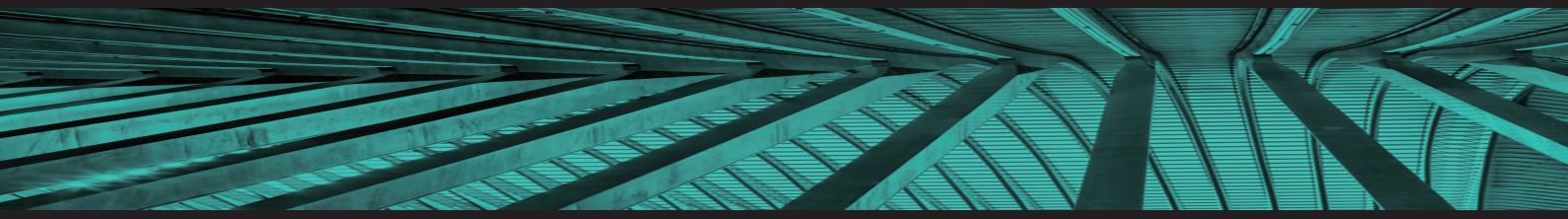
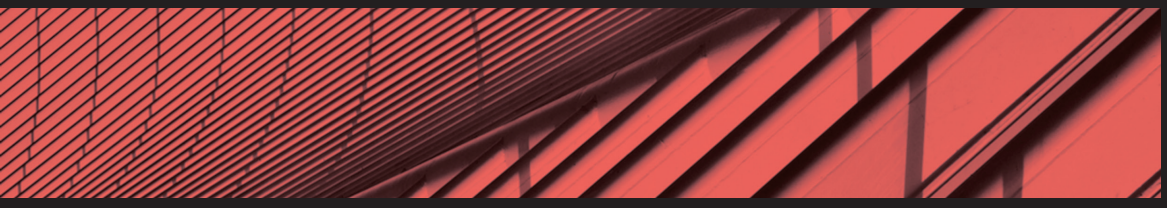
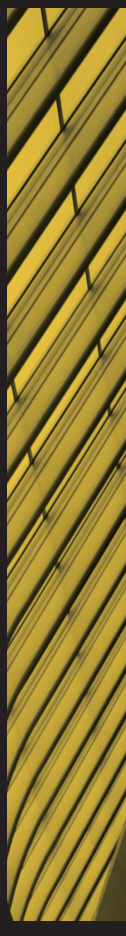
DISCE

DEVELOPING
INCLUSIVE
AND SUSTAINABLE
CREATIVE ECONOMIES



GUIDELINES FOR OPERATIONALISING THE DATA





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DISCE DEVELOPING INCLUSIVE AND SUSTAINABLE CREATIVE ECONOMIES

Measuring creative economies: a critical review of CCIs

D2.2 Guidelines for operationalising the data

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Executive summary

In D2.1 we presented a comprehensive examination of the literature on the definition of CCIs, starting from the work of Adorno and Horkheimer, which is a nodal point in the discussion on CCIs. Building on this work, D2.1 broadened the examination of CCIs definition considering research done by European scholars of the 1960s, 1970s and 1980s, from Baumol and Bowen up to the fundamental studies of Thorsby and then to the publication in 1998 of the Creative Industries Mapping Document in England, which makes a substantial step forward in the knowledge of the sector.

Exploiting a thorough review of existing approaches, D2.1 proposed a new taxonomy of CCIs. This new taxonomy combines the UNCTAD classification structure with the composition of cultural and creative industries identified by Santagata in 2009. Also, D2.1 introduced several dimensions through which CCIs relate to inclusive and sustainable growth.

Report D2.2 addresses the operationalization of the new CCIs taxonomy. This operationalization implies (i) detailing which are the main guidelines to follow to select adequate metrics for measuring CCIs according to the DISCE perspective, and (ii) reviewing available data which are consistent with these guidelines. Report D2.2 also introduces indicators suitable to measure the potential of CCIs for inclusive and sustainable growth, according to the aim of DISCE (DISCE, 2019, p 20).

These guidelines must assess whether the current availability of data does not allow for operationalization of specific aspects that DISCE highlights as relevant for a comprehensive understating of CCIs. This limitation is currently inherent to data operationalization targeting CCIs and it is due to several aspects that go beyond the scope of DISCE. First, the scope of statistics on CCIs is determined in different ways in different countries across Europe, as CCIs are not well defined at international level (Eurostat, 2018). Second, data often provide partial coverage of a theoretical concept. Third, countries have different laws and regulations which might influence the classification of relevant components of CCIs (Eurostat, 2018). To these acknowledged limitations in operationalizing data with regard of CCIs, other limitations descend from the novelty of the DISCE approach. By providing for the need to address CCIs and inclusive and sustainable growth, DISCE advances the need of new metrics that are currently missing. To this respect, the report advances suggestions of appropriate indicators.

Regarding available data, the operationalization considers secondary data, which are data collected by a third party (e.g. European Commission, National Statistical Offices, Research Institutions) and ready to be used by other researchers for statistical elaborations. Within secondary data, this report presents guidelines on publicly available data, such as EUROSTAT, OECD and European Commission data. The guidelines consider different types of secondary data, namely from administrative sources (such as business demography, R&D accounts, Higher Education Institutions accounts) and surveys. Survey data appear particularly relevant to design metrics for inclusive and sustainable growth, as this dimension is revealed also through people's attitudes and beliefs.

The design of these guidelines has also benefitted from four focus groups with relevant stakeholders, as detailed in a dedicated chapter of the report. Creatives and artists have been engaged to discuss and validate proposed metrics on CCIs. Ethnic minorities have been engaged for a discussion on CCIs activities is stimulating inclusivity. Overall, these focus groups allowed to discuss and validate some of the proposed metrics through a process that assigns a central role to key actors in the CCIs inclusivity dimension.

The indicators proposed by the report can be used to measure CCIs at the country level. At the same time the report extensively provides for the regional scale as the most suitable for operationalizing the

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measurement of CCIs and for measuring the role of CCIs in stimulating inclusive and sustainable growth. In doing so, the report contributes to dig into the limits of existing metrics, especially in light of the great diversity characterizing CCIs in different geographical contexts as required by the DISCE approach (DISCE, 2019 p. 33). The relevance of addressing CCIs at the regional scale results from the fact that CCIs display geographic heterogeneity across European countries and that sustainable and inclusive growth has a strong geographic dimension too. For instance, Higher Education Institutions (HEIs) introduced by the DISCE taxonomy in D2.1, and further investigated in WP3, are not uniformly distributed across country. The same applies to CCIs-related departments within HEIs and to heritage. Therefore, to investigate their effects it is important to account for their geography. Similarly, the strong role of community conceptualized through the "ecological approach" developed by DISCE (Gross *et al.*, 2019) cannot be measured aggregating figures at country level. This perspective also aligns to prominent policy initiatives such as the EU Cohesion Funds that pursue sustainable and inclusive growth addressing regions. Hence, the report operationalizes indicators that can be applied both at country and sub-country level.

The report starts by summarizing the main pillars which guide the operationalization strategy. Then, chapters 2 and 3 introduce specific CCIs dimensions that are relevant for the DISCE approach. Chapter 2 considers the operationalization of CCIs in terms of industries and sectors developed the DISCE taxonomy presented in D2.1. Chapter 3 considers how to operationalize indicators to measure the role of CCIs on sustainable and inclusive growth. For each dimension, each chapter describes available data sources together with a discussion on methodological issues regarding the DISCE approach, data limitations and other issues important to be mentioned for a given data collection. Each chapter also suggests new metrics which could improve the understanding of CCIs according to the conceptual frameworks developed by DISCE throughout its WPs. Chapter 4 details the outcomes from the stakeholders' consultations on the metrics proposed by DISCE. Chapter 5 summarizes the recommendations on data operationalization resulting from the analysis conducted in the previous chapters. Finally, chapter 6 provides the conclusions.

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1. The pillars developed by the DISCE framework for operationalizing data

1.1. Indicators to account for DISCE taxonomy

The operationalization of the DISCE CCIs taxonomy is framed by the following guidelines.

First, the CCIs box must be unfolded to develop indicators accounting for the different sectors that are detailed in the taxonomy in D2.1. This is done in chapter 2 in this report. Chapter 2 specifies available data for measuring the CCIs dimensions and sectors identified by the DISCE taxonomy. Starting from data on CCIs market-oriented enterprises, the chapter assesses their level of fit with the disaggregation of CCIs sectors advanced by the DISCE taxonomy. Then the chapter describes several indicators that can be designed using these available data to understand the outlook of CCIs. The chapter also outlines shortcoming of these data in accounting for the CCIs dimensions and sectors identified by the DISCE taxonomy and it suggests new indicators to fill these gaps. Then, Chapter 2 introduces indicators and metrics for the sectors considered in the taxonomy that are mainly non-market-oriented: education and training institutions and heritage. For these sectors, the report introduces indicators based on available statistics and presents suggestions on other statistics that should be made available to design further indicators.

Chapter 2 also considers the indicators for intangibles, i.e new ideas, knowledge, designs, and symbols. As argued in the DISCE taxonomy, intangibles are an important element in CCIs (Pica and Crociata, 2022) and they need to be measured. Being immaterial and characterized by public good features, intangibles are difficult to measure and only partially covered by figures on intellectual property rights. However, some indicators capable of conveying some measures for them are needed and suggestions on new statistics to be collected are presented.

Chapter 3 addresses the “role of CCIs in stimulating inclusive and sustainable growth”, a key point of DISCE (DISCE; 2019, p 20). Within CCIs literature, the role of culture and creativity as enabler of socioeconomic growth is prominent (UNESCO and UNDP, 2013; KEA 2015), mainly addressed at the country and cross-country level (UNCTAD, 2015). The conceptual framework developed by DISCE introduces new perspectives in addressing this nexus.

First, the DISCE taxonomy targets the role of CCIs in stimulating inclusive and sustainable growth. It does so by advancing a new perimeter of CCIs, which includes new sectors that are acknowledged by professionals and institutions as pertinent in understating what CCIs actually are. For example, this is the case for the introduction of GLAM and botanical gardens sectors in the Heritage domain. This new taxonomy can then be used to understand which is the contribution of the newly defined perimeter of CCIs to sustainable and inclusive growth (Pica and Crociata, 2022).

Second, in WP5 DISCE details that CCIs contribute to sustainable and inclusive growth also by stimulating inclusivity in the broader community (Gross *et al.*, 2019). WP5 considers how CCIs contribute to shaping peoples’ solidarity, which is a key component for sustainable and inclusive growth. In doing so, WP5 aligns to existing literature on the social reach of CCIs (Vezzali *et al.*, 2014; Alesina and Giuliano, 2015; Brown and Paterson, 2016; Giavazzi, Petkov and Schiantarelli, 2019). CCIs products and activities are capable of changing beliefs and attitudes within communities (Huggins and Thompson, 2015, 2019). They appear particularly effective in countering prejudices (Denti, Crociata and Faggian, 2021), helping communities to become more tolerant and open. Tolerance and openness greatly contribute to sustainable and inclusive growth, by stimulating collaboration, reducing risk aversion, decreasing violent behaviours and their costs (Glaeser,

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2005). Hence, this report also proposes metrics capable of measuring inclusiveness by considering attitudes towards the others. These metrics, combined with measures on the size of CCIs based on the new taxonomy, allow to measure whether the size of CCIs can influence these perceptions.

Another dimension for sustainable and inclusive growth is the protection of ideas and creations generated within CCIs, which is addressed in the DISCE taxonomy due to growing threats of discrimination for CCIs workers whose intangible production is not protected by existing legislation on intellectual property rights (Pica and Crociata, 2022). This report addresses this issue by proposing indicators to measure intangible production based on available data and detailing their shortcomings. It then advances some suggestions on indicators that would provide better picture of intangibles in CCIs if adequate statistics were made available.

The DISCE taxonomy also embeds the contribution of CCIs towards a sustainable and inclusive growth through environmental sustainability. The taxonomy introduces botanical gardens in CCIs. It also advances that environmental and production sustainability, compliance with production standards and work ethic should be measured in CCIs to fully grasp their contribution to sustainable and inclusive growth (Pica and Crociata, 2022 chapter 3). This report reviews existing statistics for detecting whether there are available and appropriate data to operationalize these dimensions and advances suggestions for data collection to miss existing gaps.

1.2. Spatial indicators are needed for inclusive and sustainable growth as well as for the DISCE approach

Among the aims of WP2 there is recasting and operationalizing CCIs in the EU by discussing the use of statistical sources, their advantages and pitfalls, to push forward the debate on data availability in Europe and to improve the available statistics (DISCE, 2019 pp. 32-33). In doing so, WP2 must dig into the limits of metrics, especially in light of the great diversity characterizing CCIs in different geographical contexts (DISCE, 2019 p. 33). This section reviews relevant strands of literature and evidence which provide the background for how DISCE approaches CCIs operationalization accounting for the aforementioned aims.

The great diversity characterizing CCIs in different geographical contexts appears to be particularly relevant for operationalizing data because of two main reasons. First, CCIs have a strong spatial dimension. Culture (as well as creativity) has a strong spatial root; it is, in essence, inextricably linked to a place or, in a more social sense, to a community and its history (Santagata, 2004). If culture is intrinsically linked to the spatial context, it follows that cultural goods are idiosyncratic (i.e. highly specific) with respect to the places of production or consumption to which they are linked (Santagata, 2004; Scott, 2000). Cultural goods, in fact, are the product of idiosyncratic factors because, in addition to explicit knowledge, they need 'tacit knowledge' to be produced. In this perspective, cultural heritage is the fruit of a stock of information and knowledge that is at the same time non-excludable and circumscribed within a geographical and community space defined by the personal experience of the individuals who make it up. Pratt (2004) draws attention to the spatial perspective of cultural production, confirming that creativity and innovation also require a context in which to be born, developed and disseminated. Various empirical studies corroborate the importance of considering the spatial dimension of CCIs in European countries (Bertacchini and Borrione 2013; Cruz and Teixeira 2015; Mommaas, 2004; Chapain et al, 2010).

Second, among the aims of DISCE there is “contributing to unlock the potential of CCIs in providing inclusive and sustainable growth” (DISCE; 2019, p 20). Inclusive and sustainable growth has a strong local dimension, up to the point that also the United Nation framework of the Sustainable Development Goals has assigned a paramount role to the local level in the global progress towards sustainable and inclusive growth (UNDP, UN-

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Habitat and Global Taskforce of Local and Regional Governments, 2016). The same perspective has been adopted by the European Commission and the OECD, given that it is estimated that 65% of SDGs will not be reached without addressing the local level (OECD, 2020). For European institutions the sub-country socioeconomic variability is a fundamental element to understand the performance of any industry as well as its effects on sustainable and inclusive growth (Dijkstra, Annoni and Kozovska, 2011)[1]. Cohesion funds are one of the most prominent policy initiatives by the European Union and they specifically target the reduction of territorial imbalance at the regional level (Monfort, 2020). Importantly, sustainable and inclusive growth entails pursuing inclusivity (UNESCO, 2017) by countering the sources of deprivation and discrimination. These sources can be fully grasped by addressing the local level as widely acknowledged by the growing research on left behind groups (Klasen and Fleurbaey, 2019; Calderon, 2021). The crucial importance of geography for sustainable and inclusive growth is corroborated also in academia. Established works show that European regions are characterized by sizable differences that need to be known and addressed to progress towards sustainable and inclusive growth (Iammarino, Rodriguez-Pose and Storper, 2019; Martin *et al.*, 2018).

Given that both CCIs and sustainable and inclusive growth have a strong geographic characterization, it is important to consider space in data operationalization. Country-level aggregate metrics could have shortcomings due to averaging figures across diverse local outlooks. And this could have non negligible policy implications. For instance, the country-level trend of employment in CCIs could be positive, and this could be interpreted as a signal that the sector is performing well. However, this positive sign could be determined by few regions within the country, while other regions experience falling employment in CCIs. These other regions might deserve policy interventions supporting CCIs, but country-level aggregate figures do not reveal this. DISCE Report D2.4 provides quantitative evidence showing that country-level measures do not account for relevant within-country difference in both the outlook and the performance of CCIs (Denti, 2022).

