service or facility. However, to make the indicators more precise and effective, the population can be segmented – e.g. considering different generations (children, young, working age classes, elderly), gender, or the distinction between residents and visitors - depending on which QoL aspect is under scrutiny.

Outcome indicators – objective and subjective – can be found in a vast literature on the measurement of territorial amenities and quality of life aspects. However, instead of following a top-down and somehow "technocratic" approach to identify statistical indicators measuring QoL outcomes, it makes sense to engage more systematically the citizens in the definition and co-design of indicators for the purpose of measuring and managing quality of life in the geographical area where they live, at different territorial scales: community, city, county, region, nation.

A most useful framework in this respect is the Results-Based Accounting framework described in M. Friedman (2015)[13] and used in Wales.

Outcome-based Accountability (OBA) is a disciplined way of thinking and taking action that communities can use to improve the lives of children, youth, families, adults and the community as a whole. OBA is also used by organisations to improve the performance of their programs or services.

OBA starts with at the "ends" and works backwards, step by step, towards "means". For communities, the ends are conditions of well-being for children, families and the community as a whole. For example: "Residents with good jobs," "Children ready for school," or "A safe and clean neighbourhood" or even more specific conditions such as "Public spaces without graffiti,"

[13] Developed by Mark Friedman and described in his book *Trying Hard is Not Good Enough*, the accounting framework is being used throughout the United States, and in countries around the world (including Luxembourg, Netherlands, Norway, Sweden and the U.K in Europe), to produce measurable change in people's lives. The author considers "results" – used in the U.S – and "outcomes" – used in UK – as equivalent terms to mean "conditions of well-being". We opt here for using systematically the term "outcomes" and so the acronym OBA

or “A place where neighbours know each other.” For programmes, the ends are how customers are better off when the programme works the way it should. For example: the percentage of people in the job training programme who get and keep good paying jobs.

What we need then is a system of thought and action that allows the well-being of population and the performance of programmes and agencies to be treated as separate but connected enterprises. OBA helps to improve the lives of populations and the performance of programmes because it gets from talk to action quickly, is a simple, common sense process that everyone can understand and builds collaboration and consensus. It uses data and transparency to ensure accountability for both the well-being of populations and the performance of programmes.

The most basic version of OBA can be performed in less than one hour and produces ideas that can be acted on immediately. It engages partners from a same “community” – the word is used as a shorthand for people who live together in a geographic area, including the whole range from neighbourhoods to nations. People who work together need a common language to be successful. OBA asks therefore to agree on what words they will use to describe a few ideas:

- **Outcomes**: The conditions of well-being we want for our children, families and the community as a whole.
- **Indicators**: How we measure these conditions.
- **Baselines**: What the measures show about where we have been and where we are heading.
- **Turning the curve**: What success looks like if we do better than the baseline.
- **Strategies**: What works to improve these conditions.
- **Performance measures**: How we know if programmes and agencies are working. OBA uses three common sense performance measures: How much did we do (INPUT)? How well did we do it (PROCESS)? Is anyone better off (OUTPUT)?

Data about community conditions and the way programmes and agencies work are also obviously important, to understand in an OBA exercise of how things are going. If we rely on just impressions and anecdotes, we don’t really know if things are getting better or worse. We rarely have all the data we need at the beginning, but we can start with the best data we have and get better data. Data doesn’t always have to be gathered by the experts. You can use simple, common sense methods, like community surveys with just a few questions, or a walking count of vacant houses each month, or even a show of hands at the monthly meeting about how many people know someone who was a crime victim in last 30 days.

Equally obvious is that OBA – notwithstanding how simple and well-structured is made – is hard work for the engaged partners. But it is work that can be controlled and that makes potentially a real difference in people’s lives. The table below lists the “talk-to-action” seven steps for communities and for programmes, agencies and service systems.

Table 4 Talk-to-Action seven questions for communities and for programs

From Talk to Action	
for Communities (neighbourhoods, cities, counties, regions, nations)	**for Programmes, Agencies and Service Systems**

The step-by-step process starts with a group of partners who wish to improve the quality of life in the community.	The step-by-step process starts with a manager or group of managers who care about the quality of their services.
STEP 1. What are the quality of life conditions we want for individuals and families who live in our community?	STEP 1. Who are our customers?
STEP 2. What would these conditions look like if we could see or experience them?	STEP 2. How can we measure if our customers are better off?
STEP 3. How can we measure these conditions?	STEP 3. How can we measure if we are delivering services well?
STEP 4. How are we doing on the most important measures?	STEP 4. How are we doing on the most important measures?
STEP 5. Who are the partners that have a role to play in doing better?	STEP 5. Who are the partners that have a role to play in doing better?
STEP 6. What works better, including no-cost and low-cost ideas?	STEP 6. What works better, including no-cost and low-cost ideas?
STEP 7. What do we propose to do?	STEP 7. What do we propose to do?

Concept for the factfulness test

To **test the factfulness approach** we developed the following concept:

- First indicators were identified, where gaps between objective indicators (e.g. average living space per person, quality of housing) and subjective assessments by survey occur. Such discrepancies were found in the fields of housing, transport, safety and quality of air.
- For these areas we have set up a factfulness test in the form of a small survey to understand better which domains people define as relevant for the quality of life. For the test we identified sub-domains with gaps in objective and subjective QoL indicators (these are satisfaction with housing conditions, personal safety, public transportation, quality of air, quality of life in residential area).

The aim of the factfulness test is to get an estimate of the development over time and a comparison with one neighbouring district and ask for the underlying reasons of the judgment. This should help to explain why such discrepancies occur.

This test also can be expanded to be used in citizen panels, focus groups or other interactive settings.

Appendix 5 – Complete documentation of TQoL index at European Level: list of indicators composing the TQoL index and maps for all dimensions, domains and subdomains.

Table 5 Full list of indicators selected for the integration of the TQoL index

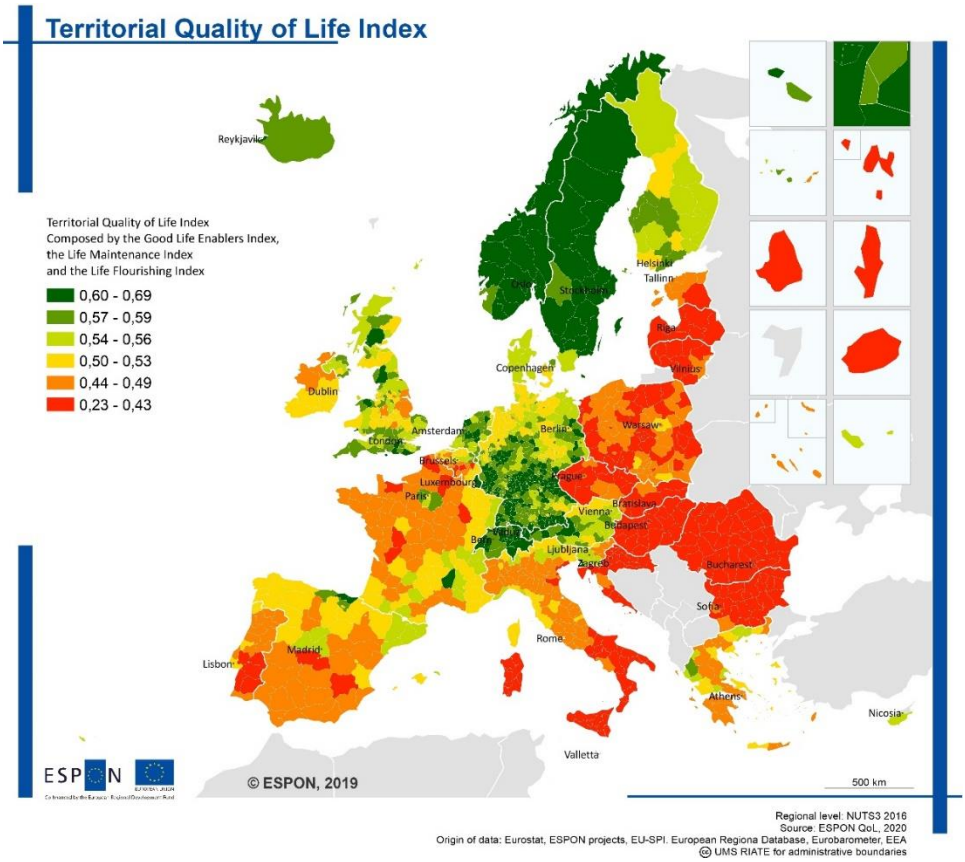
			What should indicators describe in this sub-domain?	Indicators selected, based on data availability	Rationality of indicator choices	Limitations of selected indicators and improvements
Quality of Life Enablers	Personal Sphere	Housing & basic utilities (b11)	WHAT: Indicators of availability and affordability (market prices, social housing) of houses and housing space. Indicators of quality of the housing stock and built environment (e.g. respect of planning standards). Indicators of availability and affordability (prices and taxes) for energy, water supply and sewage, and waste collection and treatment services. WHY: The availability and affordability of good housing and basic utilities is a pre-requisite for choosing to settle/live in a place.	Sanitation conditions (% uncollected sewerage & % sewerage treatment)	It aims to represent household conditions regarding the sewage system	The indicators used focus on quantity of services available due to data availability. More information would be needed in relation to quality perception and satisfaction with household conditions (sanitation, heating & cooling systems, isolation, housing affordability).
				Households lacking adequate heating	It aims to represent the lack of basic utilities (heating)	
				Household overcrowding	It aims to represent the living conditions (overcrowding)	
				Burdensome cost of housing	It aims to represent the affordability of housing	
		Health (b12)	WHAT: Indicators of availability, accessibility, and affordability (prices and taxes) for health infrastructure and services. Indicators measuring the quality of the infrastructure and services. WHY: The availability or accessibility within a reasonable time threshold of hospitals and other health care facilities is a basic need for life.	Availability of Hospital beds	It aims to represent the availability to basic health services such as hospital beds.	The indicators used focus on quantity of services available due to data availability. More information would be needed in relation to quality perception or satisfaction with "health" services accessibility
				Accessibility to health services (pharmacies, doctors and hospitals)	It aims to represent the availability to health services using as a proxy the percentage of area categorised as "highly accessible" to pharmacies, hospitals and doctors.	
		Education (b13)	WHAT: Indicators of availability, accessibility, and affordability (prices and taxes) for education infrastructure and services. Indicators measuring the quality of the infrastructure and services. WHY: The availability or accessibility in a reasonable time threshold of primary, secondary, high schools is a basic need for the households with children to settle/live in a place.	Accessibility to education (primary and secondary schools)	It aims to represent the accessibility of education using as a proxy the percentage of area categorised as "highly accessible" to primary or secondary schools	The indicators used focus on quantity of services available due to data availability. More information would be needed in relation to quality perception or satisfaction with the accessibility (commuting time, transport mode...), availability and affordability (budget destined to education...) of educational centres
	Socioeconomic Sphere	Transport (b21)	WHAT: indicators of availability, accessibility, and affordability (prices and taxes) for transport infrastructure and services. Indicators measuring the quality of the infrastructure and services. WHY: Transport infrastructure and services are a pre-requisite for the people to move around and travel from/to their places.	Access to high-level transport infrastructure	It aims to represent the accessibility to transport services using as a proxy an index evaluating the (airports, ports, highway) accessibility to main transport infrastructures	The indicators used focus on quantity of services available due to data availability. More information would be needed in relation to quality perception or satisfaction with the accessibility, availability and affordability of transport infrastructures and services.
		Digital connectivity (b22)	WHAT: Indicators of availability and affordability (prices) of ICT connection. Indicators measuring the usage and quality of the ICT connection. WHY: Good broadband connections are a pre-requisite to access to the Web and online interaction opportunities.	Efficiency of digital networks	It aims to represent the quality of ICT connections	More information would be needed in relation to quality perception or satisfaction with the availability and affordability of ICT connection.
				Internet at home	It aims to represent the availability of internet at home	
				Online interaction with public authorities	It aims to represent the people willingness to use ICT connections	
		Work (b23)	WHAT: Indicators of availability and accessibility of jobs (workplaces). Indicators measuring the quality of the workplaces (e.g. safety and comfort, respect of urbanistic standards, maintenance) WHY: The availability or accessibility in a reasonable commuting time of job opportunities is a pre-requisite to participate in the labour market. The quality of the workplaces influences the quality of employers'/employees' life.	Labour market accessibility (accessibility to jobs)	It aims to represent the accessibility of jobs using as a proxy the amount of people living within four hours of driving from the location at hand	More information would be needed in relation to quality perception or satisfaction with the accessibility, availability and quality of jobs.
		Consumption (b24)	WHAT: Indicators of availability and accessibility of shops and other services (e.g. entertainment) and online delivery. Indicators measuring the quality of the consumption places (e.g. safety and comfort, respect of planning standards, maintenance) WHY: The availability and accessibility in a reasonable time threshold of shops and service facilities influence the range of consumption choice. The same for the availability of fast online deliveries.	Accessibility to commercial services (shops and banks)	It aims to represent the accessibility to consumption using as a proxy the percentage of area categorised as "highly accessible" to shops and banks	The indicators used focus on quantity of services available due to data availability. More information would be needed in relation to quality perception or satisfaction with the accessibility, availability of consumption places (shops, entertainment…)
		Public spaces (b25)	WHAT: Indicators of availability and accessibility of public spaces. Indicators measuring the quality of the public spaces' maintenance. WHY: Good public spaces facilitate social life.	Not relevant at NUTS 3 level	Not relevant at NUTS 3 level	Not relevant at NUTS 3 level