Practically, the report operationalizes the spatial dimension following the NUTS classification (Nomenclature of territorial units for statistics), which is a hierarchical system for dividing up the economic territory of the EU for the purpose of collection, development and harmonization of European regional statistics, socio-economic analyses of the regions and framing of EU policies (Eurostat, 2022). In the NUTS classification, the following codes apply[2]:

- NUTS0: country level
- NUTS 1: major socio-economic regions
- NUTS 2: basic regions for the application of regional policies
- NUTS 3: small regions for specific diagnoses.

DISCE guidelines suggest the NUTS2 level as the most suitable for operationalizing data, as it corresponds to the regional level, which is acknowledged as prominent for socioeconomic and policy investigation (Monfort, 2020). Also, there are extensive statistics at NUTS2 level which are interesting for the DISCE approach. On the contrary, relevant data at smaller spatial scale (NUTS3) are scarcely available.

Importantly, this report designs indicators that can be used at the county-level scale, simply by using country-level data rather than regional-level data., as showed in Report D2.4.

[1] To this regard, also OECD recognizes the regional level as pertinent to analyze industry as well as well-being (Veneri and Murtin, 2019).

[2] For a visual representation of NUTS classification of Europe according to the different codes, see the Appendix 1, further information on NUTS classification is available here: https://ec.europa.eu/eurostat/web/nuts/nuts-maps

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1.3. The operationalization strategy

The previous sections have detailed the criteria adopted to design the guidelines to operationalize data for the quantitative investigation of CCIs according to the DISCE perspective.

Hinging on these criteria, the operationalization strategy considers three pillars in data operationalization. First, the new CCIs taxonomy developed by DISCE and detailed in D2.1 (Pica and Crociata, 2022). Second, the need to provide measures for the role of CCIs in stimulating sustainable and inclusive growth, which is also corroborated by the analysis of DISCE WP5 on CCIs as promoters of solidarity and connectivity. Third, the importance of geography. Figure 1 outlines the operationalization strategy according to these pillars. Chapter 2 addresses data operationalization with respect to the first pillar: DISCE new taxonomy. Chapter 3 targets data operationalization to address the second pillar: CCIs contribution to sustainable and inclusive growth. As detailed in section 1.2 and outlined in Figure 1, the spatial dimension is cross-cutting to both CCIs and sustainable and inclusive growth; hence it will be crucial in both chapters.

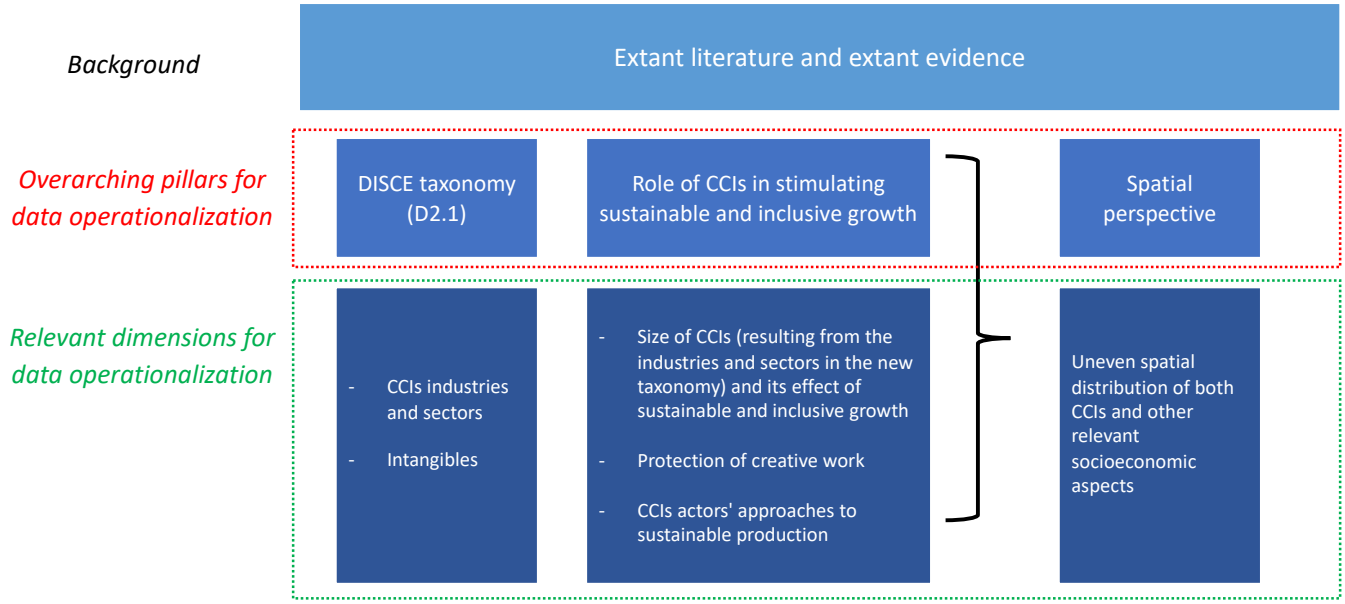

Figure 1 DISCE strategy for data operationalization of the new CCI taxonomy

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2. Operationalizing CCIs according to the DISCE taxonomy

The new DISCE taxonomy proposed in D2.1 considers the sector classification summarized in Figure 2-below.

Industries	Sectors	
Heritage	1. GLAM 2. Heritage sites 3. Architecture 4. Botanical gardens	Higher Education Institutions
Tangible culture	1. Visual arts 2. Fashion 3. Art & crafts 4. Graphics	
Media	1. Cinema & Audio-visual production 2. TV & radio 3. Press 4. Publishing	
Performing Arts	1. Performing arts 2. Music industry 3. Festivals	
Functional creations and new media	1. Software &Computer games 2. Multimedia 3. Digitalised creative content 4. Ads 5. Social media	

Figure 2 DISCE proposed taxonomy on CCIs

This taxonomy is the starting point to define a set of indicators to generate an updated and enhanced descriptive profile of the CCIs in the EU, including aspects of size, composition, economic contribution, dynamics and spatial distribution of the CCIs (DISCE, 2019). These indicators need statistics on enterprises

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and non-enterprises for each industry and sectors in Figure 2. The remaining of this chapter describes which statistics are needed to design indicators for an updated descriptive profile of CCIs in the EU. Also, these statistics should be available at regional level, for the reasons described in Chapter 1 and also because it is acknowledged by Eurostat that national figures on business demography do not reveal substantial differences between regions[3].

2.1. Indicators for the size of CCIs industries and sectors according to the new taxonomy

Statistics on the number of enterprises and non-enterprises for each sector and industry in the taxonomy allow to design indicators on the contribution of CCIs, their sectors and industries to the regional economy. Statistics for enterprises[4] are collected differently than statistics covering non-enterprises (Eurostat, 2018). Therefore, indicators are designed respectively for enterprises and non-enterprises.

Indicators on CCIs size using enterprise statistics. Using enterprises figures, the following indicators can be designed for the regional level:

- Size of each sector in the taxonomy, given by the number of enterprises active in the sector in a region over the total number of enterprises within the non-financial business economy in the region (Eurostat, 2019)
- Size of each industry in the taxonomy, given by the number of enterprises active in each sector referring to the industry in a region over the total number of enterprises within the non-financial business economy in the region
- Size of CCIs, given by the number of enterprises active in all sectors and industries identified by the taxonomy in a region over the total number of enterprises within the non-financial business economy in the region
- Trend of each sector, given by the evolution of its size along time
- Trend of each industry, given by the evolution of its size along time
- Trend of CCIs, given by the evolution of its size along time

These six indicators convey information on the contribution of CCIs, their sectors and industries to the regional economy, with a focus on the entrepreneurial component. For instance, a region where the size of CCIs is 10% is a region whose 10% of entrepreneurial outlook belongs to CCIs in a given year.

The same statistics on the number of enterprises can be used to design indicators that look inside CCIs, by measuring the relative importance of a specific industry (or sector) over the others. By doing so, these indicators provide measures for the composition of CCIs. More into details, the following indicators can be designed:

- Size of each sector (industry) within CCIs, given by the number of enterprises active in the sector (industry) in a region over the total number of enterprises within CCIs in the region
- Trend of each sector (industry) within CCIs, given by the evolution of its size within CCIs along time

For instance, the first of these indicators might measure that the size of Publishing sector in a given region amount to 25% of the whole CCIs in the same region. The second indicator might detail that Media industry

[3] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Business_demography_-_regional_analysis
[4] The enterprise is defined following the Council Regulation (EEC) No 696/93. The enterprise is the smallest combination of legal units constituting an organisational unit producing goods or services and benefiting from a degree of autonomy in decision-making, especially as regards allocating its current resources (Eurostat, 2018)

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equals to 65% of the whole CCIs in the same region. Some sectors could have size close to zero in some regions, if there are really few enterprises active in these sectors compared to the number of enterprises active in the other CCIs sectors. The same can happen to industries.

All the indicators described above can be designed using the number of establishments, rather than the number of enterprises, to account for enterprises having more than one establishment and that these establishments can be located in different regions. Technically, these indicators are designed using statistics on local units. A local unit identifies an enterprise or part thereof (e.g. a workshop, factory, warehouse, office, mine or depot) situated in a geographically identified place (Eurostat, 2021b).

Clearly, these indicators can be adjusted in a straightforward way to address the country level. It is enough to consider statistics at the country level rather than at the regional one, at the same time being aware that relevant regional differences are not visible through this approach. This holds for all the indicators and the statistics used in this report.

Indicators on CCIs size using non-enterprise statistics. All the indicators described thus far allow to compare the entrepreneurial component of CCIs with the other industries. As introduced in the new taxonomy, CCIs might also have sizeable non-enterprise actors such as foundations, charities and public sector. Therefore, the indicators described above should be considered as a lower bound for the actual size and trend of CCIs. Having additional figures on non-enterprise actors and of their establishment per industry and sector of the DISCE taxonomy would allow to design the following indicators:

- Relative weight of enterprises over non-enterprises in each sector, given by the number of enterprises that are active within the sector in a region over the sum of enterprises and non-enterprises active in the sector in the same region.
- Relative weight of enterprises over non-enterprises in each industry, given by the number of enterprises that are active within the industry in a region over the sum of enterprises and non-enterprises active in the industry in the same region.
- Trend in the relative weight of enterprises over non-enterprises in each sector, given by the evolution the relative weight in each sector along time
- Trend in the relative weight of enterprises over non-enterprises in each industry, given by the evolution the relative weight in each industry along time

Clearly, it is not advisable to design an indicator for the size of CCIs by adding up the number of enterprises and the number of non-enterprises to then compare the resulting figure with the size of other industries in the economy. This follows from the fact that also other industries might have non-enterprise actors engaged in the supply side that should be accounted for, for instance this is likely to happen in the health industry. Hence, a sound comparison of industry size using figures with both enterprises and non-enterprises needs a thorough profile of each industry in terms of enterprises and non-enterprises.

Currently, robust statistics addressing non-enterprises in CCIs are not available (Eurostat, 2018). Section 2.6 advances suggestions on data collection to overcome this limitation.

2.2. Indicators for the contribution to employment of CCIs industries and sectors according to the new taxonomy

As before, also indicators on employment must be designed recalling that statistics for enterprises are collected differently than statistics on non-enterprises (Eurostat, 2018).

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Indicators on CCIs employment using enterprise statistics. Statistics on the structure of CCIs enterprises, available combined with statistics on the total number of people employed at the regional level are useful to design the following indicators:

- Contribution to overall regional employment of enterprises in each CCIs sector (industry), given by the share of enterprises' employees in each CCIs sector (industry) on total employees in the region
- Trend in the contribution to overall regional employment of each CCIs sector (industry), given by the evolution this contribution along time
- Contribution to overall regional CCIs employment of enterprises in each CCIs sector (industry), given by the share of enterprises' employees in each CCIs sector (industry) on total CCIs employees in the region
- New job creation by enterprises in each CCIs sector (industry), given by the growth rate of employment for enterprises in each CCIs sector (industry) in each region
- Gender-equality in enterprises' employment in each CCIs sector (industry) in a region, given by the difference between female and male employment rate in enterprises for each CCIs sector (industry). This indicator also allows to compare gender-equality in enterprises' employment across CCIs sectors (industries)
- Trends in gender-equality in employment by considering the evolution along time of the previous indicator.

As before, all these indicators can be easily adjusted to fit the country level by using country statistics at the same time recalling that relevant regional differences are not visible through this approach. Also as before, these indicators just provide for enterprises and do not consider foundations, charities, the public sector. Therefore, they are likely to be smaller than total employment in CCIs.

Indicators on CCIs employment using non-enterprise statistics. Robust statistics addressing non-enterprises in CCIs are not available (Eurostat, 2018), therefore it is not currently possible to have figures on employment and its characteristics in non-enterprise actors in CCIs industries and sectors. At the same time, for employment Eurostat has designed statistics on cultural employment that breach the silo approach distinguishing enterprises and non-enterprises. These statistics are labelled "cultural employment" and are discussed below

Indicators on overall CCIs employment. Eurostat's cultural employment statistics measure all persons employed having either a cultural profession or working in the cultural sector (Eurostat, 2018). Culture employment statistics use data from the EU's Labor Force Survey which addressed workers rather than enterprises. More into details, culture employment covers occupations that are both in enterprises and not[5]. These statistics are described in details in report D2.4 as well as in other DISCE WPs (Dent *et al.*, 2020). Notably, figures on cultural employment have the advantage of providing the most comprehensive measure for people whose work relate to CCIs, at the same time not allowing to have detailed figures for each industry and sectors within CCIs. Therefore, currently it is not possible to get figures referring to each industry and sector identified by the new taxonomy. At the same time, it gives the most comprehensive figures on employment in CCIs, therefore it allows to design the following indicators:

- Comprehensive measure of CCIs contribution to overall employment, given by the share of cultural employment on total employment.

[5] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20190218-1

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2.3. Indicators for CCIs performance according to the new taxonomy

Performance of CCIs can be measured using the following indicators, again distinguishing between enterprises and non-enterprises (Eurostat, 2019).

Indicators on CCIs performance using enterprise statistics.

- Contribution of each CCIs sector (industry) in a region to income, given by the share of wages and salaries generated by enterprises in each CCIs sector (industry) on total wages and salaries generated by enterprises in the region
- Contribution of CCIs in a region to income, given by the share of wages and salaries generated by all CCIs enterprises on total wages and salaries from enterprises in the region
- Contribution of each CCIs sector (industry) in a region to Value Added, given by the share Gross Value Added of each CCIs sector (industry) in a region on total regional Gross Value Added
- Contribution of CCIs in a region to Value Added, given by the share Gross Value Added of the whole regional CCIs on total regional Gross Value Added
- Weight of each CCIs sector (industry) trade in the region, given by the value of international exchanges of each CCIs sector (industry) products. This indicator uses the following statistics: export and import values in absolute and relative terms (EUR million and as a share of total trade), extra-EU and intra-EU trade; the type of goods traded. It then measures the weight of each statistic on the value of the same statistic applied to the overall regional economy.
- CCIs sectors (industries) dynamisms, given by several indicators:
    - Rate of new firm creation per CCIs sector (industry) in a region, given by the number of enterprise births in each CCIs sector (industry) in a region expressed as a percentage of all active enterprises in the region.
    - Firm death rate per CCIs sector (industry) in a region, as the number of enterprise deaths in each CCIs sector (industry) in a region, expressed as a percentage of the total population of active enterprises in the same region
    - Firm survival rate per CCIs sector (industry) in a region, that is generally applied using newly-born enterprises as target population. The indicator is given by the number of enterprises that were born in year xx-n and survived to year xx, expressed as a percentage of the total number of enterprises born in year xx-n (Eurostat, 2019).
    - The three indicators above can be used for CCIs as a whole simply by summing figures for all CCIs sectors and industries present in the region.

Indicators on CCIs performance using non-enterprise statistics. Clearly, these indicators are the same as the one described for enterprises, simply using statistics from non-enterprise actors in CCIs sectors and industries. Given the lack of robust data on non-enterprises in CCIs, indicators on non-enterprises cannot be operationalized at the moment. More on this will be detailed in the suggestions on new statistics to be collected at the European level.

2.4. Applying indicators to the new taxonomy with available data

Translating the new conceptualization of the DISCE taxonomy into the statistical indicators detailed above encounters limitations due to the actual practical coverage of existing statistics. This “curse” is not surprising, as it also characterizes established operationalization of CCIs (Eurostat, 2018). Notwithstanding acknowledged obstacles, available data allow for operationalizing existing sectors within CCIs, also accounting for the importance of having indicators at regional level.

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The baseline assessment on this regard refers to the level of fit between existing statistics suitable to design the indicators detailed in section 2.1-2.3 and the new DISCE taxonomy. This is done in section 2.5. It has already been clarified that statistics on non-enterprises are not available. Therefore, this assessment considers available statistics on enterprises. Section 2.6 provides suggestions on statistics needed to include non-enterprises into measurement.

2.5. Operationalizing indicators using data on enterprises

Eurostat provides several regional statistics covering economic activities classified in sectors that align, although not perfectly, with several sectors identified in the DISCE taxonomy. Before detailing these statistics, it is important to check the level of fit between sectors covered by Eurostat and the DISCE taxonomy. Table 1 details the sectors covered by Eurostat data, which result from the NACE Rev.2 sector classification[6].

Table 1 Available data on Cultural and creative sectors (economic activities — NACE Rev. 2) at NUTS2 level

C18	Printing and reproduction of recorded media
J58	Publishing of books, periodicals and other publishing activities
J59	Motion picture, video and television programme production, sound recording and music publishing activities
J60	Programming and broadcasting activities
J62	Computer programming, consultancy and related activities
J63	Information service activities
M71	Architectural and engineering activities; technical testing and analysis
M72	Scientific research and development
M73	Advertising and market research
M74	Specialised design activities, Photographic activities, Translation and interpretation activities

NACE Rev 2 classification represents the established international standard for the classification of economic activity; therefore, it is the structure governing the production of statistics on CCIs enterprises across institutions in Europe. Although the classification advanced in the new DISCE taxonomy suggests new ways for data collection based on theoretical premises, the actual and present-day operationalization of data must rely on what is currently available as robust and harmonized figures.

Comparing data for CCIs sectors available from Eurostat summarized in Table 1 with the CCIs sectors identified by the DISCE taxonomy outlined in Figure 2, it appears that figures from Eurostat provide a good coverage of sectors for the following DISCE taxonomy industries.

- Media: Cinema & Audio-visual production, TV & radio, Press, Publishing are covered by Eurostat data on CCIs enterprises coded C18, J58, J59, J60, J63

[6] NACE is the "statistical classification of economic activities in the European Community" and is the subject of legislation at the European Union level, which imposes the use of the classification uniformly within all the Member States (Eurostat, 2008). See the Appendix 2 for more details

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- Functional creations and new media: Software & Computer games, Multimedia, Digitalised creative content, Ads are covered by Eurostat data on CCIs enterprises coded J62, M73. Also M72 partly relates to the industry, given the scientific components in software.
- Arts: Music is covered by Eurostat data on CCIs enterprises coded J59 and there is also coverage of Photography by CCIs enterprises coded M74.

Clearly, it appears that the available statistics are more appropriate for addressing the industry level rather than the sectoral one, as some NACE Rev.2 codes used by Eurostat appear to overlap across several sectors identified by the DISCE taxonomy. This happens for instance with NACE Rev.2 code J59, which clearly relates to the Media industry in the DISCE taxonomy. At the same time, code J59 refers to two sectors inside the Media industry: Cinema& Audio-visual production and TV&Radio. Therefore, data operationalization considers the mapping between industries from DISCE taxonomy and NACE Rev.2 codes summarized in Table 2.

Table 2 Mapping CCIs industries from the DISCE taxonomy to NACE Rev.2 classification

Media	**C18**	Printing and reproduction of recorded media
	J58	Publishing of books, periodicals and other publishing activities
	J59	Motion picture, video and television programme production, sound recording and music publishing activities
	J60	Programming and broadcasting activities
	J63	Information service activities
Functional creations and new media	**J62**	Computer programming, consultancy and related activities
	M72	Scientific research and development
	M73	Advertising and market research
Performing Arts	**J59**	Motion picture, video and television programme production, sound recording and music publishing activities
	M74	Specialised design activities, Photographic activities, Translation and interpretation activities
Heritage	**M71**	Architectural and engineering activities; technical testing and analysis
Tangible culture	**na**	na

It is clear that some industries and sectors identified in the DISCE taxonomy are not covered by Eurostat data on CCIs enterprises. This happens for the Heritage sectors aside Architecture. It happens also for Tangible culture industry. Eurostat statistics do not cover libraries, archives, museums and other cultural activities, arts, creative and entertainment activities[7] (Eurostat, 2018). Design fashion figures cannot be extracted from the manufacturing statistics referring to textile, apparel, leather products that sum design fashion with production that does not assign great importance to design [8]. Sections 2.5-2.6 proposes metrics and data to

[7] Eurostat Structural Business Statistics do not cover neither NACE Rev.2 R90 (Creative, arts & entertainment activities and R91 (Libraries, archives, museums & other cultural activities). Eurostat Business Demography statistics have figures for both R90 and R91, but these statistics are collected on a voluntary base, hence they do not allow for robust comparison. This applies to data from the country level to the sub-country level.

[8] See statistics on NACE Rev 2 C13-C15 and sub digits

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contribute to the operationalization of the CCIs industries that are scarcely covered by available statistics based on NACE Rev.2 codes.

Another important point is that the Eurostat Structural Business statistics cover market-oriented enterprises only. Hence, also for the industries and sectors of the DISCE taxonomy that that are well-represented in the Eurostat Structural Business statistics, available figures are likely to underestimate the actual size of each industry.

Notably, all these limitations do not change depending on the spatial lens: country data have the same coverage of regional data.

Notwithstanding these limitations, Eurostat data on CCIs enterprises convey one of the most comprehensive data sources for CCIs-related enterprises that can be interpreted as lower bounds. More into details, Eurostat provides a wide array of economic figures on CCIs enterprises covered by the NACE Rev.2 classification summarized in Table 2, which allow for an extensive operationalization of the indicators described in section 2.1-2.3 for the following industries in the DISCE taxonomy: Media, Functional creations and New media, Performing Arts (limited coverage). As said above, operationalization focuses on the industry-level of the new taxonomy, since its sectoral level has classes that overlap across Eurostat classification based on NACE Rev.2.

Eurostat Structural Business Statistics (SBS) provide multi-year statistics suitable for operationalization of several indicators that are relevant to understand the economic performance of CCIs across Europe. SBS statistics follow NACE Rev.2 codes, therefore indicators designed using these statistics cover the industries summarized in Table 2. More into details, the following indicators can be designed using the SBS database (database code: SBS_R_NUTS06_R2):

Indicators for the size of CCIs industries according to the new taxonomy (from section 2.1)

- Indicators for the size of regional CCIs industries Media, Functional Creation and new media, Performing Arts using the percentage share of local units with the NACE Rev.2 codes mapped in Table 2 on total count of local units. These figures are available at regional (NUTS2) level.
- Trend of each one of these industries, given by the evolution of its size along time in each region.

Indicators for the contribution to employment of CCIs industries sectors according to the new taxonomy (from section 2.2)

- new job created by CCIs industries Media, Functional Creation and new media, Performing Arts, using data on the growth rate of employment for each NACE Rev.2 code listed in Table 2, provided by Eurostat through the Structural Business Statistics database. These figures are available at regional (NUTS2) level.

Then, integrating the Eurostat SBS database with the EU Labor Force Survey (LFS), several indicators for CCIs performance still focusing on enterprise can be designed as suggested by section 2.3. More into details:

- contribution of CCIs industries Media, Functional Creation and new media, Performing Arts on regional income. This indicator considers the ratio of regional yearly data on wage and salaries from these industries on regional yearly data on overall wage and salaries. Figures on wage and salaries for both CCIs and the overall economy are provided by Eurostat through the SBS database and the LFS[9]. These figures are available at macro regional (NUTS1) and regional (NUTS2) level.

A final indicator can be designed using SBS statistics is useful to measure the evolution in the sectoral composition of CCIs, which is relevant to understand whether CCIs in a place either diversify or move towards

[9] Eurostat datasets: reg_lcs_r2, LC_RCOST_R2, SBS_R_NUTS06_R2

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having only few sectors. More into detail, this indicator can be designed using data on the evolution of the number of existing local units for each CCIs industry listed in Table 2, provided by Eurostat through the SBS database. A local unit identifies an enterprise or part thereof (e.g. a workshop, factory, warehouse, office, mine or depot) situated in a geographically identified place (Eurostat, 2021b). The trend in the relative size of each CCIs sector, proxied by its share of local units on total CCIs local units, shows if each sector is either growing or shirking compared to the other CCIs sector along time.

Table 3 below summarizes the indicators that can be operationalized using existing statistics on enterprises. As already pointed out, these indicators measure a lower bound given that: non all the industries in the new taxonomy are covered by existing statistics on enterprises and non-enterprise actors are missing from available statistics. For each indicator, the table details also the statistics used to design the indicator, their source and other important characteristics enabling to have indicators with a EU coverage and robust measures for the regional spatial scale.

Table 3 DISCE operationalization of several indicators for enterprises for several CCIs industries of the DISCE taxonomy (Media, Functional creation and new media, Performing Arts)

Dimension	DISCE indicator	Statistics	Source	EU harmonized	Regional-level data (NUTS2)
CCIs sectors: enterprises	Size of each CCIs sectors	Local units for CCIs sectors	EU Structural Business Statistics	Yes	Yes
	CCIs diversification	Relative size of CCIs sectors measured through the number of local units	EU Structural business statistics	Yes	Yes
	Contribution of CCIs to the overall economy	New job creation per CCIs sector	EU Labor Force Survey	Yes	Yes
	Income generated by CCIs sectors	Wages & salaries per CCIs sector	EU Structural Business Statistics Labour Force/Cost Survey	Yes	Yes

Having presented the indicators about CCIs enterprises which can be built using available data and that are coherent with the DISCE taxonomy, it is important to detail relevant indicators (and the related statistics to build them) which could contribute to the empirical measurement of the new taxonomy developed by DISCE.

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First, all indicators outlined in Table 3 do not cover relevant CCIs industries identified in the new DISCE taxonomy. As stated above, Heritage sectors, many Arts sectors and Tangible culture sectors are not covered by Eurostat figures. Having harmonized information across European regions on NACE Rev.2 codes 90 and 91 would contribute to fill this gap, allowing to broaden the coverage of indicators on new job creation, income generated by CCIs, size of CCIs sectors and CCIs industry diversification. With respect to Tangible culture sectors, currently NACE Rev.2 data does not allow to discriminate enterprises along their creative content. For instance, data are available for wearing apparel companies, with no possibility to discriminate Fashion companies from industrial clothing production[10].

Second, self-employed enterprises are recognized as a relevant component of CCIs, hence EU harmonized statistics capable of appropriately measure this aspect are needed. It is acknowledged that existing figures on self-employed enterprises have strong limitations, starting from the threshold for the inclusion of very small units into business statistics varies across EU member states (European Commission, OECD and Eurostat, 2007). At the same time, this information gap is relevant for CCIs.

Third, financial sustainability is a key element for CCIs. Small and Medium Sized Enterprises in CCIs encounter structural difficulties in accessing bank financing, creative workers have difficulties in getting economic rewards for their skills and the overall sector suffers from high level of precariousness (Comunian, Faggian and Li, 2010; Borin, Donato and Sinapi, 2018; Comunian and England, 2020). Out of this picture, public support for CCIs is a relevant feature (Florida and Seman, 2020). The regional dimension appears crucial, as regional public funding supporting CCIs is a widespread policy tool. Also, other sources for funding, such as foundations, have a strong local dimension too. Hence, having figures on local funding benefitting CCIs could allow to design metrics for the financial sustainability of CCIs. Notably, combining this indicator with the existing indicators on employment and new job creation could allow to investigate the relationship between different structures for financial sustainability of CCIs and their economic performance. To this respect figures on central governments expenditure need a more precise classification of public expenditure components (Eurostat, 2018). Alongside central governments, regional governments are a relevant source of funding for cultural institutions and activities, overseeing local development strategies, and several aspects of education, tourism and culture in many European countries. Often regions finance these policy initiatives through fiscal policy and using European funds. Hence, harmonized figures on public spending by regional governments are needed. A preliminary indicator of regional expenditure on CCIs can be designed exploiting the available data on European Structural and Investment Funds. Data for the 2006-2014 period are available at regional level (NUTS2) through the Cohesion Data Platform of the European Commission (European Commission, 2022b) and they allow to have regional figures on the amount of European Structural and Investment Funds targeting projects CCIs-related areas, i.e. Tourism, Culture, Urban and Rural regeneration, Infrastructure. These data convey a measure of the capacity of regions to get European funding to support CCIs, both directly and indirectly. Hence, they allow design indicators of the regional governments' efforts in supporting CCIs through public spending. Report D2.4 exploits these figures to design and test several indicators for regional governments' expenditure on CCIs.

Fourth, as recalled above, Eurostat data allow to design indicators regarding enterprises only. Within CCIs, non-enterprise organizations are relevant actors (Eurostat, 2018). To account for this, there is the need of having indicators measuring the relative weight of non-enterprise organizations compared to enterprise organizations, as well as metrics assessing how non-enterprise organizations performs in terms of new job creation, income generation, CCIs diversification.

[10] Currently Eurostat NACE Rev.2 data considers the following classifications: Manufacture of Textiles, Manufacture of wearing apparel, Manufacture of leather and related products

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Fifth, regional data on business demography, such as enterprise death rates or enterprise survival rates are needed. As pointed out by Eurostat, business demography statistics at the national level do not reveal substantial differences between regions[11]. Currently, regional-level data on business demography are collected by the OECD Regional Business Demography Database[12]. This database uses the ISIC Rev.4 classification, which is the International Standard Industrial Classification of All Economic Activities, Revision 4. Difference between ISIC Rev. 4 and NACE Rev.2 are addressed by harmonization methodologies. Also, Eurostat adopts the NUTS classification outlined in Chapter 1, section 3. OECD organizes spatial units according to its own classification system that pivots on Territorial Levels (TLs), which do not entirely align to NUTS classification. More into details, OECD considers two sub-country territorial scales: TL2 corresponding to macro-regions and TL3 corresponding to micro-regions. TL2 regions are largely consistent with the Eurostat NUTS2, except for France, Germany, Belgium, Norway and the UK. These differences have to be considered in aggregating statistics in comparable units. With these caveats in mind, the OECD Regional Business Demography Database contains figures that could be used to build indicators on CCIs firms' performances in terms of firms' survival trends, new firm creation, and firm deaths. The current limitation in using these data is due to the sectoral coverage of available figures. Notably, OECD Regional Business Demography Database has figures at regional level covering enterprises in the Arts, entertainment, and recreation sector (Code R). These figures are unfortunately together in a single bundle with figures on enterprises in other service activities which include labour unions, business representatives, laundry services, hairdressers (Code S). Having regional figures on enterprises belonging to Code R alone would be greatly useful for operationalizing data on CCIs.

Also, statistics on Gross Value Added generated by CCIs and disaggregated by the industries and the sectors identified by the new taxonomy are needed at regional level.

Section 2.3 lists also indicators on the weight of each CCIs sector (industry) trade in the region as important to measure CCIs performance. According to the ESSnet-Culture final report and the UNESCO's framework for cultural statistics, trade is a relevant dimension for CCIs, as it works as proxy for the transmission of CCIs goods, values and ideas (Eurostat, 2018). Operationally, existing European statistics on trade have several limitations which prevent their use within the DISCE approach. First, the classification of traded goods in use sometimes makes it impossible to identify the cultural content. Also, sometimes the lack of information on the production process and a lack of distinction between crafts and industrial manufacturing make it impossible to classify some products as 'cultural' (Eurostat, 2018). Therefore, measurement errors are a source of concern when it comes to operationalization. Another shortcoming of trade statistics is given by their coverage. In fact, international trade in goods statistics provide data on trade in tangible goods only, hence no information is available for services, licenses, intellectual property rights or digital content such as music, films and video games available via streaming platform (Eurostat, 2018). Further, there are measurement issue affecting European countries with big ports at the external EU border, such as the Netherlands. These countries might record goods arriving in the national ports and destined for other Member States as extra-EU imports. Then, the same goods are dispatched as intra-EU exports to other Member States, even though there is no impact on the national economy. Hence, in these countries the classification of international trade in good statistics might over-value the actual transit of goods (Eurostat, 2018). Finally, statistics are available at country level, whereas for DISCE it would be important to assess the relevance of trade for CCIs with respect to the regional dimension. This would allow to know the geographical reach of regional CCIs outside the regional borders. Hence, it would be particularly important to collect statistics on international trade in CCIs goods capable of overcoming the existing limitations acknowledged by Eurostat and containing information on the regional origin of the traded goods.