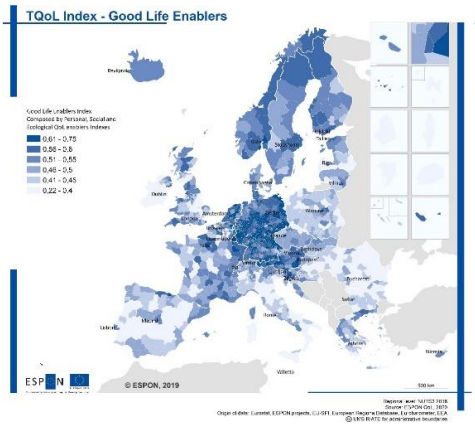
Life Maintenance	Ecological Sphere	Cultural Assets (b26)	WHAT: Indicators of availability, accessibility, and affordability (prices) of cultural assets (e.g. heritage sites, museums etc.). Indicators measuring the usage and the quality of the cultural assets' maintenance. WHY: The availability and accessibility in a reasonable time threshold of cultural assets and options widen the range of quality of life experiences.	Availability of cultural landmarks (UNESCO World Heritage)	It aims to represent the availability of cultural spots	The indicators used focus on quantity of services available due to data availability. More information would be needed in relation to quality perception or satisfaction with the availability and affordability of cultural spots
				Accessibility to cultural services (cinemas)	It aims to represent the availability of cultural spots	
		Green Infrastructure (b31)	WHAT: At a wider territorial scale, this includes indicators of connectivity of green areas (woods, meadows) and the preservation of the agricultural mosaic. At city level, indicators of Urban Green (urban parks, street trees, gardens....) WHY: Availability of and access to green spots is key for health, sport and relax activities in the city, and to host biodiversity in the environment	Availability of Natural Areas	It aims to represent the availability of green areas (forests, herbaceous vegetation, wetlands and inland waters)	The indicators used focus on quantity of natural areas available due to data availability. More information would be needed in relation to quality perception or satisfaction with the availability and quality of green areas and the landscape
				Farmland abandonment (% abandoned land)	It aims to represent the deterioration of land using as a proxy the percentage of abandoned land	
		Protected areas (b32)	WHAT: Indicators of availability and accessibility of natural protected areas (i.e. areas where flora, fauna, landscape is preserved, which makes protected areas different from other green infrastructure). WHY: Accessible protected areas augment the opportunities to live in contact with nature.	Existence of Protected Areas	It aims to represent the availability of protected area	The indicators used focus on quantity of protected areas available due to data availability. More information would be needed in relation to quality perception or satisfaction with availability and affordability of protected areas
	Personal Health and Safety	Personal Health (m11)	WHAT: Objective and subjective outcome indicators of status of personal health, nutrition, physical activity. WHY: Being in and perceiving a good health – body and mind – status is a fundamental quality of life ingredient	Life expectancy at birth	It aims to represent the population health using as a proxy the life expectancy	More information would be needed in relation to the satisfactions and perception of personal health, nutrition or physical performance
		Personal Safety (m12)	WHAT: Objective and subjective outcome indicators of personal security, safety against accidents. WHY: By the same token, living in and/or perceiving to live in a safe place is also fundamental for people's quality of life.	Standardised traffic accident death rate	It aims to represent the road safety	More information would be needed in relation to personal safety perception on different aspects (while driving, at home, on the streets…)
				Standardised homicide death rate	It aims to represent the general safety using as a proxy the homicide death rate	
	Economic and Societal Health	Inclusive Economy (m21)	WHAT: Mostly objective outcome indicators related to unemployment and employment rates, gender employment and salary gap, job security, work dignity, disposable income distribution, inequality of financial/real estate wealth of households (personal saving, house ownership, etc.) WHY: An inclusive economy, low unemployment and high work security and dignity are a key ingredient for people's quality of life. The sub-domain does not include GDP or local productivity indicators, only aspects of earning and wealth distribution, equity, economic cohesion in the territory. Local productivity indicators are obviously important for local/regional development strategies, but the TQoL "inclusive economy" indicators focus on the spill-over of economic progress in terms of benefits for the citizens. They are complementary to GDP measurement – an orthogonal, not a collinear factor.	Household disposable income per capita	It aims to represent the disposable income	More information would be needed in relation to job security, work dignity, personal savings…
				Gender employment gap	It aims to represent the job equity	
				Unemployment rate	It aims to represent the employment performance	
		Healthy Society (m22)	WHAT: Mostly objective outcome indicators related to social disparities (population at risk of poverty, working poor families, social security coverage, work-life balance). WHY: A healthy and not too unequal society influences the quality of life by reducing sources of stress and tensions	People at risk of poverty rate	It aims to represent the financially vulnerable population	More information would be needed in relation to social security coverage and work-life balance.
				Early Leavers from education (18-24)	It aims to represent the educational level of the population	
				Tertiary Educational Attainment (25-64)	It aims to represent the educational level of the population	
				NEET 15-24	It aims to represent the educational/labour level of the population	
	Ecological Health	Healthy Environment (m31)	WHAT: Objective and subjective outcome indicators related to the status of the environment (air quality, water quality, noise pollution, soil contamination) WHY: A healthy environment prolongates life expectancy, reducing morbidity, and influences the subjective well-being of people	Air Quality	It aims to represent the air quality using as a proxy an air index that considers the main pollutants (PM, NOx and SOx)	More information would be needed in relation to quality perception or satisfaction with air and noise pollution, water quality and soil contamination.
		Climate change (m32)	WHAT: Objective and subjective outcome indicators related to greenhouse gases emissions, decarbonisation of the economy (economic activities, public and individual transport, housing, etc.), vulnerability, presence and persistence of risks, adaptation and access to Disaster Risk Reduction (DRR) policies and means (resources, plans, protection infrastructures), awareness and climate-friendly behaviour. WHY: Less greenhouse emissions contribute to reduce the climate change risks for the present	Aggregate expected impact of climate change by 2070	IT aims to represent the impact of climate change	More information would be needed in relation to quality perception or satisfaction with aspects related to decarbonisation of the economy, GHE and access to disaster risk reduction policies, among others.
				Population covered by Sustainable Action Plans	It aims to represent the resilience to climate change using as a proxy the population covered by Sustainable Action Plans	