[11] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Business_demography_-_regional_analysis
[12] The database can be accessed here: https://stats.oecd.org/Index.aspx?DataSetCode=REGION_DEMOGR

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Table 4 summarizes the potential indicators which would greatly contribute to a comprehensive understanding of CCIs regarding their sectoral composition and the relative performance of each sector.

Table 4 DISCE suggestions for an improved accounting of CCIs industries and sectors across Europe

Dimension	Proposed indicator	Required statistics	EU harmonized	Regional-level data (NUTS2)
CCIs sectors: enterprises	Enterprises in the DISCE taxonomy industries: Heritage and Performing Arts	SBS and LFS statistics on missing NACE Rev.2 codes: -libraries, archives, museums and other cultural activities (NACE Rev.2 Code 90) -arts, creative and entertainment activities (NACE Rev.2 Code 91; OECD ISIC Rev.4 Code R)	Yes	Yes
	Self-employment in CCIs across sectors	-statistic on self-employed for CCIs industries and sectors (all relevant NACE Rev.2 codes)	Yes	Yes
	Financial outlook of CCIs	Share of CCIs units benefitting from external non-for-profit funding (eg. crowdfunding, national and international grants) for NACE Rev2 relevant sectors (all relevant NACE Rev.2 codes	Yes	Yes
	enterprise death rates enterprise survival rates	OECD Regional Business Demography Database data disaggregated for CCIs industries (Code R separated from Code S)	Yes	Yes
	Gross Value Added generated by each CCIs industry in the taxonomy	GVA statistics for NACE Rev2 relevant sectors (all relevant NACE Rev.2 codes	Yes	Yes
	Weight of each CCIs industry trade	Improved European statistics on trade	Yes	Yes
CCIs sectors	Relevance of non-enterprises in CCIs	share of non-for-profit companies, foundations, charities and public services for NACE Rev2 relevant sectors (all relevant NACE Rev.2 codes	Yes	Yes

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2.6. Operationalizing indicators for the DISCE taxonomy using other data

Heritage. The new DISCE taxonomy includes Heritage among CCIs, as it is acknowledged in the literature that Heritage might favor CCIs, since local endowments of cultural amenities offers opportunities for creative enterprises and cultural works (Comunian, Chapain, & Clifton, 2010). Operationally, the importance of statistics on heritage was also recognized by the ESSnet Culture framework, although the practical implementation is still characterized by relevant limitations on available figures (Eurostat, 2018).

EU SBS data considers only enterprises in the architectural sector (M71, Table 2). EU harmonized data on museums are particularly limited and the EGMUS statistics are identified as the most accurate source of information on European museums (Eurostat, 2018). However, EGMUS figures are not harmonized in terms of timeliness of data, spatial coverage, information collected (Eurostat, 2018). These shortcomings prevent comparability across EU countries. Another relevant limiting factor of EGMUS figures is that the statistical scope and observation unit (museum) are not defined according to the same criteria in all countries (Eurostat, 2018).

Other components of heritage cannot be compared across EU countries since each country selects the objects to include in the national heritage with different criteria. For instance, the number of cultural sites registered on the UNESCO list or in possession of the European Label have comparability issues as each country selects its cultural sites on selection criteria which are nationally shaped (ESPON, 2021). Currently, Eurostat is working on experimental statistics to make the number of sites registered in the World Heritage List comparable. This new methodology weights each World Heritage site by its popularity measured through online visits on Wikipedia for each UNESCO World Heritage Site. At the moment, these experimental statistics are operationalized on a pilot sample of 20 cultural sites with a global coverage, therefore they cannot yet be used for a European-wide measurement. However, they represent a promising operationalization strategy which could benefit the operationalization of the Heritage industry of the DISCE taxonomy in the future[13].

To provide support to the ongoing institutional efforts for EU harmonized statistics for the Heritage industry identified by the DISCE taxonomy, this report advances some suggestions on possible indicators.

First, an example of operationalization on cultural heritage given by the ESPON HERIWELL project which has built a database on tangible cultural heritage (Espon, 2020). In particular, the HERIWELL database collects data to measure the following indicator:

- Territorial stock of heritage: sum of historical (pre-1919) dwellings and material cultural heritage in per capita terms at regional (NUTS2) level. Data for historical dwellings come from the EU Census Hub, figures on material cultural heritage come from the ESPON database. The indicator covers 11 countries.

Table 5 summarizes the proposed indicator for Cultural Heritage and its characteristics. Report D2.4 provides several measures for the association between this indicator measured through ESPON data and CCIs.

[13] It is worth mentioning that the 2019 Eurostat Cultural Statistics report (EUROSTAT, 2019) provides a list the European heritage recognized by the UNESCO World Heritage list, which could represent the information-base to widen the application of the Eurostat experimental statistic to make the number of sites registered in the World Heritage List comparable

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Table 5 DISCE operationalization of Cultural Heritage

Dimension	DISCE indicator	Statistics	Source	EU harmonized	Regional-level data (NUTS2)
CCIs industry: heritage	Indicator for the territorial stock of cultural heritage	sum of historical (pre-1919) dwellings and material cultural heritage in per capita terms	ESPON	Yes	Yes

Although having a limited coverage of European countries and the impossibility of discriminating between historical dwellings along their quality, this indicator has been designed to allow for a sound quantitative measure of tangible cultural heritage covering the sub-national geographic dimension. Hence, it represents a consistent, although preliminary, indicator to measure cultural heritage according to the DISCE approach. This indicator would contribute to measure the size of CCIs, by adding to existing measures based on enterprises, summarized in Table 3.

Second, the relevance of Heritage for CCIs explained in D2.1 calls for more indicators than the ones that are currently available. An indicator is suggested for botanical garden, another sector contributing to the Heritage industry according to the DISCE taxonomy. Currently, extensive information on botanical gardens across European countries are available through the GardenSearch database maintained by Botanic Gardens Conservation International[14]. This database is primarily provided and managed by individual institutions, hence there is no guarantee of either completeness or accuracy of data. This limitation currently prevents using these data for operationalization, due to the potentially relevant measurement bias[15]. As for Heritage, this indicator would contribute to measure the size of CCIs, by adding to existing measures based on enterprises.

GLAM (galleries, libraries, archives, and museums) are relevant in DISCE taxonomy since they are a sizeable component of CCIs as detailed in D2.1. At the moment, there are no EU harmonized official statistics covering GLAM and their collections. The existing limitations on museum statistics described above are an example of current shortcomings, as well as the absence of Eurostat statistics on Nace Rev.2 code 90. A promising initiative is the Open GLAM data[16], which contains information on a subset of GLAM having open data policy. Clearly, this database suffers from the relevant drawback of its limited coverage and comprehensiveness, since all GLAM with no open data policy are not considered. At the same time, it provides an interesting suggestion on how to address statistics design addressing GLAM.

Intangible Cultural Heritage (ICH) represents another key component. ICH consists of oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts (UNESCO, 2022). To this regard, a consistent starting point for statistics operationalization is given by the UNESCO lists of ICH manifestations[17]. Now the UNESCO lists contain a narrow count of ICH practices. The bigger bulk of these practices is listed in inventories

[14] https://tools.bgci.org/garden_search.php

[15] Another possible source is a MarketResearch database, which is not publicly available, but can be purchased at: https://www.marketresearchreports.com/datagroup/zoos-botanical-gardens-europe-report-database. However caveats about its coverage and accuracy remain.

[16] https://medium.com/open-glam/four-years-of-the-open-glam-survey-eadebf8bd743

[17] The three lists are: Representative List of the Intangible Cultural Heritage of Humanity, List of Intangible Cultural Heritage in Need of Urgent Safeguarding, Register of Good Safeguarding Practices. More info can be found at this link: https://ich.unesco.org/en/lists

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managed by national or regional/local authorities in many European countries or documented in national and/or academic inventories. This implies the current unavailability of comprehensive statistics on Intangible Cultural Heritage across Europe (ESPON, 2021). Hence, it is proposed to measure the European endowment of ICH embedding the UNESCO methodology in a EU harmonized framework and asking national, regional and local authorities to provide information on their endowment of ICH.

Hence, these indicators would allow to have measures for the size of CCIs industry Heritage. By adding these measures to the ones covering the other industries in the taxonomy, it would be possible to have comprehensive measures for the size of CCIs and the relative size of each CCIs industry and sectors within CCIs. First, a comparable inventory of heritage sites for European countries would fill the current information gap on one of the most prominent components of Heritage.

Table 6 summarizes the indicators that could greatly contribute to a comprehensive measurement of Heritage industry within CCIs.

Table 6 DISCE suggestions for an improved accounting of Heritage regarding CCIs across Europe

Dimension	Proposed indicator	Required statistics	EU harmonized	Regional-level data (NUTS2)
CCIs industry: heritage	Size of Heritage industry: Heritage sites	Consolidation of the Eurostat experimental statistics on Heritage Sites	Yes	Yes
	Size of Heritage industry: botanical gardens	Institutional validation of the geolocalized information contained in the GardenSearch database	Yes	Yes
	Size of Heritage industry: GLAM	Production of an EU inventory of GLAM institutions and related collections	Yes	Yes
	Size of Heritage industry: Intangible Heritage	Count of Intangible Cultural Heritage manifestations according to UNESCO criteria	Yes	Yes

These indicators and the necessary statistics only contribute to a more refined measurement of the size of CCIs and of its industries and sectors. At the same time, they are the necessary starting point for further data collection targeting employment, wages and salaries, which could then be implemented following the same framework used for enterprises in Structural Business Statistics data collection.

Performing Arts. Currently there are limited data. Enterprise data cover the Music sector as outlined in Table 3. The Eurostat Perception Survey Results database only contains information on citizens' perception of

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cultural facilities[18]. The Cultural and Creative City Monitor (Montalto *et al.*, 2019) does not target the offer of cultural activities and performing arts. For what concerns festivals and photography, a European database is missing and there is a lack of national institutions with a mandate to collect data.

Hence, this report suggests collecting statistics on the regional production of Performing Arts by advancing a possible indicator summarized in Table 7.

Table 7 DISCE suggestions for an improved accounting of Performing Arts

Dimension	Proposed indicator	Required statistics	EU harmonized	Regional-level data (NUTS2)
CCIs industry: Performing Arts	Size of Performing Arts: Performing arts and Festivals	Developing statistics for: - Performing Arts production - Festivals	Yes	Yes

Tangible culture. Regarding this industry, a relevant limitation for suggesting indicators is given by the complexity of addressing the most relevant sector within the industry, Fashion. It appears highly complex to separate Fashion figures from the manufacturing statistics referring to textile, apparel, leather products that sum design fashion with production that does not assign great importance to design [19]. This point would need an agreed definition for the fashion component in textile, apparel, leather across member states, together with adequate procedure to map this component in those companies that produce both design fashion and items with no importance to design. Hence, suggesting indicators and statistics to this regard does not appear appropriate now.

2.7. CCIs and Higher Education Institutions (HEIs): production of CCIs-related skills, knowledge and ideas

Literature addressing CCIs and their contribution to sustainable and inclusive growth assigns a central role to the linkage between CCIs and Higher Education Institutions (HEIs). Both CCIs and HEIs are sources of innovation and new ideas, whose supply is needed for sustainability (Lazzaro, 2021). Aside for being independently relevant for sustainable and inclusive growth, CCIs and HEIs are intertwined. CCIs could benefit from HEIs as the latter provide both skills and knowledge spillovers, which are key factors for CCIs economic success (Comunian, Taylor and Smith, 2014; Comunian, Gilmore and Jacobi, 2015). At the same time, the local presence of CCIs can attract students who enroll in CCIs-related HEIs programme at the local HEIs (Comunian and Faggian, 2011, 2014). For these reasons, HEIs are a key cross-cutting domain considered in the DISCE taxonomy as summarized in Figure 2.

Therefore, for DISCE it is relevant to acknowledge this bulk of extant literature and accounting for the association between CCIs and HEIs in operationalizing data. It is clear from existing literature that addressing

[18] https://ec.europa.eu/eurostat/databrowser/view/urb_percep$DV_170/default/table?lang=en; These data cover citizens' satisfaction levels for the cultural offer of several cultural facilities. This database only covers cities and it also has comparability issues (https://ec.europa.eu/eurostat/cache/metadata/en/urb_esms.htm)

[19] See statistics on NACE Rev 2 C13-C15 and sub digits

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this point in the perspective of data operationalization implies assigning a central role to the spatial dimension. HEIs are spatially localized as well as their knowledge spillovers (England and Comunian, 2016; Lazzaro, 2021).

A recent European Commission initiative provides data that are particularly suitable for operationalizing this aspect. The European Tertiary Education Register (ETER), funded by the European Commission, Directorate General for Education Youth, Sport and Culture is a comprehensive register of HEIs delivering degrees ranging from short diplomas to PhD[20]. ETER provides data on more than 2,500 higher education institutions (HEIs) in 36 European countries for the years 2011-2016, covering more than 22 million undergraduate students (European Commission DG Education Sport and Culture Youth *et al.*, 2017). Data are available at the level of each individual HEI and they include:

- geographical information for each HEI, including the region of location (NUTS2), hence allowing to operationalize data at the regional level.
- total number of students per degree type
- number of students per degree type enrolled in CCIs-related fields: Arts and Humanities, Social Sciences Journalism and Information and ICT
- share of PhD researchers engaged in CCIs-related fields
- basic information on the type of HEI: university, technical university, academy of arts, etc.

With these data it is possible to design the following indicators:

- Local (regional) supply of CCIs skills, given by the share of students enrolled in CCIs-related fields.
- Local (regional) research generated in CCIs-related fields, given by the share of researchers in CCIs-related fields.
- Local (regional) availability of CCIs- related knowledge infrastructures, given by the count of HEIs with a specific focus on CCIs

Table 8 summarizes the proposed indicators and their characteristics. Report D2.4 provides several measures for the association between HEIs indicators measured through ETER data and CCIs.

Table 8 DISCE operationalization of HEIs

Dimension	DISCE indicator	Statistics	Source	EU harmonized	Regional-level data (NUTS2)
HEIs	Local supply of CCIs skills	Share of students in CCIs related fields	ETER	Yes	Yes
HEIs	Local research in CCIs-related fields	Share of researcher in CCIs related fields	ETER	Yes	Yes
HEIs	Local availability of CCIs-related knowledge infrastructures	Number of CCIs specific HEIs	ETER	Yes	Yes

[20] https://www.eter-project.com

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2.8. Indicator for CCIs contribution to the economy

The previous sections have described the existing limitations preventing a quantitative measurement of the entire set of industries identified by the DISCE taxonomy. It has been stressed that the indicators that can be designed with available data provides a lower bound for the actual outlook of CCIs. Limited coverage of Eurostat statistics on enterprises and the great scarcity of figures on non-enterprises do not allow to have indicators for all the industries in the DISCE taxonomy on many dimensions. Hence, new indicators and data needed to design them have been suggested.

Currently, available data allow to design an indicator that gives a comprehensive measure of the contribution of the overall CCIs to the economy in terms of employment (Duranton, Rodríguez Pose and Sandall, 2009). More into details, Eurostat's cultural employment statistics measure all persons employed having either a cultural profession or working in the cultural sector (Eurostat, 2018). Culture employment statistics use data from the EU's Labor Force Survey which addressed workers rather than enterprises and they cover enterprises and non-enterprises[21]. Culture employment statistics allow to design the following indicator:

- Comprehensive measure of CCIs contribution to overall employment and the economy, given by the share of cultural employment on total employment.

Table 9 DISCE operationalization for the contribution of CCIs to employment and the economy

Dimension	DISCE indicator	Statistics	Source	EU harmonized	Regional-level data (NUTS2)
All CCIs	Contribution of CCIs to the overall economy	Culture employment	Eurostat	Yes	Yes

2.9. Indicators for intellectual, aesthetic and symbolic components of goods: measuring immaterial components of goods

The CCIs taxonomy developed in D2.1 recognizes the increasing importance of intellectual, aesthetic and symbolic components of goods in nowadays markets and the relevance of this for CCIs (Pica and Crociata, 2022). Taking this point to the "practical" statistical operationalization encounters several challenges and limitations, starting from the acknowledged difficulties of measuring ideas and innovation (Charlot, Crescenzi and Musolesi, 2015). Not all ideas, designs and innovation get either patented or legally protected in other ways. Hence, looking at data on patents would provide a sizeable underestimation.

Indicators using input data appear more suitable, since they allow to measure the effort devoted to new knowledge creation irrespective to the output of this process. Thus, it is proposed to consider several existing indicators quantifying different measures for inputs used to create new knowledge. Eurostat and the European Commission provide the following data suitable for designing indicators on immaterial goods:

[21] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20190218-1

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- the share of knowledge workers on total workers, measured through the EU Labour Force Survey and available at regional (NUTS2) level through the European Commission database on regional competitiveness
- the share of people employed in Science and Technology activities at regional level on total workers, collected in the EU Regional S&T statistics
- the share of R&D expenditure on total GDP at regional level, collected in the EU Regional S&T statistics. This measure goes beyond data on employees, considering all the costs associated to R&D production

It is then considered an indicator for intangible output capable of overcoming the limited coverage of patenting on knowledge creation:

- number of scientific publications per inhabitants, available at the regional level through the European Commission database on regional competitiveness and collected using data from ScienceMetrix Scopus

It is also possible to use an indicator capable of accounting for cross-contamination of intangibles across CCIs which also exploits the industry classification for CCIs introduced by the new DISCE taxonomy. More into details, using Eurostat SBS data on CCIs sectors according to NACE Rev.2 classification, it is possible to design an indicator to measure the evolution of the size of each industry within CCIs relative to the size of the other CCIs industries present in the region. If there are CCIs industries that are becoming smaller along time while other grow, this might suggest that new knowledge generated in the region is the type of knowledge supporting specialization in specific industries against others in CCIs. On the contrary, if a region experiences a general increase in the size of most CCIs industries along time, then it might be that new knowledge generated in the region is the type of knowledge supporting diversification of CCIs sectors.

In practical terms, the indicator is an entropy index that uses data on the number of local units classified using the NACE Rev.2 across EU regions provided by the EU Structural Business Statistics. At the present moment, data allow to design the entropy index only regarding the industries summarized in Table 3: Media, Functional creations and new media, Performing Arts (limited coverage), Heritage (limited coverage).

Table 10 outlines the proposed indicators. The same indicators are used in report D2.4 to describe several quantitative investigations on the association between CCIs and knowledge.

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Table 10 DISCE operationalization of intangibles relating CCIs

Dimension	DISCE indicator	Statistics	Source	EU harmonized	Regional-level data (NUTS2)
Immaterial components	Human forces employed in knowledge activities	Share of Knowledge workers on total workers	EU Labor Force Survey	Yes	Yes
	Investment in R&D	R&D expenditure on total GDP	EU Regional S&T statistics	Yes	Yes
	Output of research activities	Scientific publications per inhabitants	ScienceMetrix Scopus data	Yes	Yes
	Human forces employed in S&T activities	Share of employed in S&T on total worker	EU Regional S&T statistics	Yes	Yes
	CCIs diversification	Entropy index using local units for each CCIs industry	EU Structural business statistics	Yes	Yes

The relevance of intangibles for calls for more indicators than the ones that are currently available. Using R&D statistics might be disconnected from several industries in the taxonomy, such as Ads and Fashion.

Table 11 below summarizes the indicators that could greatly contribute to a comprehensive measurement of intangible production within CCIs. First, administrative data on the share of local public funding supporting applications for intellectual property rights could be useful to measure local commitment supporting actors engaged in new knowledge creation. Also, figures on applicants and beneficiaries of this public funding classified according to the relevant CCIs sectors identified in D2.1 would contribute to a more refined understanding of intangible creation.

Another important metric should target digital contents, which are an increasing product of CCIs (Pica and Crociata,2022). Operationally. it is proposed to measure this aspect through public support for intellectual property rights protecting digital content since this information could be collected from the public institutions assigning the funding, providing also details of the beneficiaries in terms of industry sector and geographic location. Also, European Regions are key institutional players in European innovation policy, as acknowledged by the European Commission through dedicated policy initiatives and funding[22]. Also metrics for registered trademarks should be made available, as they might complement data on patenting.

A metric accounting the intellectual work of creative workers should be introduced, because of the acknowledged shortcomings in capturing labour outcomes in CCIs due to ineffective system of economic

[22] The promotion of innovation is a central feature in the Cohesion Policy programmes for 2014-2020, where about €65 billion go towards innovation and research. Some 30% of the total Cohesion Policy allocations are invested in innovation in the wider sense. Smart specialisation strategies mobilises the innovation potential of all EU regions (European Commission, 2022a).

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rewards for CCIs professionals (Comunian, Faggian and Li, 2010) and job precariousness (Comunian and England, 2020; Florida and Seman, 2020).

Table 11 DISCE suggestions for an improved accounting of intangibles regarding CCIs across Europe

Dimension	Proposed indicator	Required statistics	EU harmonized	Regional-level data (NUTS2)
Immaterial components	Alternative strategies for protection of ideas and new knowledge creations	Amount of public local funding supporting applications for intellectual property rights Number of applicants and beneficiaries of public local funding supporting applications for intellectual property rights and classification of beneficiaries according to CCIs industries in DISCE taxonomy Number of registered trademarks classified according to CCIs industries in DISCE taxonomy	Yes	Yes
		Amount of public local funding supporting intellectual property rights for digital content	Yes	Yes
		Existence and count of legal regulations recognizing the intellectual work of creative workers	Yes	Yes

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3. Operationalizing the role of CCIs in stimulating sustainable and inclusive growth according to DISCE perspective

DISCE supports the role of creativity and culture as an enabler of inclusive and sustainable growth. This aspect calls for developing measures which can account for a role of CCIs that go beyond standard economic features. This chapter interprets this point from an empirical stand.

The operationalization of CCIs in its contribution to sustainable and inclusive growth finds crucial support in the established institutional and academic literature on European inclusive and cohesive growth. This support appears particularly appropriate as DISCE is about the European context. Literature on European inclusive and cohesive growth has developed validated measures, yet it scarcely considers CCIs among the elements to analyze. At the same time, CCIs literature barely addresses inclusive and cohesive growth through the European territorial cohesion lens. Hence, operationalizing data to measure the role of CCIs in inclusive and cohesive growth allows to bridge two relevant strands of research and policy design.

The crucial points of European inclusive and cohesive growth are (i) pursuing growth while also achieving continuous convergence across Europe's regions and (ii) pursuing growth also along the social dimension (Farole, Rodriguez-Pose and Storper, 2011). This approach entails a strong geographic solidarity principle which is crucial to counter territorial disparities in socioeconomic terms (Art. 158 of the Treaty of the European Union). Literature on CCIs and cultural-led development has widely stressed the positive role of cultural economy and CCIs in promoting inclusive development, with little attention to the role of geography (UNESCO-World Bank, 2021). DISCE lies at the intersection of these two perspectives. Conceptually, DISCE advances new frameworks capable of including inclusiveness and sustainability among the relevant dimensions which characterize CCIs (Pica and Crociata, 2022). In this report, DISCE analyses which available data can be used to measure the relevance of these dimensions in the European landscape.

First, spatial data are needed. Inclusive and sustainable growth entail a crucial spatial dimension, as acknowledged by the European Union and supported by established evidence. Lagging behind and declining regions suffer from decline in employment and income, outmigration, low investment. They are also characterized by eroded trust, reduced collaborative attitudes, resentful behaviours and loneliness (Martin *et al.*, 2018; Dijkstra, Poelman and Rodríguez-Pose, 2019; Baarck *et al.*, 2021; Denti and Faggian, 2021). Clearly, the erosion of the social fabric further damages the economic performance of lagging behind and declining regions, since it deteriorates network opportunities, risk taking and the overall well-being. Given that also cultural economy and CCIs have relevant spatial characteristics (Lazzeretti, 2012), it appears relevant to consider their effects on sustainable and inclusive growth through a sub-national perspective. By doing so, it is possible to understand CCIs role and to overcome potential limitations due to an aggregate country-level focus that fails to account for acknowledged territorial differences.

Operationally, this point must be addressed using harmonized data for European regions to provide measures that are comparable across countries. To this respect, Eurostat statistics provide several data available both at country and sub-country level, as detailed in section 1.2. The different spatial granularity allows to check whether there are territorial disparities within countries when analyzing the association between CCIs and sustainable, inclusive growth. The report considers data collected and organized by Eurostat according to the Nomenclature of Territorial Units for Statistics (NUTS). In particular, regional data (NUTS2) are used, being that this geographical scope defines basic regions for the application of regional

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policies targeting inclusiveness and sustainability (Dijkstra, Annoni and Kozovska, 2011; Charron, Dijkstra and Lapuente, 2014). Also, comprehensive data on CCIs and inclusive, sustainable growth at a smaller geographical scale (NUTS3) are currently scarcely available. The spatial dimension must be intertwined with relevant channels through which inclusive and sustainable growth manifests, that are detailed below.

3.1. CCIs as enabler of inclusion

CCIs can contribute to sustainable and inclusive growth both directly and indirectly.

A direct contribution can be measured using the indicator on the contribution of CCIs to employment. According to institutions, industries enable inclusions by generating sufficient employment opportunities for its population (Eurostat, 2021a; ILO, 2021a). Hence, a baseline indicator for inclusivity of CCIs is given by its employment figures. To account for this indicator, DISCE considers the indicator using cultural employment statistics defined in section 2.8 and summarized in Table 9.

Indirect contributions of CCIs to sustainable and inclusive growth can be measured using several indicators. Indicators are needed to measure relevant dimensions for sustainable and inclusive growth that might be influenced by CCIs. Then, each one of these indicators can be mapped against a measure for CCIs contribution to the regional system, such as its size or employment, to check whether there are measures of a positive association. If regions with larger CCIs have good scores for indicators measuring some dimension of sustainable and inclusive growth, then it might be that CCIs are contributing to these good scores. Below, indicators for relevant dimensions for sustainable and inclusive growth are introduced. Report D2.4 provide extensive quantitative evidence measuring the strength and the relevance of the association between CCIs and each of these dimensions.

Indicators for inclusiveness of vulnerable groups. Specific groups, such as ethnic minorities, young people and LGBTQ+, are characterized by vulnerability threats. Inclusive growth must measure how socially vulnerable groups evolve in relation to economic features that should influence them. This is clearly stated by the United Nations and the European Commission in assigning a central role to the “Leave No One Behind” principle in designing growth strategies (European Commission, 2015; UNDP, 2018). Given the acknowledged impact of cultural products and activities on tolerance and openness (Vezzali *et al.*, 2014; Brown and Paterson, 2016), the relationship between CCIs and attitudes towards vulnerable groups is a relevant dimension to consider in operationalizing data.

Measures for social vulnerability with a regional scale are available from Eurostat, which provides data at NUTS2 level for some indicators that are recognized by the “Leave No One Behind” principle of the Sustainable Development Goals (UNDP, 2018) and relevant for CCIs: the share of vulnerable young population and the share of literate population. More into details, the following metrics are considered:

- Young people aged 15-24 that are neither in employment nor in education or training (NEET) (Eurostat code: EDAT_LFSE_04). These figures measure the vulnerability of young people with respect to labour market, human capital development, and social inclusion. The NEET rate is a broad measure of untapped potential of youth as well as a measure for the size of a group at risk of both labour market and social exclusion. Its relevance as measure for inclusive and sustainable growth has been also acknowledged through its inclusion as one of the indicators to measure progress towards the achievement of the Sustainable Development Goals (SDG), under Goal 8: Promote sustained,

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inclusive and sustainable economic growth, full and productive employment and decent work for all (ILO, 2021c).

- Population aged 25-64 with tertiary education (level 5-8) (Eurostat code: EDAT_LFSE_04), a measure that captures the capacity to compete successfully and sustainably (ILO, 2021b) and the capacity to promote equal access to education. Ideally, these figures should be complemented with data on lifelong learning, and indicators on informal and tacit education, which remain remarkably scarce (ILO, 2021b). Hence, data on levels of educational attainment represent the best available indicator. Notably, breaking down figures on literacy level by regions allows to capture existing degrees of territorial inequality in the distribution of human capital that can be coupled with regional data on CCIs to detect further inequality.

Other data measuring openness and tolerance come from surveys designed to collect people's perceptions and beliefs. The European Social Survey[23] (ESS) draws on academically driven cross-national surveys conducted every two years with robust figures at regional (NUTS2) level. The survey questionnaire has two modules: a core module, which remains fixed over the years and makes comparisons possible over time; and a rotating variable module, which explores a specific thematic area. The core module covers a wide range of social variables, including social values and social exclusion. The multiple waves of ESS allow to average answers across waves to reduce concerns due to survey dropout, incomplete repeated measures, missing information (Office for National Statistics - ONS, 2020). Hence, ESS data represent a valuable source of information to measure the following dimensions that are relevant for inclusiveness and sustainability for DISCE: attitudes towards ethnic minorities and LGBTQ+. More into details, the following metrics from ESS are relevant for the DISCE approach:

- Gays and lesbians free to live life as they wish (European Social Survey code: freehms). Answers to this question ranks from 1 (agree strongly) to 7 (refusal) and they convey a measure for the level of openness towards the LBGTQ+ community at the regional (NUTS2) level. These data contribute to assessing the speculated nexus between CCIs and openness (Florida, 2002; Nathan, 2015)
- Country's cultural life undermined or enriched by immigrants (European Social Survey code: imueclt). Answers to this question range from 0 (cultural life undermined) to 10 (cultural life enriched). This measure for tolerance towards migrants appears particularly appropriate for DISCE, as it assess people's attitude towards the cultural dimension and its relationship with immigrants.

Indicators for trust in formal and informal institutions. Inclusive and sustainable growth implies nurturing trust, both in formal and informal institutions (Bachtler, 2019). Trust encourages cooperative behavior, which in turns eases economic transactions (Annen, 2003). Existing evidence provides for trust to be a spillover of CCIs (Attanasi *et al.*, 2013; Comunian, 2017; Brownett, 2018). Intense networking, inherent to CCIs, spurs collaboration (Comunian, 2017), which reinforces trust in other people. Values and information channeled by cultural products contribute to cultural evolution and to the dismantling of local stereotypes and prejudices against institutions (Andersen *et al.*, 2017). So, also measures for trust are relevant in operationalizing data to measure the association between CCIs and inclusive and sustainable growth.

Measures for trust in formal and informal trust having both country and regional coverage can be retrieved from different sources. Mostly they are measured through surveys (Krosnick, Judd and Wittenbrink, 2018). Many Eurobarometer surveys have asked questions related to trust in people and institutions (GESIS, 2021). However, these surveys have some limitations in terms of operationalization within the DISCE approach. They do not cover the sub-country level and they do not ask the exact question across different surveys.

[23] https://www.europeansocialsurvey.org

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As for openness and tolerance, the European Social Survey (ESS) contains questions on trust in its core module which remains fixed over the years and makes comparisons possible over time and across European regions (NUTS2). For DISCE, the following metrics from ESS are considered:

- Trust in legal system (European Social Survey code: trstlgl). Answers to this question ranks from 0 (no trust) to 10 (Complete trust) which provide a measure for the level of trust in a specific type of formal institutions. Trust in the legal system is a measure for institutional trust which relates to people's well-being through their perception of being protected (Grönlund and Setälä, 2012). By estimating correlation patterns between this metric and the size of CCIs, it is possible to measure if places with larger CCIs have more trust in the laws and regulations, which in turn favors collaborative attitudes and social sustainability (Chou, 2006).
- Trust in country's parliament (European Social Survey code: trstprl). Answers to this question ranks from 0 (no trust) to 10 (Complete trust) which provide a measure for the level of trust in a specific type of formal institutions. Trust in parliament is a measure for institutional trust which relates to people's well-being through their perception of being represented in their needs and aspirations (Helliwell, Haifang and Shun, 2018). Among possibilities, this metric allows to estimate the association between the size of CCIs and people's trust in political institutions, which in turn is a measure for social cohesion and inclusivity (Rooduijn, 2018)

Most people can be trusted, or you can't be too careful (European Social Survey code: ppltrst). Answers to this question ranks from 0 (no trust) to 10 (most people can be trusted), which provide a measure for the level of trust in other people at regional level. Trusting others is a pre-requisite for collaboration and network creation (Guiso, Sapienza and Zingales, 2008). A straightforward analysis enabled by this metric is measuring the association between the size of CCIs in a place and how much people trust each other. This allows to empirically test the theoretical argument that CCIs products and activities stimulate overcoming prejudices by giving new ideas and perceptions to people (Brown and Paterson, 2016; Greene *et al.*, 2018).