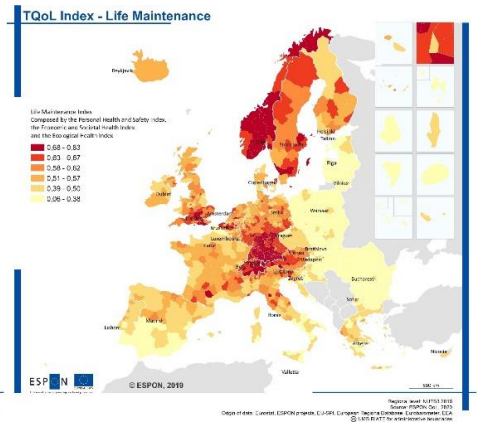
			and future generations. Resilience to extreme events is fundamental to reduce people vulnerability and exposure to the harmful effects of climate change. Climate-friendly awareness will bring more sustainable consumption habits and lifestyles.			
Life Flourishing	**Personal Flourishing**	**Self-esteem (f11)**	WHAT: Mostly subjective outcome indicators related to recognition and respect from others and of self-respect. Social tolerance (e.g. respect for minorities, disabled, LGBT). WHY: Self-esteem is a pre-requisite for living a good life	Standardised suicide death rate	It aims to represent the self-respect using as a proxy the suicide death rate	More information would be needed in relation to social tolerance about different aspects (minorities) and the self-perception.
				Attitudes toward people with disabilities	It aims to represent the tolerance to others using as a proxy a survey about the tolerance to people with disabilities	
		Self-actualization (f12)	WHAT: Mostly subjective outcome indicators of self-realization of one's full potential (e.g. life satisfaction with jobs, mate acquisition, parenting, utilising, and developing abilities and talents, pursuing goals). Objective labour markets indicators of jobs matching with skills and competences WHY: A purpose-full life is also a key ingredient of a good life.	No data available at NUTS level	No data available at NUTS level	More information would be needed in relation to quality perception or satisfaction with current jobs, civil status (single, in a relationship, married…) and goals achieved.
	Community Flourishing	**Interpersonal trust/ societal belonging (f22)**	WHAT: Objective and subjective outcome indicators of inter-personal trust (social capital). WHY: The sense of belonging to a community and interpersonal trust influences the quality of life perception and experience.	Population that believe voluntary work is very important	It aims to represent the perception on community activities using as a proxy the voluntary work perception	More information would be needed in relation to quality perception or satisfaction about the local community
				Population participating in associative activities (organisational work or participatory events)	It aims to represent the population willingness to participate in community activities	
		Institutional trust/ good governance (f21)	WHAT: Objective and subjective outcome indicators of institutional trust (governance). This category includes also active citizens participation as a mean to build or re-build trust in policy making. WHY: Trust in institutions is a key factor for the quality of community life.	European Quality of Government Index	It aims to represent the quality of government	More information would be needed in relation to quality perception or satisfaction with government institutions (local, regional and national)
				Trust in the Administration	It aims to represent the population perception on the administration	
				Quality and accountability of government services	It aims to accountability of government services	
				Corruption Index	It aims to represent the corruption level	
	Ecological Flourishing	**Biodiversity Wealth (f31)**	WHAT: Indicators measuring the quantity and variety of ecosystems services in the territory sustaining quality of life perpetuation for all living species (biodiversity). WHY: The quantity and quality of ecosystem services is key to ecological flourishing, and indirectly to preserve people health and reduce the risks of pandemic outbreaks. The world of living subjects offers a web of dynamic, living and unfolding creative relationships for constant development.	Invasive Alien Species	It aims to represent the ecosystem quality using as a proxy the number of invasive alien species	More information would be needed in relation to quality perception or satisfaction with biodiversity and policies aiming to preserve the ecosystems
				Ecosystem services net value (supply-demand)	It aims to represent the value of the ecosystems	

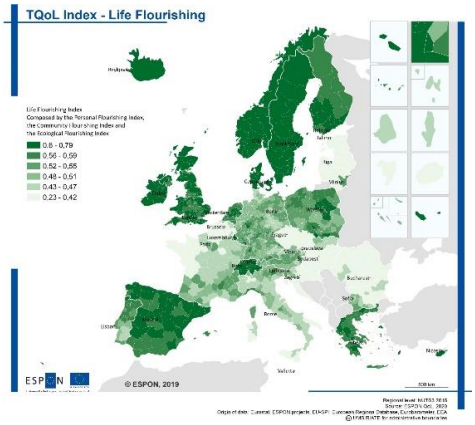
ESPON Territorial Quality of Life Index

Figure 14 Full stack of maps for dimensions, domains and sub-domains of the TQoL index