The Quality of Government Institute[24] provides further survey data on people's perception about institutions through the PERCEIVE survey (Charron *et al.*, 2019; Bauhr and Charron, 2020) which has few questions overlapping with the ESS. PERCEIVE survey has data on 2017, while ESS data cover a longer time span having 2002 as starting date. So, regarding similar survey questions, ESS data are a richer source of information, and they allow to average data across different waves to reduce bias. At the same time, PERCEIVE survey has a strong focus on perceived corruption which appears interesting with respect to trust in institutions. Through this measure it is possible to empirically investigate the association between CCIs and quality of institutions.

The association between CCIs and the quality of institutions can be further investigated using a more comprehensive measure for institutional quality is given by the European Quality of Government Index (EQI). The index is designed and measured by the Quality of Government Institute, which uses survey data where respondents are asked about perceptions and experiences with public sector corruption, along with the extent to which citizens believe various public sector services are impartially allocated and of good quality (Charron, Dijkstra and Lapuente, 2014, 2015; Charron, Lapuente and Annoni, 2019). It is a recognized source of data to compare the quality of institutions at the European level. The data was first gathered and published in 2010 and then repeated in 2013, 2017, and 2021. The index is based on a large citizen survey covering European regions (NUTS2).

[24] The Quality of Government Institute is an independent research institute within the Department of Political Science at the University of Gothenburg. The institute conducts research on the causes, consequences and nature of Good Governance and the Quality of Government

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To summarize, the following indicators are considered:

- Corruption in National Institutions (The Quality of Government PERCEIVE survey Q16.2). Answers to this question range from 0 (no corruption) to 10 (corruption in widespread).
- European Quality of Government Index (EQI) (The Quality of Government Institute EQI). A composite index measuring impartiality and quality of public service delivery, along with corruption (Charron, Dijkstra and Lapuente, 2014).

Indicators for territorial capital endowment. Alongside the specific aspects detailed above, inclusive and sustainable growth is multi-faceted, being shaped by various features and by their intertwines (Dijkstra, Annoni and Kozovska, 2011). Existing literature addressing the European landscape relies on a composite concept of social territorial sustainability containing the following dimensions (Annoni and Dijkstra, 2019):

- Geography, acknowledging the regional scale (NUTS2) as appropriate.
- Institutions, Macroeconomic stability, Infrastructure, Health, Basic Education.
- Higher Education and life-long learning, Labour market efficiency, Market size.
- Technological readiness, Business sophistication, Innovation.

Notably, CCIs literature supports associations between CCIs and the aforementioned dimensions that characterize inclusive and sustainable growth (Comunian, Chapain and Clifton, 2010; Hauge, Pinheiro and Zyzak, 2018; Innocenti and Lazzeretti, 2019). Hence, also data providing this comprehensive measure for inclusive and sustainable growth should be operationalized. The European Commission has designed and implemented the Regional Competitiveness Index (RCI) (Dijkstra, Annoni and Kozovska, 2011), that has been applied to European regions (NUTS2) from 2010. Through RCI, regions are assessed regarding their ability to offer an attractive and sustainable environment for firms and residents to live and work (European Commission, 2019). RCI allows the assessment of territorial inequalities acknowledging that the regional level is much more suitable than looking only at the national level (European Commission, 2019). RCI is widely used in measuring the impact of several industries on inclusive growth (Iammarino, Rodriguez-Pose and Storper, 2019; Trippl, Zukauskaite and Healy, 2020; Di Caro and Fratesi, 2022), so it appears appropriate to complement existing evidence by using it referring to CCIs.

Table 12 summarizes the existing metrics that are suitable to operationalize data to account for sustainability and inclusiveness according to the DISCE perspective. Currently, data at a smaller geographic scale are both scarce and sparse. Notably, the growing efforts by local institutions in pursuing the Sustainable Development Goals (SDGs) is stimulating municipalities to collect local data on relevant dimensions for inclusiveness and sustainability, with strong support by the European Commission (European Commission, 2015). Availability of local data on discrimination, social inequalities, vulnerable groups will grow in the forthcoming years thanks to these efforts. Municipalities are doing this on a voluntary basis and there is no harmonized standard on data collection (Kanuri *et al.*, 2016; Siragusa *et al.*, 2020). However, this evidence would be particularly relevant to improve the investigation of the nexus between CCIs, sustainability and inclusiveness, and it would be relevant to promote a connection between the institutional efforts to monitor SDGs and the efforts to measure CCIs social impact.

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Table 12 DISCE operationalization of inclusiveness and sustainability

Dimension	DISCE indicator	Statistics	Source	EU harmonized	Regional-level data (NUTS2)
Economic	CCIs contribution to the regional economy	Cultural employment	Eurostat	Yes	Yes
Social	Share of young cohorts affected by socioeconomic vulnerability	Share of youth neither in employment nor in education or training (NEET)	Eurostat	Yes	Yes
Social	Share of people accessing Higher Education	Share of Adult literacy	Eurostat	Yes	Yes
Social	Openness & Tolerance towards migrants	People displaying positive attitudes towards migrants' culture	ESS	Yes	Yes
Social	Openness & Tolerance towards LGBTQ+	People displaying positive attitudes towards LGBTQ+ rights	ESS	Yes	Yes
Social / Economic	Trust: institutions	People's level of trust in the legal system People's level of trust in political institutions	ESS	Yes	Yes
Social	Trust: people	People's attitude towards trusting other people	ESS	Yes	Yes
Social / Economic	Corruption	People's perception on corruption within institutions	QoG	Yes	Yes
Social/Economic	Quality of institutions	Level of impartiality and quality of public service delivery	QoG	Yes	Yes
Social/Economic	Regional territorial capital enabling sustainable growth and well-being	Regional Competitivess Index	European Commission	Yes	Yes

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Notably, the current availability of data does not allow to measure several key elements of DISCE relating to CCIs to sustainable and inclusive. For instance, data on the gender distribution of employment within CCIs at regional level are not available now. The same applies to data on the share of ethnic minorities employed in CCIs across regions and to regional figures on CCIs employment of LGBTQ+ and people with disabilities.

When it comes to sustainability, there are no data available, for instance, when examining the number of CCIs industries ensuring environmentally sustainable and/or ethical processes. Similarly, data are missing for the number of CCIs industries promoting and/or involved in environmental protection, production standards, territorial branding, and work ethics, or ensuring respect criteria of environmental and production sustainability. These are crucial aspects to be covered at the European level, to have measures for the CCIs contribution to socioenvironmental sustainability.

Finally, detailed and harmonized data on audience and participants to CCIs activities -such as exhibitions, workshops, performances- distinguishing between free and paid admissions represents another relevant metric that should be provided. It would contribute to a more refined understanding of the effect of CCIs on their community in terms of participation and socialization.

Table 13 below summarizes some indicators which could greatly contribute to a more thorough understanding of the relationships between CCI and inclusive sustainable growth. To this respect, a survey at NUTS2 level addressing these indicators across CCIs employers could represent a relevant tool to collect EU harmonized data.

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Table 13 DISCE suggestions for an improved accounting of inclusiveness and sustainability regarding CCIs across Europe

Proposed indicator	Required statistics	EU harmonized	NUTS2 level
Gender balance	Share of men, women and lgbqt+ in CCIs (per industry)*	Yes	Yes
Ethnicity balance	Share of ethnic minorities in CCIs (per industry)*	Yes	Yes
Inclusive design	Number of actions to promote social cohesion for disabled	Yes	Yes
Spatial cohesion	Number of public cultural spaces in peripheral areas (per industry)*	Yes	Yes
Learning	Number of learning programs to give access to CCIs to young generations (age equality)	Yes	Yes
Training	Number of training programs to give access to CCIs to the sector workers	Yes	Yes
Environment	Share of CCI employers engaged in environmental protection Share of CCIs employers engaged in promotion of the territory, and work ethics Share of CCI employers complying to environmental and production sustainability standards	Yes	Yes
Socio-cultural	Number of participants in CCI programs/activities Gender and socioeconomic characteristics of participants in CCIs programs/activities	Yes	Yes

*Per industry means one of the five sectors as described in the WP2 new DISCE taxonomy, namely Heritage, Tangible culture, Media, Arts, and Functional creations and New media. The indicators could be measured for each single sector as explained in D2.1 at NUTS2 spatial scale

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4. Validation of relevant dimensions of the taxonomy through focus groups

Within DISCE, several case studies have implemented heterogenous workshops aimed at testing stakeholders' perspective on the nexus between CCIs, inclusivity and sustainability. These activities contribute to the evidence-base by providing in-depth information on stakeholders' perception. Clearly, this aspect fails to be captured by the statistics used to operationalize CCIs, as the latter cover large population samples. Hence, the information resulting from these workshops allow to assess whether several indicators proposed by DISCE align to stakeholders' views.

Dresden, Germany. The first co-creation lab with 35 participants took place on 18 May 2019, focusing on cultural development, sustainability, inclusiveness, and growth of CCIs in Europe. The main points highlighted by participants concerned:

- Need of statistics on survival rates of CCIs, which could be obtained from the figures on enterprises growth rate, death rate and survival rate collected by the OECD Regional Business Demography Database. As detailed in section 2.2 of the present report, currently these figures cannot be effectively used as they do not discriminate between enterprises in the Arts, entertainment, and recreation sector (Code R) and enterprises in other service activities which include labour unions, business representatives, laundry services, hairdressers (Code S). To this respect, Table 3 includes the availability of data on growth rate, death rate and survival rate of enterprises for CCIs sectors among the proposed indicators that should be implemented. Hence, the point made by participants of the Dresden workshop corroborates this proposal.
- Need of metrics capable of capturing creative works in the production process, with metrics focusing on inclusivity and sustainability generated by CCIs workers, rather than metrics on commercial values of the resulting products/services. This point aligns with DISCE recommendations on indicators for sustainability and inclusiveness summarized in Table 12.

Timisoara, Romania. The second co-creation lab was organized in Timisoara on 16 October 2019 with 34 participants, aimed at understanding stakeholders' definition of inclusiveness and sustainability within CCIs. The main points from this workshop are the following:

- Need of a thorough assessment of sustainability of the CCIs themselves, which could be performed referring to the Sustainable Development Goals (SDGs) indicators as starting point. This aspect strongly relates to the DISCE indicators for sustainability and inclusiveness summarized in Table 11, which have a strong focus on measurement of openness towards minorities, vulnerability, access to education. Further, this point corroborates the indicators suggested by DISCE which cannot currently being operationalized due to data availability and summarized in Table 12. This second set of indicators specifically targets metrics to measure sustainable practices within CCIs, as well as inclusivity of minorities within CCIs workforce.
- Need of statistics enabling sub-national comparative analyses and a clear state of the art CCIs within each country, which will allow for a within-country assessment and a more granular analysis of the geography of the levels of inclusiveness and sustainability of CCIs. This kind of findings would inform evidence-based (both people- and place-sensitive) policies aimed at fostering them. This point relates to one of the pillars of DISCE, that is the importance of investigating CCIs considering regions as the key unit of observation.

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Enschede, the Netherlands. In Enschede DISCE organized several workshops of which particularly two were used by WP2 to test stakeholders' perspective. ABCD workshop in December 2019 involved 24 participants from the Assyrian Mesopotamian Association with the purpose to pose questions, problems, challenges, or opportunities, related to the participation to the Armenian community at the cultural and creative life in Enschede. Participants were not artists, neither belonging to the creative and cultural workforce. Hence, the workshop followed the DISCE ecological approach in investigating how the participation to the city's cultural and creative ecosystem could work as a driving force to ease the inclusion of particular minorities in the society (Wilson *et al.*, 2020).

The main point from the workshop is that cultural and creative events in Enschede served as an opportunity for the Armenian community to come closer to the city and its inhabitants. Moreover, within the community space, which can be considered itself a cultural and creative center, was easier for the newcomers to get in touch with the already settled Armenians, reducing the feeling of loneliness and homesickness. These outcomes corroborate the importance of measuring sustainability and inclusiveness regarding CCIs going beyond the within-industry characteristics of the workforce. Hence, they validate the indicators on sustainability and inclusiveness developed by DISCE and summarized in Table 11. These indicators operationalize inclusivity and openness in the community through metrics on people's perceptions and attitudes towards ethnic minorities, LBBTQ+ and trust in other people.

Another ABCD workshop took place on 18 February 2020 with 13 participants, addressing a completely different audience. In fact, in this case, participants were artists and creatives, and they were very keen on responding to questions related to sustainability, inclusivity, and growth from their point of view, meaning from persons directly involved in the cultural and creative scene in Enschede. From this second workshop, metrics on sustainable practices within CCIs appeared as a relevant point for participant, such as collecting evidence on re-adaptation of abandoned spaces as artist-led coworking studio, other practices for urban regeneration and environmental improvements – like wall painting or recycling of old materials. This point supports the relevance of the indicators suggested by DISCE in Table 12 and currently not implementable due to lack of data.

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5. Final recommendations for data operationalization

Through an extensive review of existing figures on CCIs and through their alignment with the pillars of the DISCE approach, this report can provide two sets of recommendations regarding data operationalization for mapping CCIs across Europe.

The first set of recommendations refers to practical indicators which can be designed and operationalized exploiting existing data. Available data allow to build indicators capable of covering several aspects that have been introduced by DISCE. Chapter 2 described which indicators can be built to measure many CCIs sectors considered in the new taxonomy, and chapter 3 showed which indicators can be built to measure the relationship between CCIs and inclusive, sustainable growth. Table 14 summarizes these indicators, retrieving information from Tables 3, 5, 8, 9, 10, 12

Table 14 Summary of DISCE recommendations for operationalizing CCIs indicators

Dimension	DISCE indicator	Statistics	Source	EU harmonized	Regional-level data (NUTS2)
CCIs sectors: enterprises	Size of each CCIs sectors	Local units for CCIs sectors	EU Structural Business Statistics	Yes	Yes
CCIs sectors: enterprises	CCIs diversification	Relative size of CCIs sectors measured through the number of local units	EU Structural business statistics	Yes	Yes
CCIs sectors: enterprises	Contribution of CCIs to the overall economy	New job creation per CCIs sector	EU Labor Force Survey	Yes	Yes
CCIs sectors: enterprises	Income generated by CCIs sectors	Wages & salaries per CCIs sector	EU Structural Business Statistics Labour Force / Cost Survey	Yes	Yes
CCIs industry: heritage	Indicator for the territorial stock of cultural heritage	Sum of historical (pre-1919) dwellings and material cultural heritage in per capita terms	ESPON	Yes	Yes

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HEIs	Local supply of CCIs skills	Share of students in CCIs related fields	ETER	Yes	Yes
HEIs	Local research in CCIs-related fields	Share of researcher in CCIs related fields	ETER	Yes	Yes
HEIs	Local availability of CCIs- related knowledge infrastructures	Number of CCIs specific HEIs	ETER	Yes	Yes
All CCIs	Contribution of CCIs to the overall economy	Culture employment	Eurostat	Yes	Yes
Immaterial components	Human forces employed in knowledge activities	Share of Knowledge workers on total workers	EU Labor Force Survey	Yes	Yes
	Investment in R&D	R&D expenditure on total GDP	EU Regional S&T statistics	Yes	Yes
	Output of research activities	Scientific publications per inhabitants	ScienceMetrix Scopus data	Yes	Yes
	Human forces employed in S&T activities	Share of employed in S&T on total worker	EU Regional S&T statistics	Yes	Yes
	CCIs diversification	Entropy index using local units for each CCIs industry	EU Structural business statistics	Yes	Yes
Economic	CCIs contribution to the regional economy	Cultural employment	Eurostat	Yes	Yes
Social	Share of young cohorts affected by socioeconomic vulnerability	Share of youth neither in employment nor in education or training (NEET)	Eurostat	Yes	Yes

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Social	Share of people accessing Higher Education	Share of Adult literacy	Eurostat	Yes	Yes
Social	Openness & Tolerance towards migrants	People displaying positive attitudes towards migrants' culture	ESS	Yes	Yes
Social	Openness & Tolerance towards LGBTQ+	People displaying positive attitudes towards LGBTQ+ rights	ESS	Yes	Yes
Social / Economic	Trust: institutions	People's level of trust in the legal system People's level of trust in political institutions	ESS	Yes	Yes
Social	Trust: people	People's attitude towards trusting other people	ESS	Yes	Yes
Social / Economic	Corruption	People's perception on corruption within institutions	QoG	Yes	Yes
Social / Economic	Quality of institutions	Level of impartiality and quality of public service delivery	QoG	Yes	Yes
Social / Economic	Regional territorial capital enabling sustainable growth and well-being	Regional Competitivess Index	European Commission	Yes	Yes

From Table 14, it appears that existing statistics already provide for extensive coverage of the relevant dimensions identified by DISCE for an improved understanding of CCIs across Europe. Data allow to measure many of the different industries and related sectors identified by the DISCE taxonomy, as well to measure several dimensions of intangibles and education in its relationship with CCIs.

Also, exploiting rich databases on people's beliefs and perception, it is possible to design indicators on several dimensions of inclusivity and sustainability, such as openness, trust, vulnerability, territorial capital enabling well-being. These indicators make it possible to measure the community-level endowment of openness, care and human development which are the crucial dimensions of inclusiveness and sustainability identified by DISCE through its ecological approach (Gross *et al.*, 2019; Wilson *et al.*, 2020).

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The indicators summarized in Table 14 represent the practical toolbox complementing DISCE conceptual frameworks developed in WP2, D2.1 and in the deliverables of WP3, WP4 and WP5. Also, they enable quantitative investigation of CCIs, complementing the qualitative investigation performed through surveys and case-study in other DISCE reports. To this respect, the indicators listed in Table 14 are recommended for data operationalization consistent with the DISCE approach.

At the same time, the report also outlines existing limitations in terms of indicators that should be implemented to fully operationalize the DISCE approach. The second set of recommendations covers the indicators that are currently not feasible. Chapter 2 and 3 describe in detail these indicators and which are the reasons that hinder their practical operationalization. These reasons mainly refer to lack of statistics. Table 15 summarizes them.

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Table 15 Summary of DISCE recommendations for missing indicators for CCIs

Dimension	Proposed indicator	Required statistics	EU harmonized	Regional-level data (NUTS2)
CCIs sectors: enterprises	Enterprises in the DISCE taxonomy industries: Heritage and Arts	SBS and LFS statistics on missing NACE Rev.2 codes: -libraries, archives, museums and other cultural activities (NACE Rev.2 Code 90) -arts, creative and entertainment activities (NACE Rev.2 Code 91; OECD ISIC Rev.4 Code R)	Yes	Yes
	Self-employment in CCIs across sectors	Statistic on self-employed for CCIs industries and sectors (all relevant NACE Rev.2 codes)	Yes	Yes
	Financial outlook of CCIs	Share of CCIs units benefitting from external non-for-profit funding (e.g. crowdfunding, national and international grants) for NACE Rev2 relevant sectors (all relevant NACE Rev.2 codes	Yes	Yes
	Enterprise death rates Enterprise survival rates	OECD Regional Business Demography Database data disaggregated for CCIs industries (Code R separated from Code S)	Yes	Yes
	Gross Value Added generated by each CCIs industry in the taxonomy	GVA statistics for NACE Rev2 relevant sectors (all relevant NACE Rev.2 codes	Yes	Yes
	Weight of each CCIs industry trade	Improved European statistics on trade	Yes	Yes
CCIs sectors	Relevance of non-enterprises in CCIs	Share of non-for-profit companies, foundations, charities and public services for NACE Rev2 relevant sectors (all relevant NACE Rev.2 codes	Yes	Yes
CCIs industry: heritage	Size of Heritage industry: Heritage sites	Consolidation of the Eurostat experimental statistics on Heritage Sites	Yes	Yes

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	Size of Heritage industry: botanical gardens	Institutional validation of the geolocalized information contained in the GardenSearch database	Yes	Yes
	Size of Heritage industry: GLAM	Production of an EU inventory of GLAM institutions and related collections	Yes	Yes
	Size of Heritage industry: Intangible Heritage	Count of Intangible Cultural Heritage manifestations according to UNESCO criteria	Yes	Yes
	Size of Performing Arts: Arts production and Festivals	Developing statistics for: -Performing Arts production -Festivals	Yes	Yes
Immaterial components	Alternative strategies for protection of ideas and new knowledge creations	Amount of public local funding supporting applications for intellectual property rights Number of applicants and beneficiaries of public local funding supporting applications for intellectual property rights and classification of beneficiaries according to CCIs industries in DISCE taxonomy Number of registered trademarks classified according to CCIs industries in DISCE taxonomy	Yes	Yes
		Amount of public local funding supporting intellectual property rights for digital content	Yes	Yes
		Existence and count of legal regulations recognizing the intellectual work of creative workers	Yes	Yes
Social / Economic	Gender balance	Share of men, women and lgbqt+ in CCIs (per industry)*	Yes	Yes
Social / Economic	Ethnicity balance	Share of ethnic minorities in CCIs (per industry)*	Yes	Yes
Social / Economic	Inclusive design	Number of actions to promote social cohesion for disabled	Yes	Yes
Social	Spatial cohesion	Number of public cultural spaces in peripheral areas (per industry)*	Yes	Yes

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Economic	Learning	Number of learning programs to give access to CCIs to young generations (age equality)	Yes	Yes
Economic	Training	Number of training programs to give access to CCIs to the sector workers	Yes	Yes
Economic	Environment	Share of CCI employers engaged in environmental protection Share of CCIs employers engaged in promotion of the territory, and work ethics Share of CCI employers complying to environmental and production sustainability standards	Yes	Yes
Social		Number of participants in CCI programs / activities Gender and socioeconomic characteristics of participants in CCIs programs/activities	Yes	Yes

The availability of the statistics would improve the measurement of CCIs according to the main dimensions identified by DISCE in its WPs and summarized in the previous chapters. Also, the overall menu of indicators proposed in the guidelines could also represent the starting metrics for developing Cultural Satellite Accounts (CSA) (UNESCO, 2015), which are statistical frameworks for refined measurement of the economic contribution of CCIs[25]. CSA needs thorough measures for all the actors involved in the supply side of CCIs, both public and private. The metrics accounting for both non-enterprises and enterprises that are advanced in this report appear suitable as a starting point to this regard. Similarly, suggested metrics for inclusivity in CCIs employment, financial sustainability in CCIs, public policy for CCIs are all indicators needed in the CSA framework.

[25] Culture Satellite Accounts (CSA) is a statistical framework designed to compare CCIs with other industries in terms of System of National Accounts

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6. Conclusions

The purpose of this report is to provide practical guidelines for operationalizing data to measure the main elements characterizing CCIs according to DISCE along a quantitative perspective.

The relevant elements characterizing CCIs resulting from DISCE are: a new CCIs taxonomy, the crucial nexus between CCIs and sustainable and inclusive growth and the salience of the spatial dimension. Developing indicators capable of accounting for these three pillars and their sub-characteristics entails several limitations, many of which are inherent to acknowledged shortcomings in designing statistics covering CCIs (Eurostat, 2018). Disentangling CCIs products and activities within the supply chain as well as appropriately measuring CCIs workforce is not straightforward as design, creativity and ideas might overlap across different dimensions. Also, ideas and innovation are difficult to measure.

Other statistics are currently missing because they are not collected and this report provides for the importance of designing statistical tools, such as surveys, to gather them. Aside from these limitations, the report presents a broad array of indicators that can be designed exploiting existing figures. The proposed indicators contribute to operationalize several aspects covered by DISCE: from the size and the economic performance of CCIs sectors to measures for inclusivity and sustainability. Report D2.4 shows how these indicators can be used to provide quantitative investigation and mapping of CCIs across Europe.

Future research should address the operationalization of the demand side. Measures of cultural participation and of consumption of CCIs goods and services are relevant for a thorough understanding of CCIs. To this regard, data are extremely limited. Figures on cultural participation harmonized at European level are available for two years -2006 and 2015- and with different scopes between the two years[26]. The survey questions targeting cultural participation referred limited activities. These figures are collected through households' survey, hence there is the need to average answers across waves to reduce concerns due to survey dropout, incomplete repeated measures, missing information (Office for National Statistics - ONS, 2020). Currently, the time coverage of available survey waves with the ad hoc module on cultural participation does not allow a robust averaging, since only two waves are available. Thus, it would be relevant embed the ad hoc module on cultural participation in the primary set of variables that are measured every year. Regarding private cultural expenditure, figures are collected through Household Budget Surveys. Despite ongoing efforts to improve harmonization of these surveys across countries, currently there still relevant differences across countries in the structure of the survey, its design, the choice of the sample, the timing and the frequency. Therefore, there are important limitation in data comparison across countries (Eurostat, 2018). These limitations are even stronger when the focus is on cultural expenditure since the coding of cultural goods and services in the survey are not disaggregated enough to give a complete picture of cultural expenditure (Eurostat, 2018). It would be particularly important to collect statistics on cultural expenditure capable of (i) overcoming the existing limitations acknowledged by Eurostat and (ii) containing information on the regional patterns of cultural expenditure. The latter aspect is non-negligible, given the acknowledged wide differences in households' income across European regions[27]. Being households' expenditure inherently related to available income, the observed regional difference in the latter should corroborate the importance of having figure on cultural expenditure capable of accounting for this spatial heterogeneity.

[26] Previously, two rounds of the Adult Education Survey included a module on cultural participation (years 2007 and 2011). The module was subsequently discontinued, thus the 2007 and 2011 results may be considered as historical data (Eurostat, 2018).
[27] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_10r_2hhinc&lang=en

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References

Alesina, A. and Giuliano, P. (2015) 'Culture and Institutions', *Journal of Economic Literature*, 53(4), pp. 898–944. doi: 10.1257/jel.53.4.898.

Andersen, T. B. *et al.* (2017) 'Pre-reformation Roots of the Protestant Ethic', *Economic Journal*, 127(604), pp. 1756–1793. doi: 10.1111/ecoj.12367.

Annen, K. (2003) 'Social capital, inclusive networks, and economic performance', *Journal of Economic Behavior & Organization*, 50(4), pp. 449–463. doi: 10.1016/S0167-2681(02)00035-5.

Annoni, P. and Dijkstra, L. (2019) *Regional Competitiveness Index*.

Attanasi, G. *et al.* (2013) 'Cultural investment, local development and instantaneous social capital: A case study of a gathering festival in the South of Italy', *The Journal of Socio-Economics*, 47, pp. 228–247. doi: 10.1016/j.socec.2013.05.014.

Baarck, J. *et al.* (2021) *Loneliness in the EU. Insights from surveys and online media data*. Luxembourg (Luxembourg): Publications Office of the European Union. doi: 10.2760/28343 (online),10.2760/46553 (print).

Bachtler, J. (2019) 'Towards Cohesion Policy 4.0: Structural Transformation and Inclusive Growth', *Regional Studies Policy Impact Books*. RSA Website, 1(1), pp. 1–2. doi: 10.1080/2578711X.2019.1547481.

Bauhr, M. and Charron, N. (2020) 'The EU as a savior and a saint? Corruption and public support for redistribution', *Journal of European Public Policy*, 27(4), pp. 509–527. doi: 10.1080/13501763.2019.1578816.

Baumol, W.J., Bowen, W.G. (1966), *Performing Arts. The Economic Dilemma*. A study of Problems common to Theater, Opera, Music and Dance. New York, The Twentieth Century Fund.

Bertacchini, Enrico, and Paola Borrione. 2013. "The Geography of the Italian Creative Economy: The Special Role of the Design and Craft-Based Industries." *Regional Studies* 47(2): 135–47.

Borin, E., Donato, F. and Sinapi, C. (2018) 'Financial Sustainability of Small- and Medium-Sized Enterprises in the Cultural and Creative Sector: The Role of Funding', in, pp. 45–62. doi: 10.1007/978-3-319-65506-2_4.

Brown, R. and Paterson, J. (2016) 'Indirect contact and prejudice reduction: limits and possibilities', *Current Opinion in Psychology*, 11, pp. 20–24. doi: 10.1016/j.copsyc.2016.03.005.

Brownett, T. (2018) 'Social capital and participation: The role of community arts festivals for generating well-being', *Journal of Applied Arts & Health*, 9(1), pp. 71–84. doi: 10.1386/jaah.9.1.71_1.

Di Caro, P. and Fratesi, U. (2022) 'One policy, different effects: Estimating the region-specific impacts of EU cohesion policy', *Journal of Regional Science*, 62(1), pp. 307–330. doi: 10.1111/jors.12566.

Charlot, S., Crescenzi, R. and Musolesi, A. (2015) 'Econometric modelling of the regional knowledge production function in Europe', *Journal of Economic Geography*, 15(6), pp. 1227–1259. doi: 10.1093/jeg/lbu035.

Charron, N. *et al.* (2019) 'THE PERCEIVE SURVEY DATASET', 0(0), pp. 1–19.

Charron, N., Dijkstra, L. and Lapuente, V. (2014) 'Regional Governance Matters: Quality of Government within European Union Member States', *Regional Studies*, 48(1), pp. 68–90. doi: 10.1080/00343404.2013.770141.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 822314

Charron, N., Dijkstra, L. and Lapuente, V. (2015) 'Mapping the Regional Divide in Europe: A Measure for Assessing Quality of Government in 206 European Regions', *Social Indicators Research*, 122(2), pp. 315–346. doi: 10.1007/s11205-014-0702-y.

Charron, N., Lapuente, V. and Annoni, P. (2019) 'Measuring quality of government in EU regions across space and time', *Papers in Regional Science*, 98(5), pp. 1925–1953. doi: 10.1111/pirs.12437.

Comunian, R. (2017) 'Temporary Clusters and Communities of Practice in the Creative Economy: Festivals as Temporary Knowledge Networks', *Space and Culture*, 20(3), pp. 329–343. doi: 10.1177/1206331216660318.

Comunian, R., Chapain, C. and Clifton, N. (2010) 'Location, location, location: exploring the complex relationship between creative industries and place', *Creative Industries Journal*, 3(1), pp. 5–10. doi: 10.1386/cij.3.1.5_2.

Comunian, R. and England, L. (2020) 'Creative and cultural work without filters: Covid-19 and exposed precarity in the creative economy', *Cultural Trends*. Taylor & Francis, 29(2), pp. 112–128. doi: 10.1080/09548963.2020.1770577.

Comunian, R. and Faggian, A. (2011) 'Higher education and the creative city', in Andersson, D., Andersson, Å., and Mellander, C. (eds) *Handbook of Creative Cities*. Edward Elgar Publishing. doi: 10.4337/9780857936394.

Comunian, R. and Faggian, A. (2014) 'International Journal of Cultural and Creative Industries Creative Graduates and Creative Cities: Exploring the Geography of Creative Education in the UK', *International Journal of Cultural and Creative Industries*, 1(2), pp. 18–34.

Comunian, R., Faggian, A. and Li, Q. C. (2010) 'Unrewarded careers in the creative class: The strange case of bohemian graduates', *Papers in Regional Science*, 89(2), pp. 389–410. doi: 10.1111/j.1435-5957.2010.00281.x.

Comunian, R., Gilmore, A. and Jacobi, S. (2015) 'Higher Education and the Creative Economy: Creative Graduates, Knowledge Transfer and Regional Impact Debates', *Geography Compass*, 9(7), pp. 371–383. doi: 10.1111/gec3.12220.

Comunian, R., Taylor, C. and Smith, D. N. (2014) 'The Role of Universities in the Regional Creative Economies of the UK: Hidden Protagonists and the Challenge of Knowledge Transfer', *European Planning Studies*, 22(12), pp. 2456–2476. doi: 10.1080/09654313.2013.790589.

Cruz, S and A. Teixera (2011), 'Methodological approaches for measuring the creative employment: a critical appraisal with an application to Portugal', *FEP Working Paper No. 455*, University of Porto.

Denti, D. (2022) '*A comprehensive descriptive profile of the European CCIs'.*

Denti, D., Crociata, A. and Faggian, A. (2021) *Knocking on Hell's door: dismantling hate with cultural consumption*. 2131.

Denti, D. and Faggian, A. (2021) 'Where do angry birds tweet? Income inequality and online hate in Italy', *Cambridge Journal of Regions, Economy and Society*. doi: 10.1093/cjres/rsab016.

Dijkstra, L., Annoni, P. and Kozovska, K. (2011) 'A New Regional Competitiveness Index: Theory, Methods and Findings', *European Union Regional Policy Working Paper*, 2/2011.

Dijkstra, L., Poelman, H. and Rodríguez-Pose, A. (2019) 'The geography of EU discontent', *Regional Studies*, pp. 1–17. doi: 10.1080/00343404.2019.1654603.