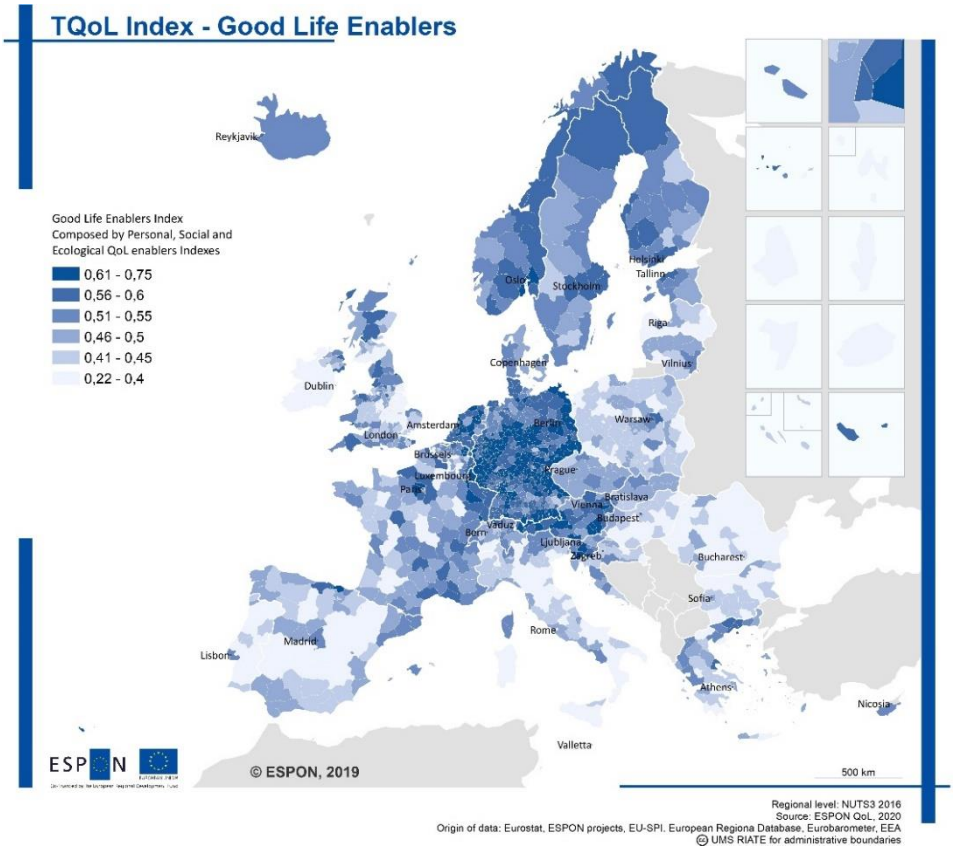




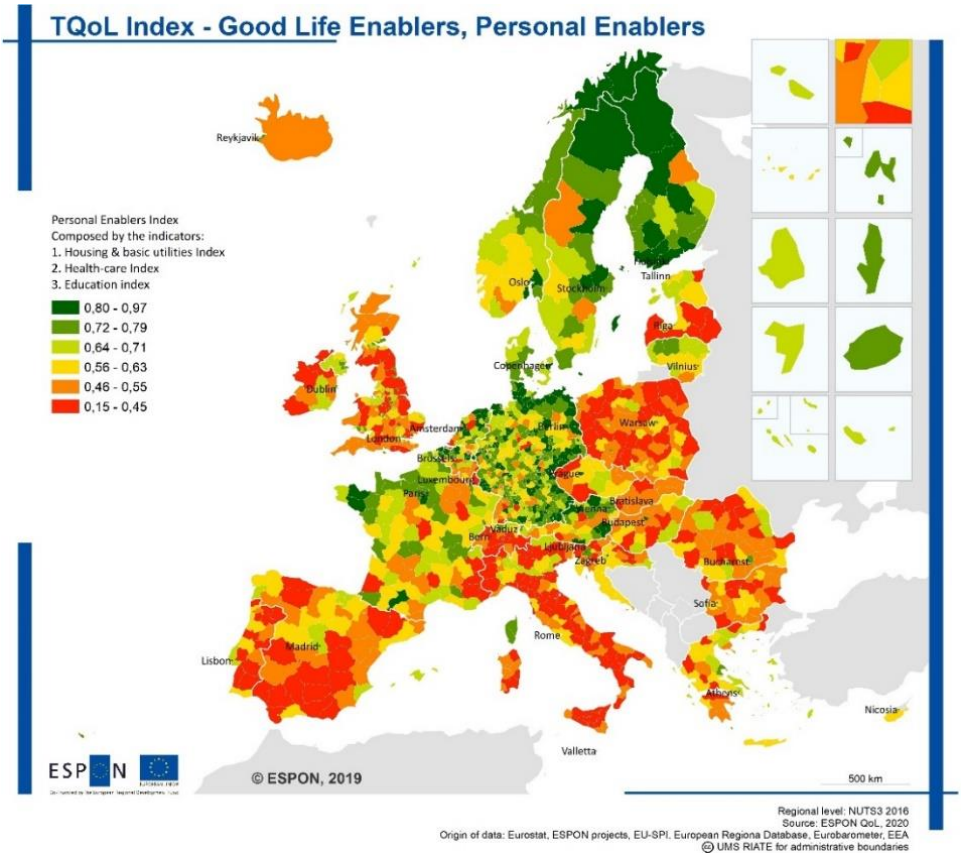




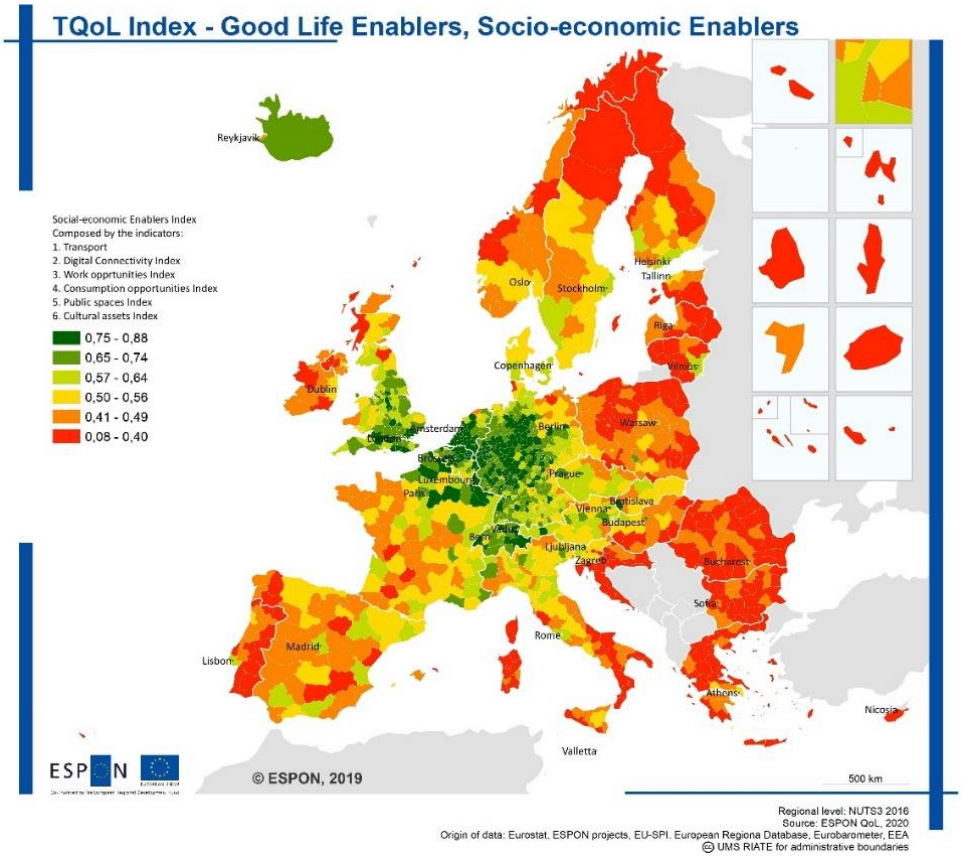
Good Life Enablers Dimension



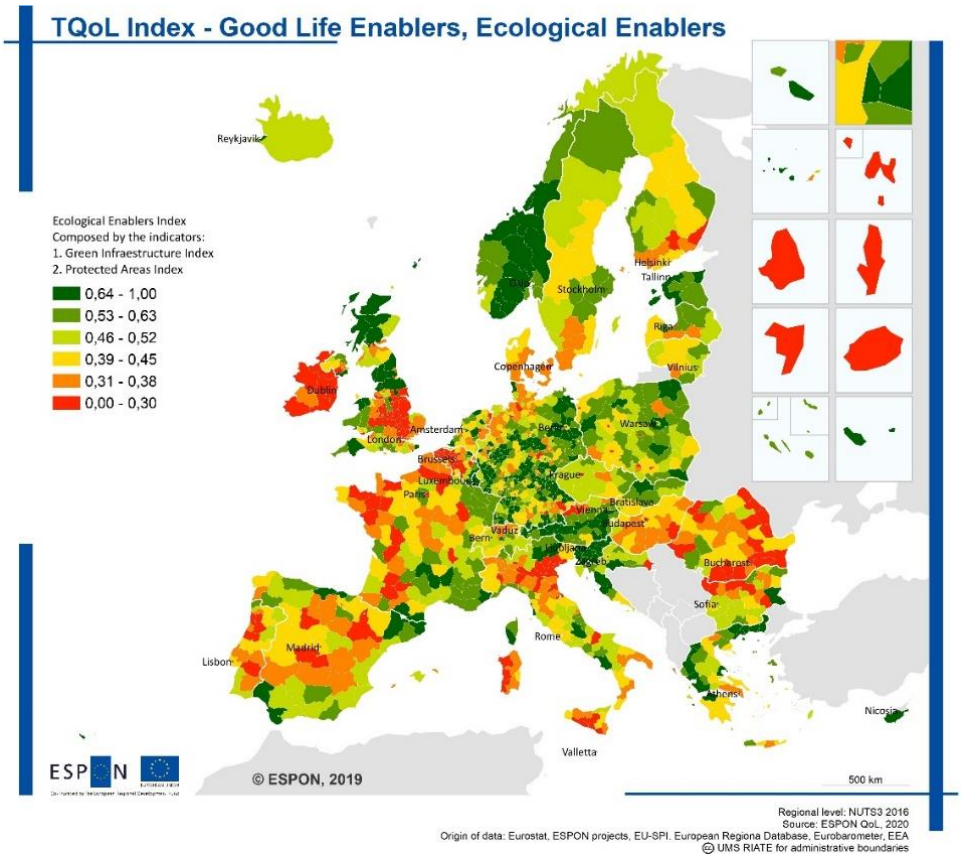
Personal Enablers domain



Socio-economic enablers domain

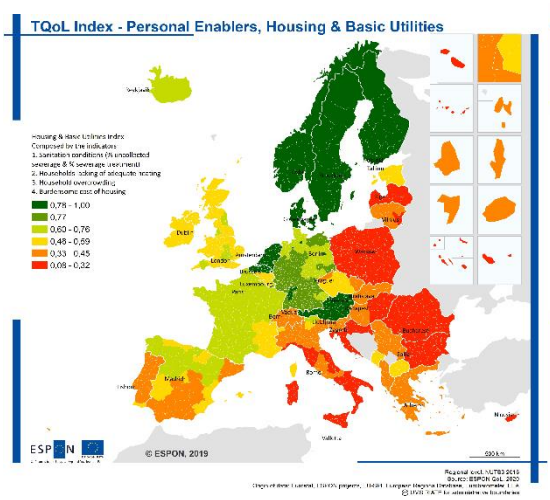


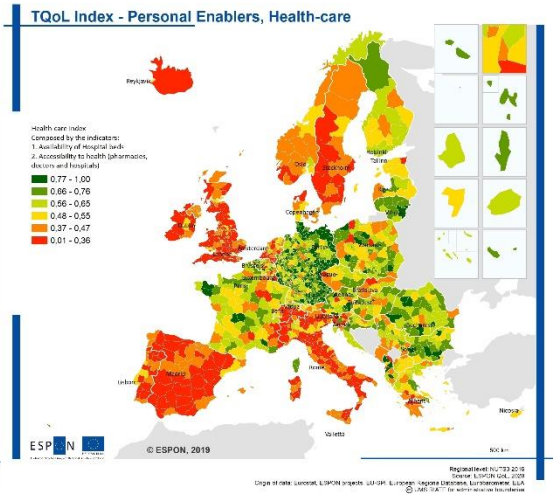
Ecological enablers domain

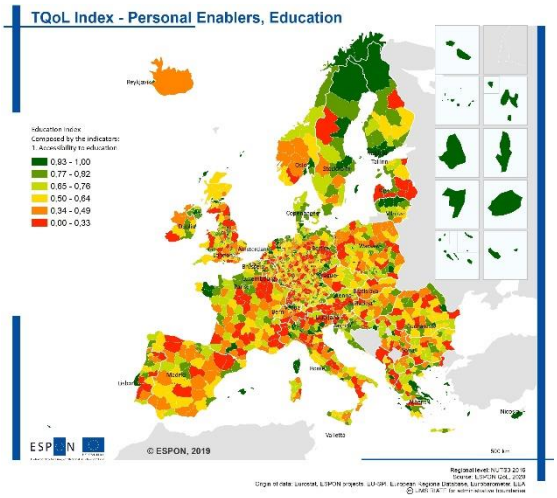