England, L. and Comunian, R. (2016) 'Support or competition? Assessing the role of HEIs in professional networks and local creative communities: the case of glass-making in Sunderland', in *Higher Education and the Creative Economy*. Routledge, pp. 177–195.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 822314

Espon (2020) 'Measuring economic impact of cultural heritage at territorial level Approaches and challenges'. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2019:0548:FIN.

ESPON (2021) 'Cultural Heritage as a Source of Societal Well-being in European Regions – ESPON HERIWELL', (April), pp. 1–71. Available at: https://www.espon.eu/HERIWELL.

European Commission (2015) *Sustainable Development Goals*. Available at: https://ec.europa.eu/info/strategy/international-strategies/sustainable-development-goals_it.

European Commission (2019) *The EU Regional Competitiveness Index*. Available at: https://cohesiondata.ec.europa.eu/stories/s/Regional-Competitiveness-Index-2019/363v-4uq6/.

European Commission (2022a) *EU Innovation policy*. Available at: https://ec.europa.eu/regional_policy/en/policy/themes/research-innovation/.

European Commission (2022b) *In profile: EU cohesion spending by NUTS regions*. Available at: https://cohesiondata.ec.europa.eu/stories/s/EU-spending-by-NUTS-regions/ym2g-jhtp/#ex-post-evaluation-2007-2013-study-on-geography-of-expenditure-(2015).

European Commission DG Education Sport and Culture Youth *et al.* (2017) *Implementing and disseminating the European tertiary education register : final report*. Publications Office. doi: doi/10.2766/31228.

European Commission, OECD and Eurostat (2007) *Eurostat-OECD Manual on Business Demography Statistics, European Commission*. Available at: https://www.hermes-osr.eu/index.php/files/423/attachments/882/231ocde-eurostat-business-demography.pdf.

Eurostat (2008) *NACE Rev. 2 – Statistical classification of economic activities in the European Community*, *Office for Official Publications of the European Communities*.

Eurostat (2018) *Guide to Eurostat culture statistics 2018 edition*. Available at: https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-18-011.

Eurostat (2021a) *Culture statistic. Cultural employment*. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Culture_statistics_-_cultural_employment#Some_other_characteristics_of_cultural_employment.

Eurostat (2021b) 'Structural business statistics (sbs) Reference Metadata in Euro SDMX Metadata Structure (ESMS)'.

Eurostat (2022) *NUTS - NOMENCLATURE OF TERRITORIAL UNITS FOR STATISTICS*. Available at: https://ec.europa.eu/eurostat/web/nuts/background.

Farole, T., Rodriguez-Pose, A. and Storper, M. (2011) 'Cohesion Policy in the European Union: Growth, Geography, Institutions', *JCMS: Journal of Common Market Studies*, 49(5), pp. 1089–1111. doi: 10.1111/j.1468-5965.2010.02161.x.

Florida, R. and Seman, M. (2020) 'Measuring COVID-19 's devastating impact on America 's creative economy', (August), pp. 1–32.

GESIS (2021) *Trust in National and International Institutions*. Available at: https://www.gesis.org/en/eurobarometer-data-service/search-data-access/eb-trends-trend-files/list-of-trends/trust-in-institutions.

Giavazzi, F., Petkov, I. and Schiantarelli, F. (2019) 'Culture: persistence and evolution', *Journal of Economic Growth*. Springer US, 24(2), pp. 117–154. doi: 10.1007/s10887-019-09166-2.

Grönlund, K. and Setälä, M. (2012) 'In Honest Officials We Trust', *The American Review of Public Administration*, 42(5), pp. 523–542. doi: 10.1177/0275074011412946.

Gross, J. *et al.* (2019) *Developing Inclusive and Sustainable Creative Economies*.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 822314

Guiso, L., Sapienza, P. and Zingales, L. (2008) 'Alfred Marshall Lecture Social Capital as Good Culture', *Journal of the European Economic Association*, 6(2–3), pp. 295–320. doi: 10.1162/JEEA.2008.6.2-3.295.

Hauge, E. S., Pinheiro, R. M. and Zyzak, B. (2018) 'Knowledge bases and regional development: collaborations between higher education and cultural creative industries', *International Journal of Cultural Policy*, 24(4), pp. 485–503. doi: 10.1080/10286632.2016.1218858.

Helliwell, J. F., Haifang, H. and Shun, W. (2018) 'New Evidence on Trust and Well-Being', *The Oxford Handbook of Social and Political Trust*.

Hawkins, J. (2001), *The creative economy*, Allen Lane

Huggins, R. and Thompson, P. (2015) 'Culture and Place-Based Development: A Socio-Economic Analysis', *Regional Studies*, 49(1), pp. 130–159. doi: 10.1080/00343404.2014.889817.

Huggins, R. and Thompson, P. (2019) 'The behavioural foundations of urban and regional development: culture, psychology and agency', *Journal of Economic Geography*, 19(1), pp. 121–146. doi: 10.1093/jeg/lbx040.

Iammarino, S., Rodriguez-Pose, A. and Storper, M. (2019) 'Regional inequality in Europe: evidence, theory and policy implications', *Journal of Economic Geography*, 19(2), pp. 273–298. doi: 10.1093/jeg/lby021.

Iammarino, S., Rodríguez-Pose, A. and Storper, M. (2017) 'Why Regional Development matters for Europe's Economic Future', *Regional and Urban Policy Working Papers (European Commission)*, (7), pp. 1–31. Available at: https://ec.europa.eu/regional_policy/sources/docgener/work/201707_regional_development_matters.pdf.

ILO (2021a) 'Decent work for sustainable development (DW4SD) 3. Employment-rich Economic Growth'.

ILO (2021b) 'Indicator description: Employment by education', *ILOStat*. Available at: https://ilostat.ilo.org/resources/concepts-and-definitions/description-employment-by-education/.

ILO (2021c) 'Indicator description: Share of youth not in employment, education or training (youth NEET rate) ', *ILOStat*.

Innocenti, N. and Lazzeretti, L. (2019) 'Do the creative industries support growth and innovation in the wider economy? Industry relatedness and employment growth in Italy', *Industry and Innovation*, 26(10), pp. 1152–1173. doi: 10.1080/13662716.2018.1561360.

Kanuri, C. *et al.* (2016) 'Getting Started with the SDGs in Cities - A guide for Stakeholders (UN SDSN)', *Sustainable Development Solutions Network*, (October), pp. 33–71. Available at: http://unsdsn.org/resources/publications/getting-started-with-the-sdgs-in-cities/%5Cnhttp://www.pando.sc/resources/getting-started-sdgs-cities-guide-local-stakeholders%0Ahttp://unsdsn.org/resources/publications/getting-started-with-the-sdgs-in-cities/%0Ah.

Krosnick, J. A., Judd, C. M. and Wittenbrink, B. (2018) 'The Measurement of Attitudes', in Albarracín, D. and Johnson, B. T. (eds) *The Handbook of Attitudes*.

Lazzaro, E. (2021) 'Linking the Creative Economy with Universities' Entrepreneurship: A Spillover Approach', *Sustainability*, 13(3), p. 1078. doi: 10.3390/su13031078.

Lazzeretti, L. (2012) *Creative industries and innovation in Europe*. Routledge.

Martin, R. *et al.* (2018) 'Globalisation at a critical conjuncture?', *Cambridge Journal of Regions, Economy and Society*, 11(1), pp. 3–16. doi: 10.1093/cjres/rsy002.

Monfort, P. (2020) *Convergence of EU regions redux - Recent trends in regional disparities*. WP 02/2020. doi: 10.2776/27556.

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Montalto, V. *et al.* (2019) *The Cultural and Creative Cities Monitor: 2019 Edition*. Publicatio. Luxembourg. doi: 10.2760/473302.

Office for National Statistics - ONS (2020) 'User guide to crime statistics for England and Wales'.

Pica V. Crociata A. (2022) *A new Taxonomy for CCIs*

Pratt, A. (2004). The cultural economy: A call for specialized 'production of culture' perspectives. International Journal of Cultural Studies, 7(1):117-128.

Santagata W., (2009), *Libro bianco sulla creatività. Per un modello italiano di sviluppo*, Università Bocconi Editore, Milano.

Scott, A. (2000). *The cultural economy of cities: essays on the geography of image-producing industries*. London: SAGE

Siragusa, A. *et al.* (2020) *European Handbook for SDG Voluntary Local Reviews,*. Publications Office of the European Union. doi: 10.2760/670387.

Trippl, M., Zukauskaite, E. and Healy, A. (2020) 'Shaping smart specialization: the role of place-specific factors in advanced, intermediate and less-developed European regions', *Regional Studies*, 54(10), pp. 1328–1340. doi: 10.1080/00343404.2019.1582763.

UNDP (2018) 'What does it Mean to Leave No One Behind?', *United Nations Development Programme*, (July), pp. 1–28.

UNESCO-World Bank (2021) *Cities, Culture, Creativity*. World Bank. doi: 10.1596/35621.

UNESCO (2022) *Intangible Cultural Heritage*. Available at: https://ich.unesco.org/en/what-is-intangible-heritage-00003.

UNESCO (2013), *Creative Economy Report, Special Edition: Widening Local Development Pathways*

Veneri, P. and Murtin, F. (2019) 'Where are the highest living standards? Measuring well-being and inclusiveness in OECD regions', *Regional Studies*. Taylor & Francis, 53(5), pp. 657–666. doi: 10.1080/00343404.2018.1463091.

Vezzali, L. *et al.* (2014) 'Improving intergroup relations with extended and vicarious forms of indirect contact', *European Review of Social Psychology*, 25(1), pp. 314–389. doi: 10.1080/10463283.2014.982948.

Wilson, N. *et al.* (2020) 'Re-thinking Inclusive and Sustainable Growth for the Creative Economy: A Literature Review'.

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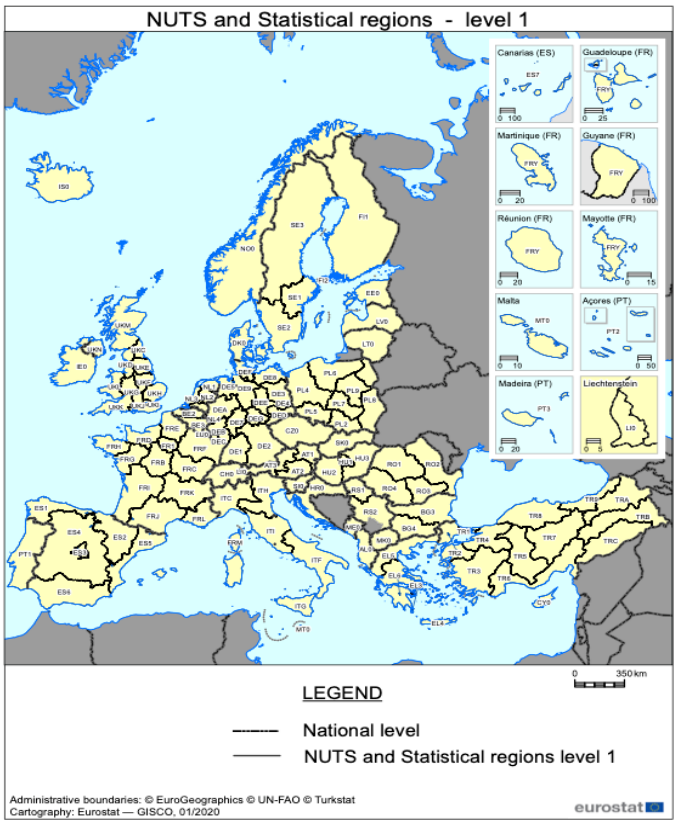
Appendices

Appendix 1: Maps of Europe according to NUTS classification

NUTS0

NUTS1



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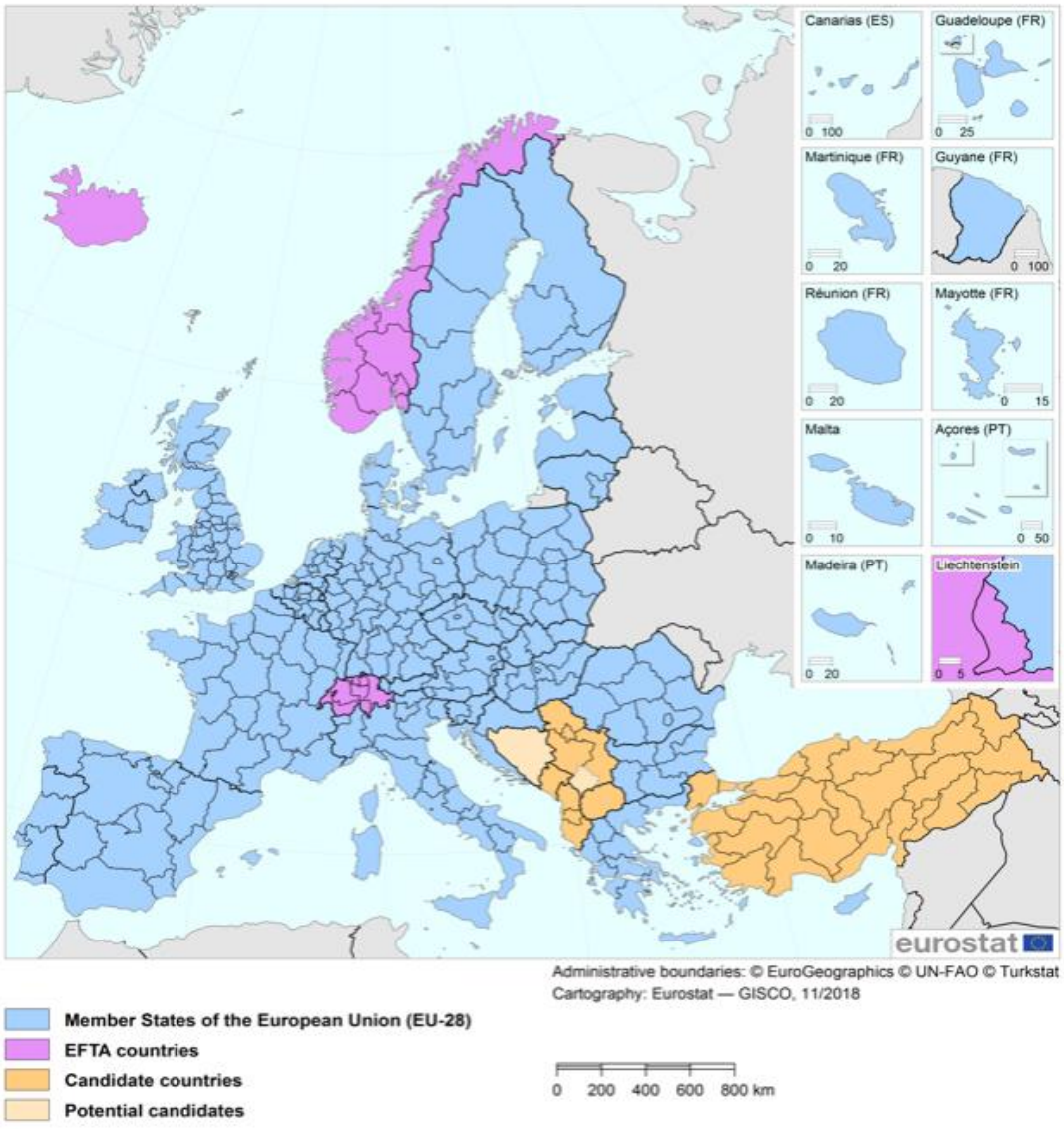
NUTS2



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Appendix 2: NACE classification

NACE is the "statistical classification of economic activities in the European Community" and is the subject of legislation at the European Union level, which imposes the use of the classification uniformly within all the Member States (Eurostat, 2008).

It is a basic element of the international integrated system of economic classifications, which is based on classifications of the UN Statistical Commission (UNSTAT), Eurostat as well as national classifications; all of them strongly related each to the others, allowing the comparability of economic statistics produced worldwide by different institutions (Eurostat, 2008). NACE consists of a hierarchical structure as follows:

1. first level consisting of headings identified by an alphabetical code (sections),
2. second level consisting of headings identified by a two-digit numerical code (divisions),
3. third level consisting of headings identified by a three-digit numerical code (groups),
4. fourth level consisting of headings identified by a four-digit numerical code (classes).

Eurostat data at regional level (NUTS2) for CCIs cover levels 1 and 2.

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