Sub-domains

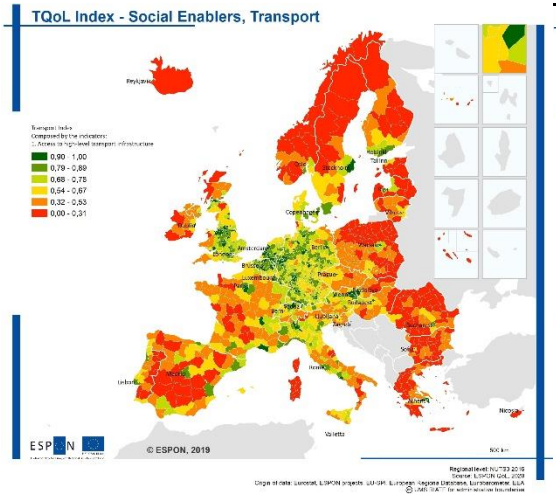
Personal

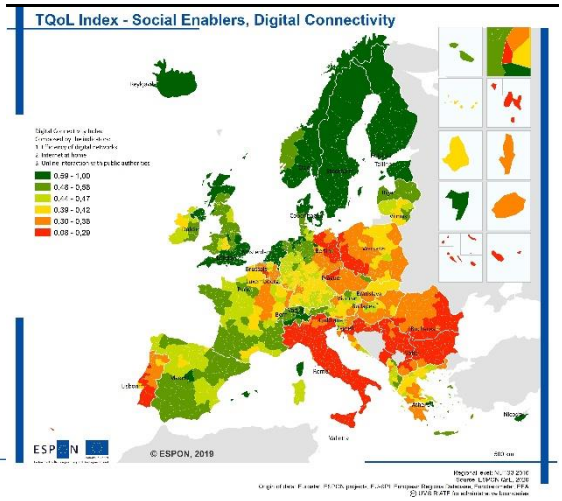


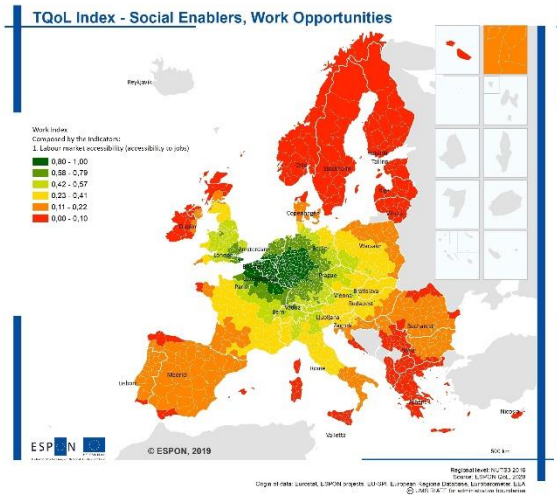


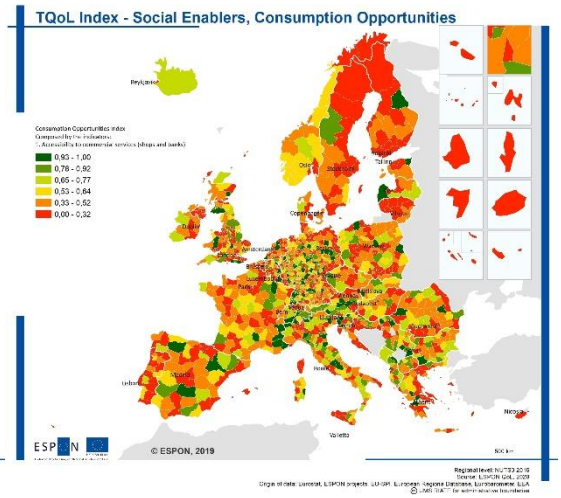


Socio-economic

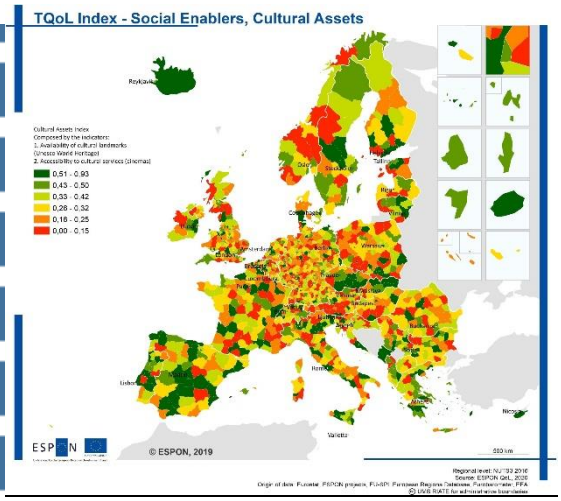




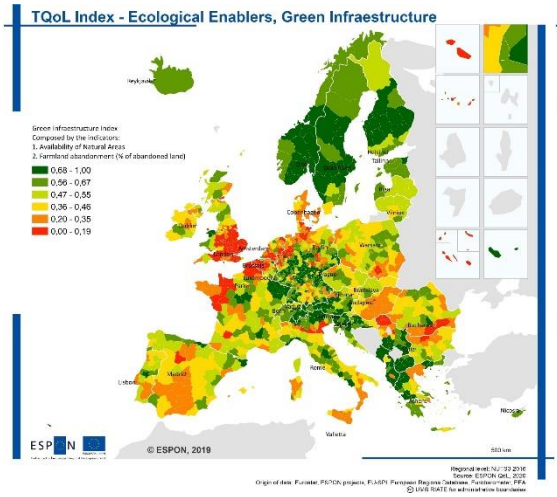


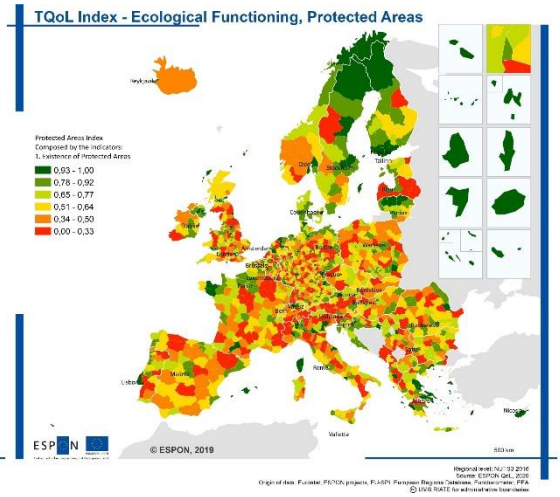


Public Spaces
(no data at NUTS level)

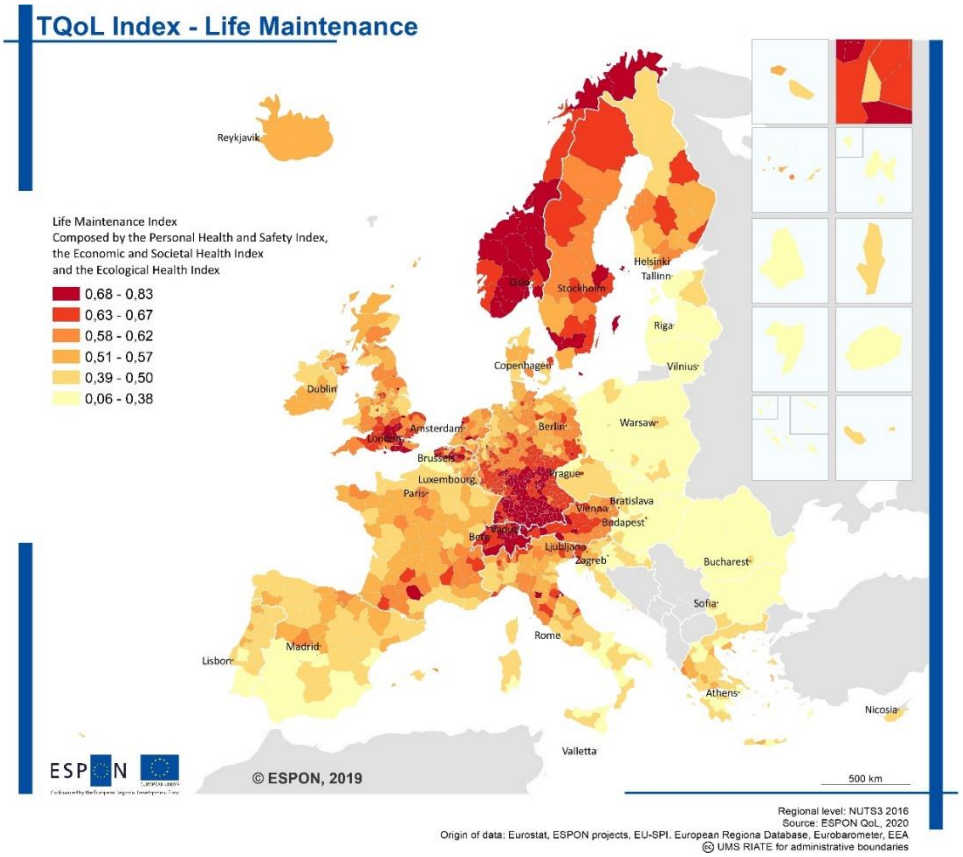


Environmental

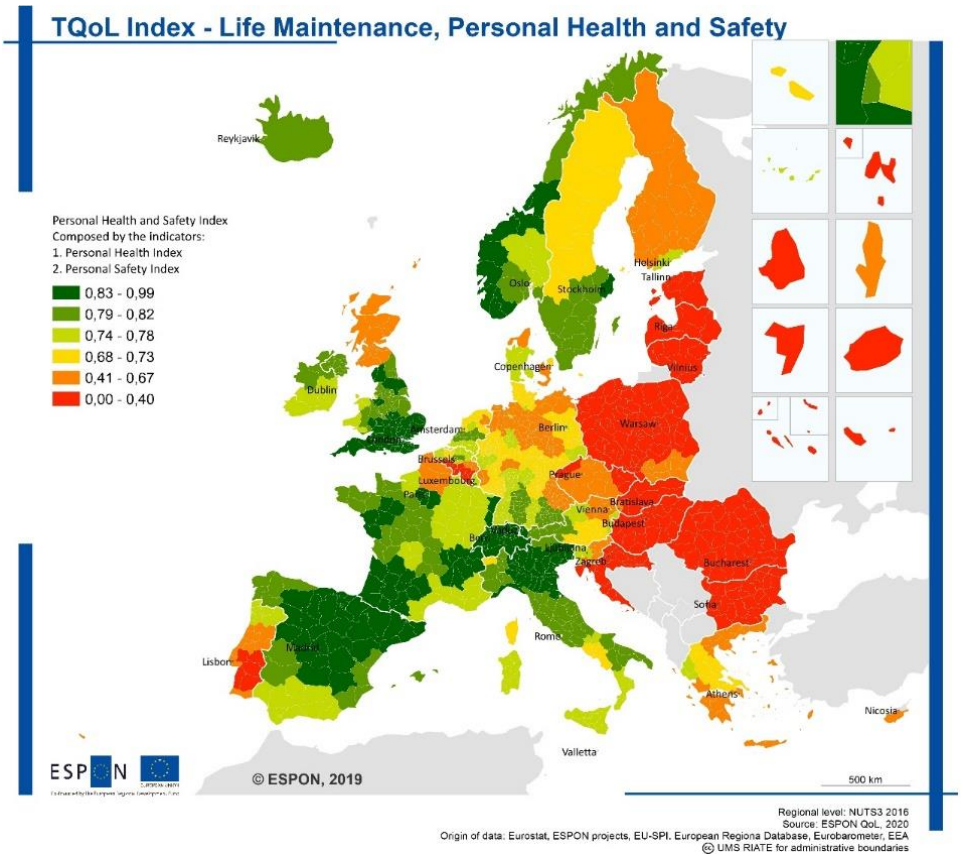




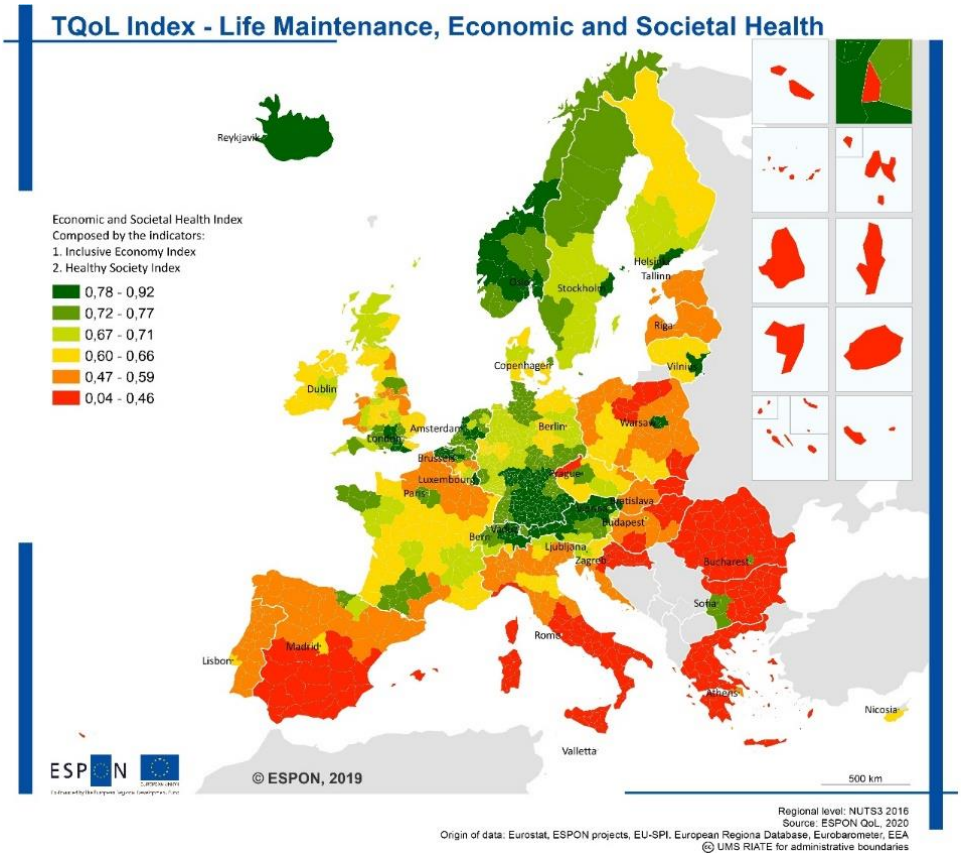
Life Maintenance Dimension



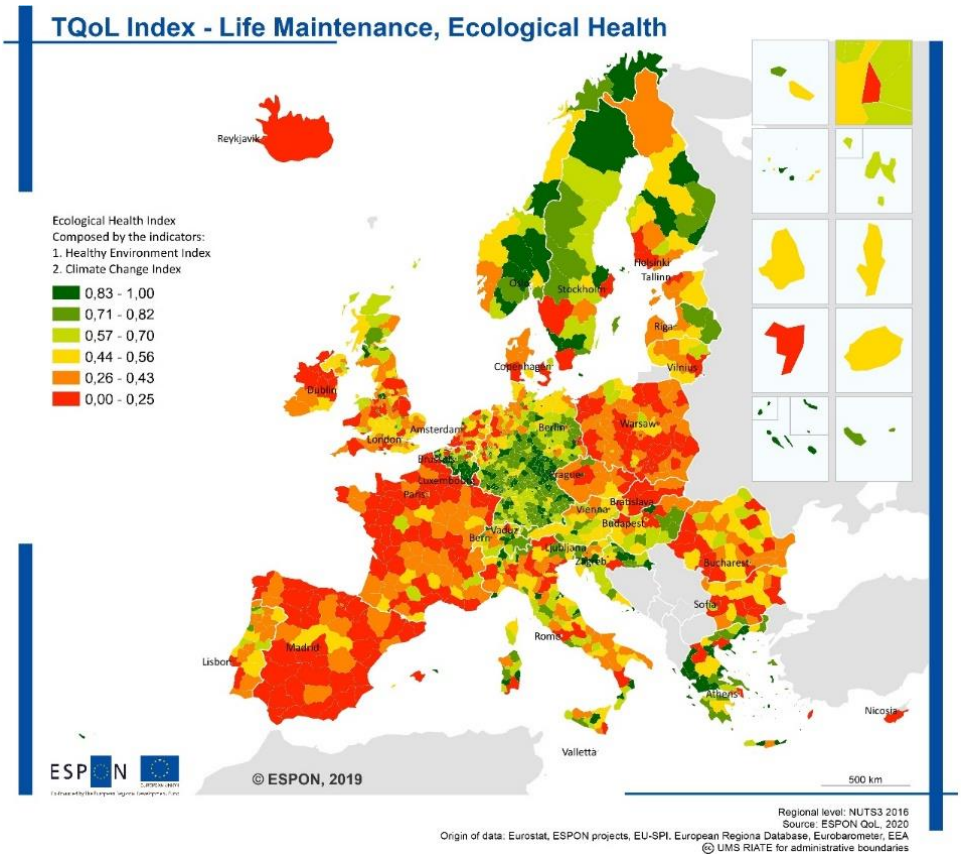
Personal Health and Safety domain



Economic and Societal Health domain

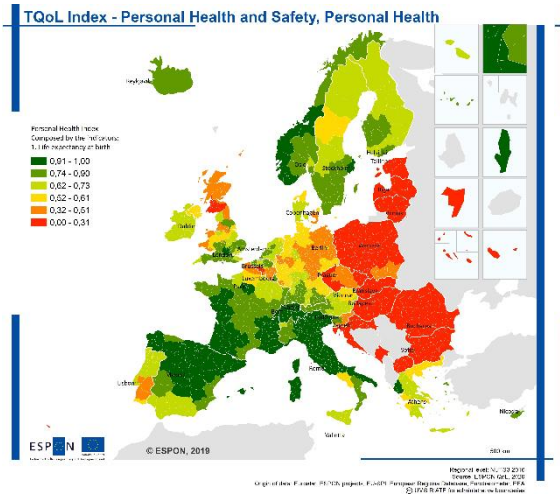


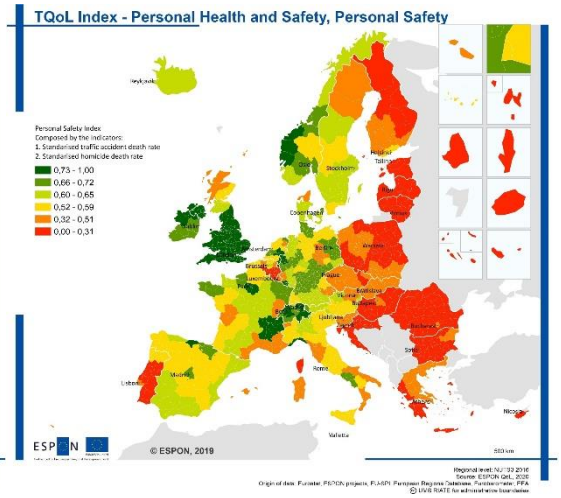
Ecological Health domain



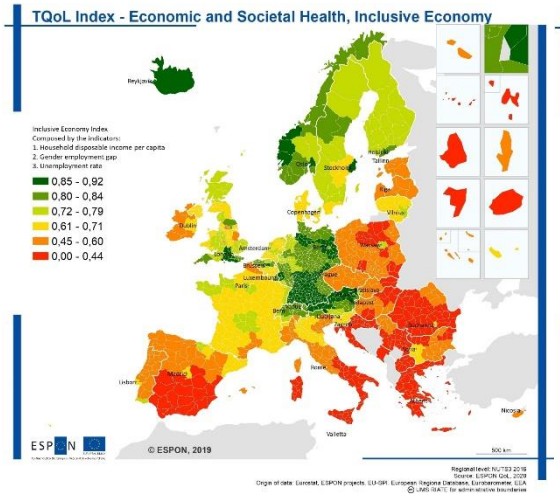
Sub-domains

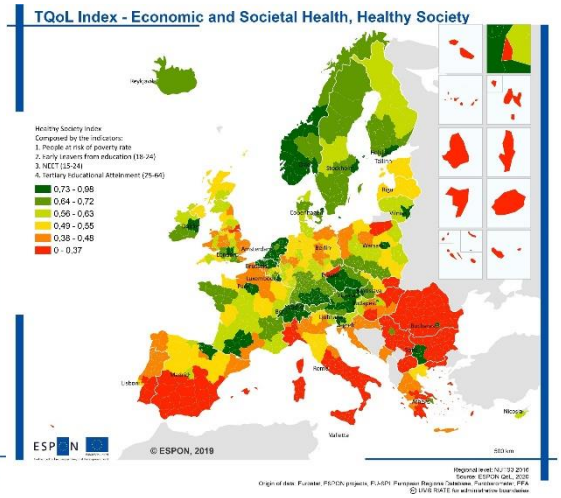
Personal



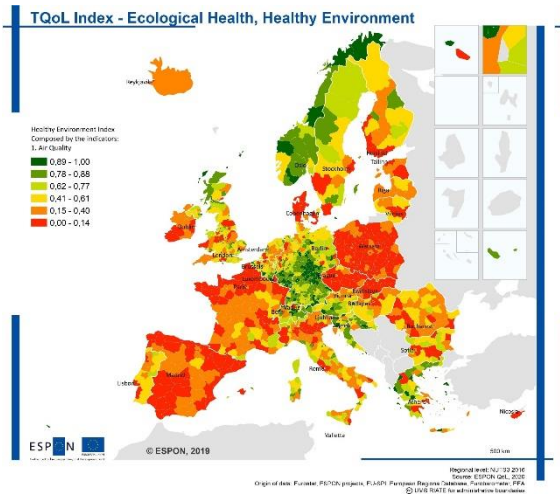


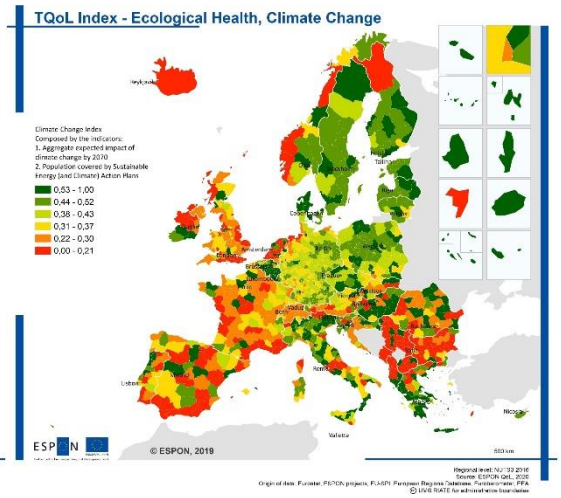
Socio-economic



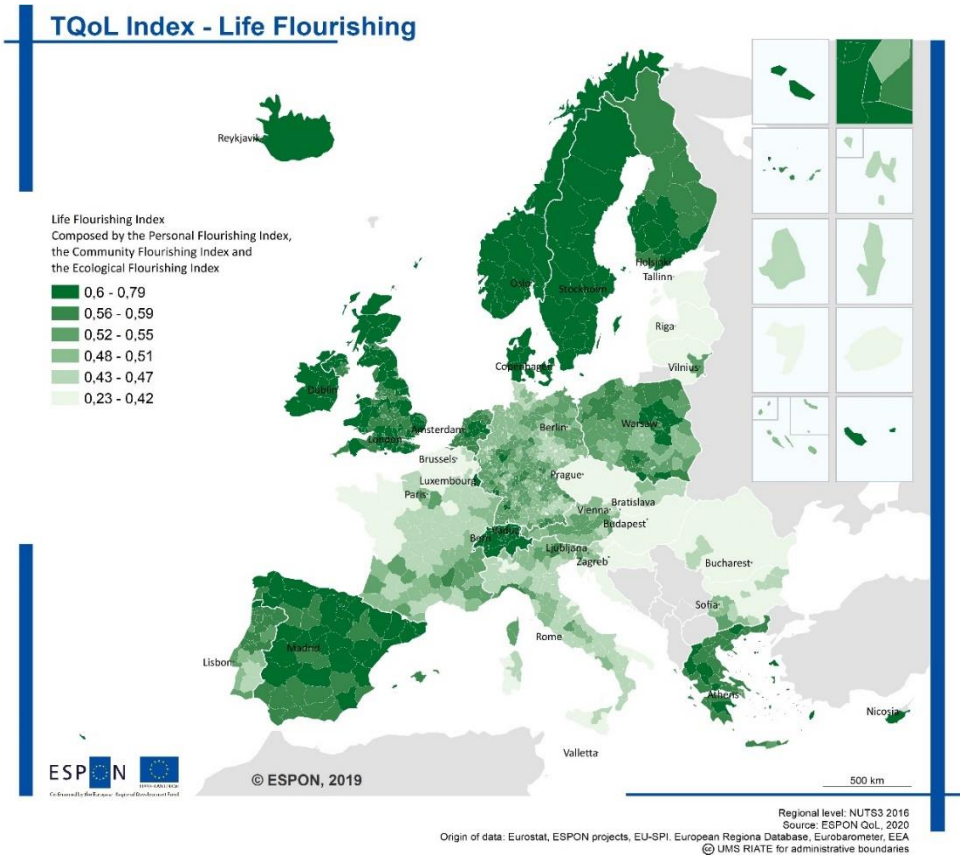


Environmental

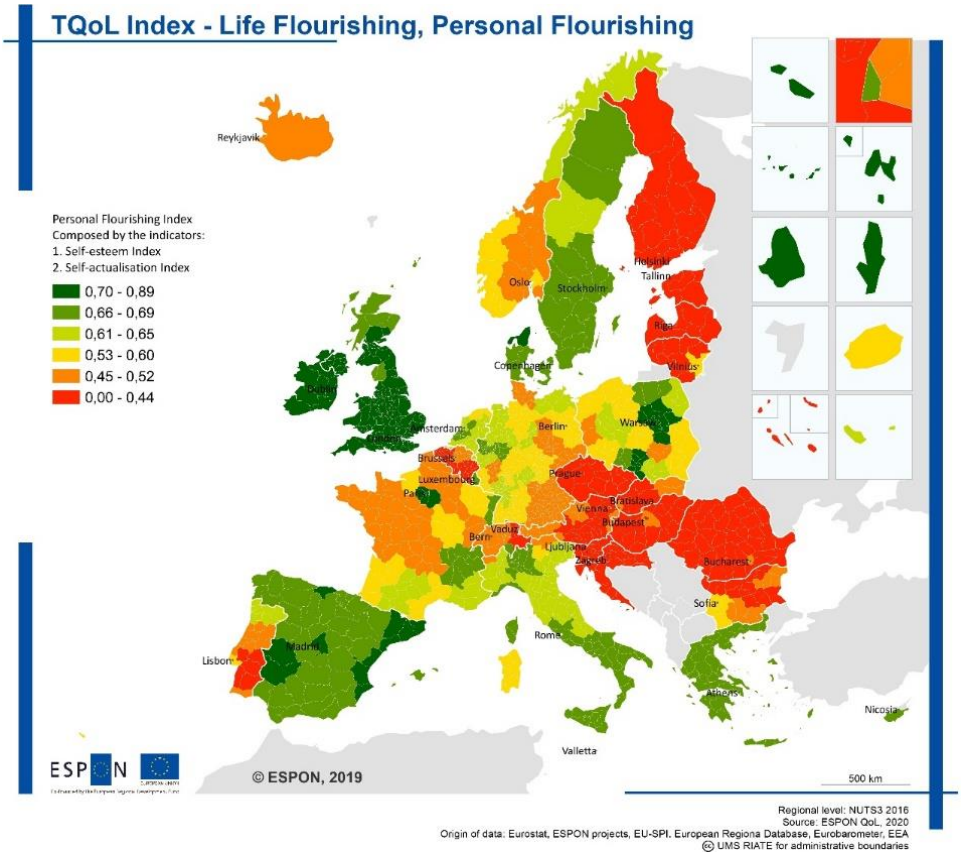




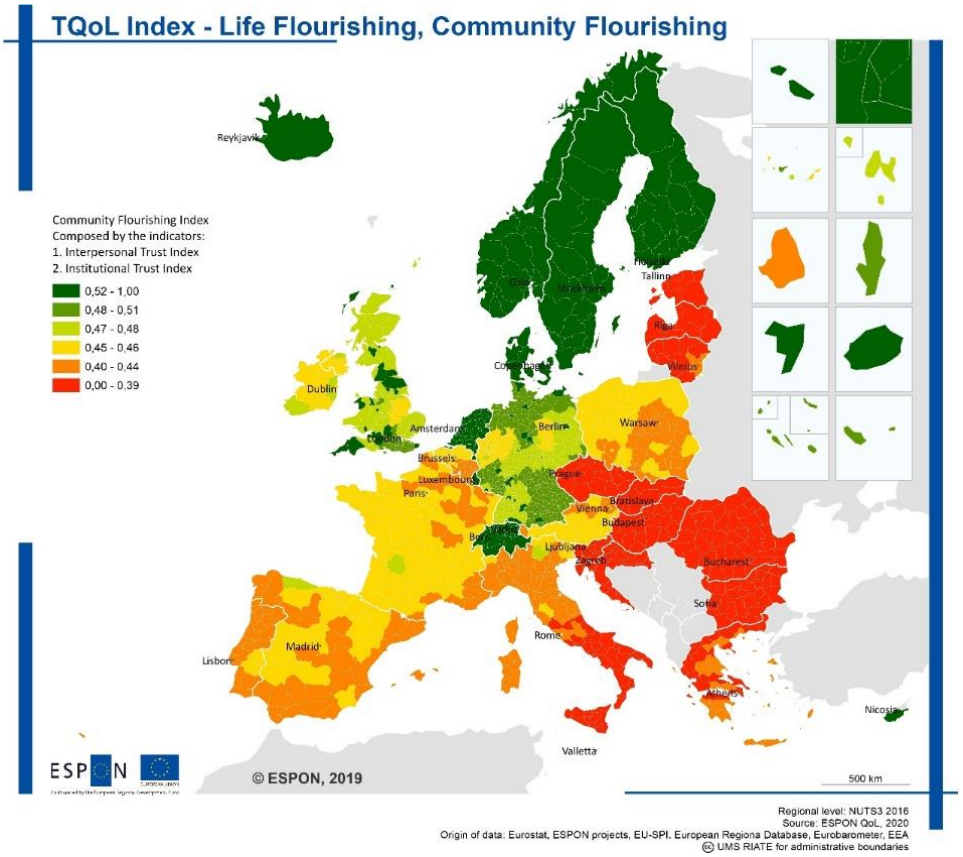
Life Flourishing Dimension



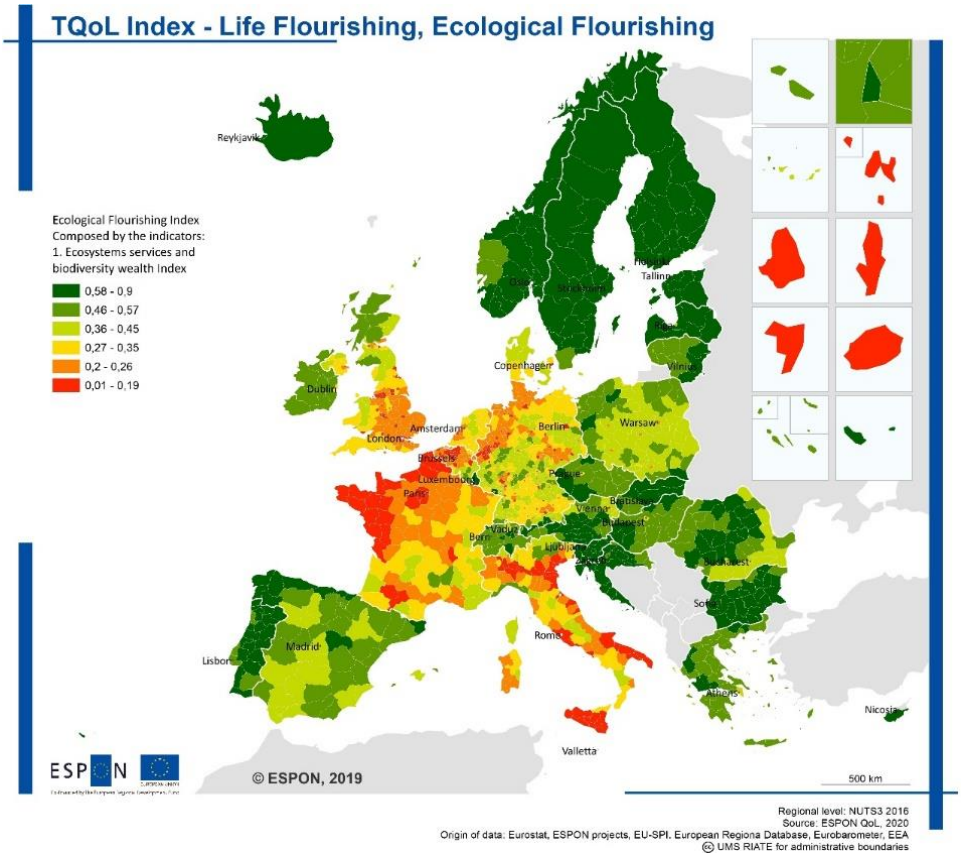
Personal Health and Safety



Community Flourishing domain

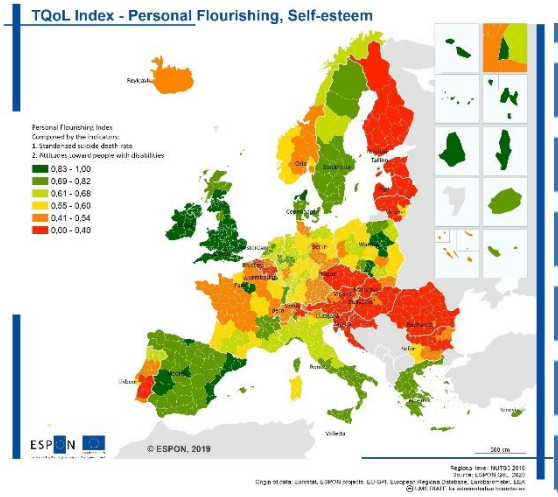


Ecological Flourishing domain



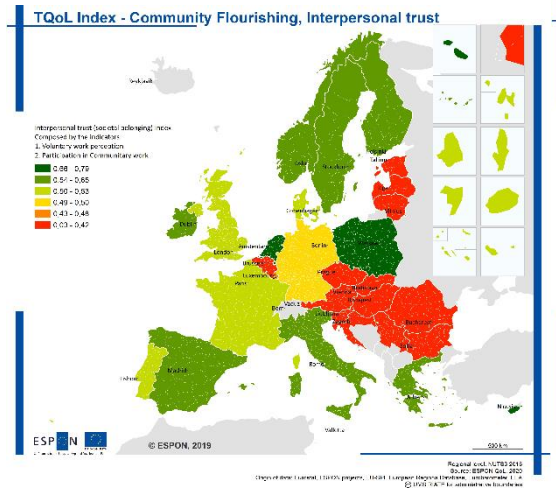
Sub-domains

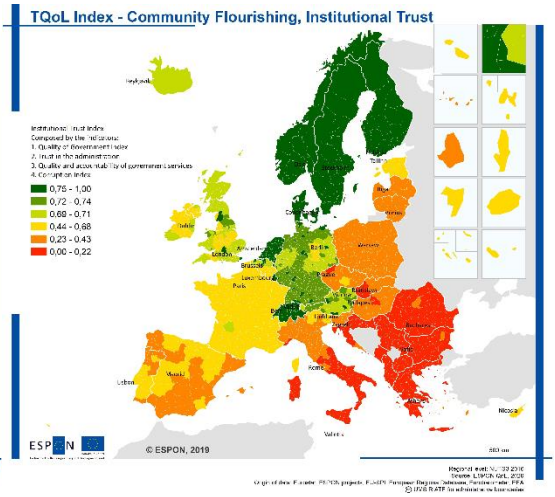
Personal



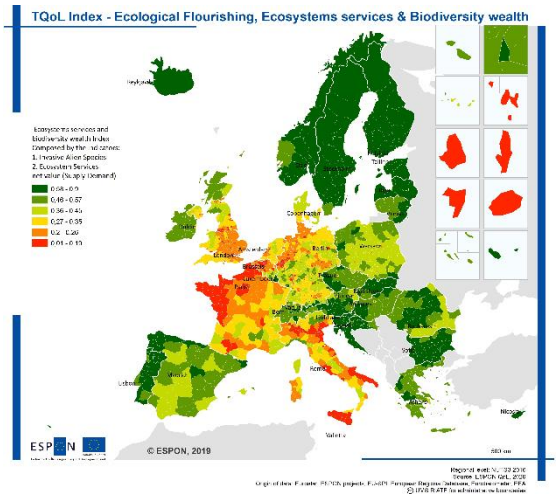
Self-actualization
(no data at NUTS level)

Socio-economic

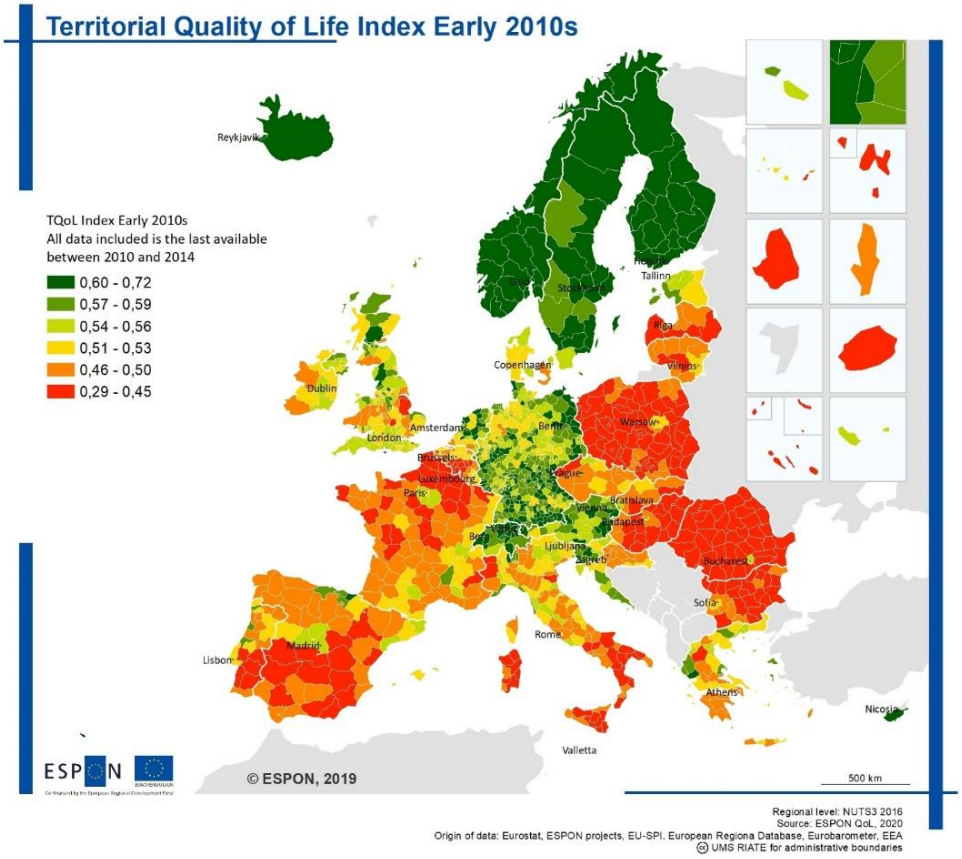


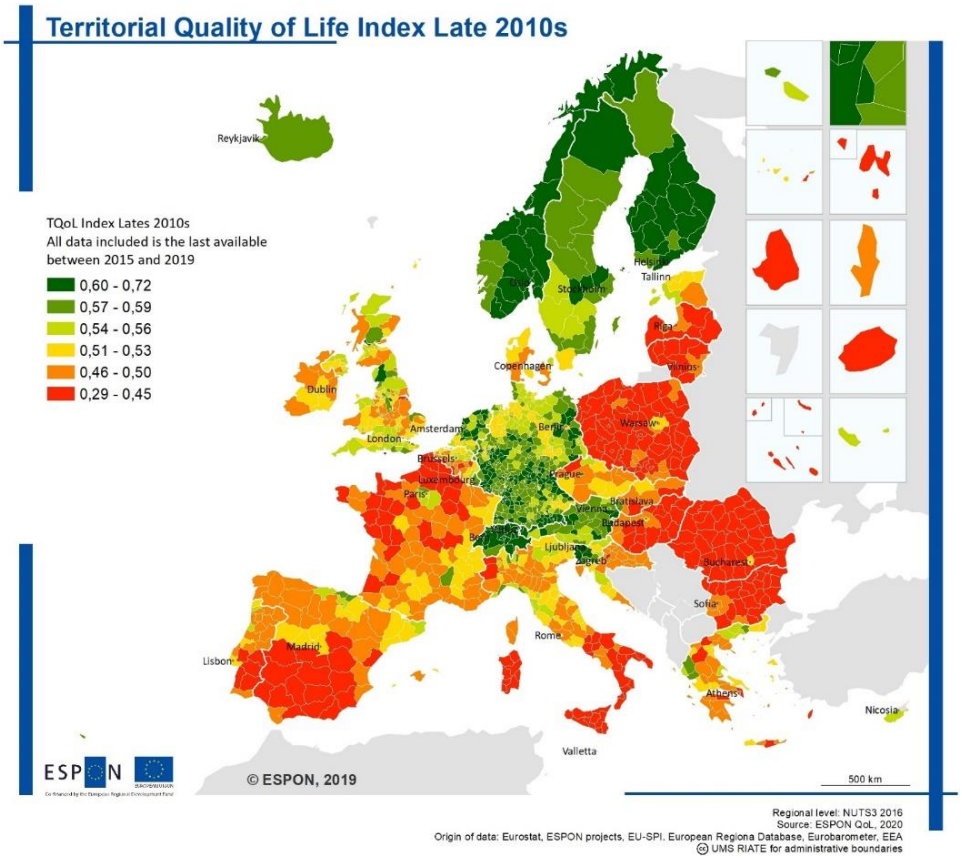


Environmental



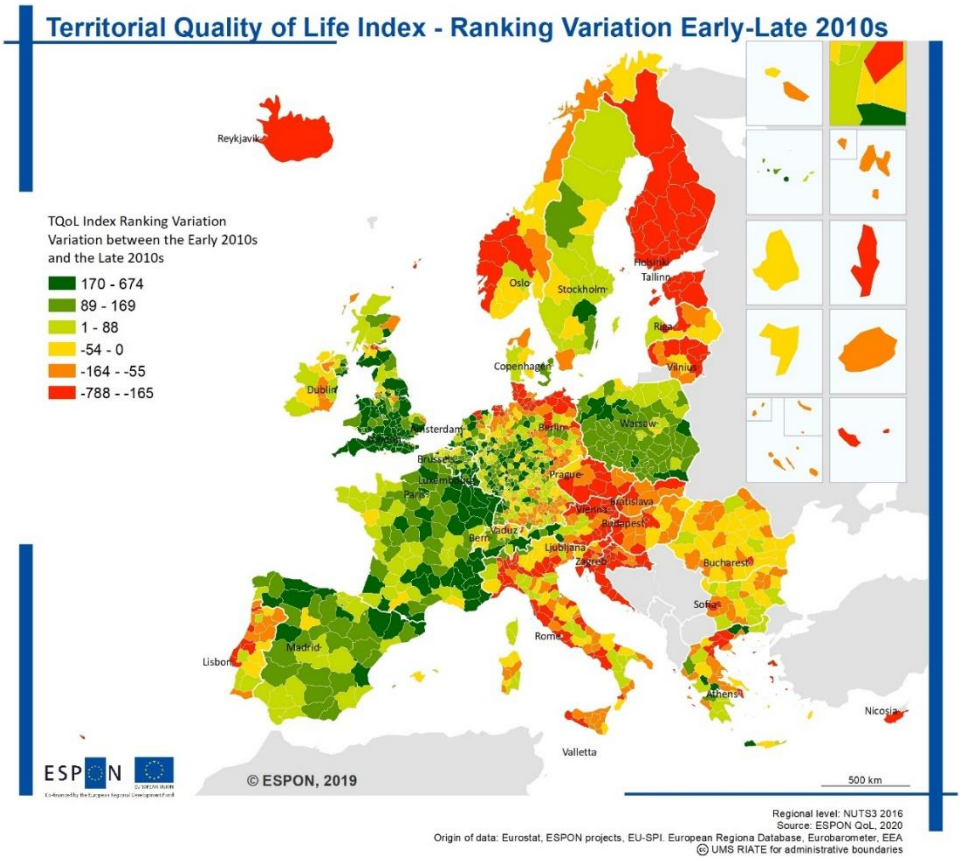
TQoL Index in Early 2010s vs Late 2010s





Ranking Variation Early Late 2010s

The following map shows the regions that changed their relative positions in the TQoL Index ranking over the last decade. Regions depicted in yellow/red lowered their position in the ranking; regions in green had risen.



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ESPON 2020 – More information

ESPON EGTC
4 rue Erasme, L-1468 Luxembourg - Grand Duchy of Luxembourg
Phone: +352 20 600 280
Email: **info@espon.eu**
www.espon.eu, **Twitter**, **LinkedIn**, **YouTube**

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