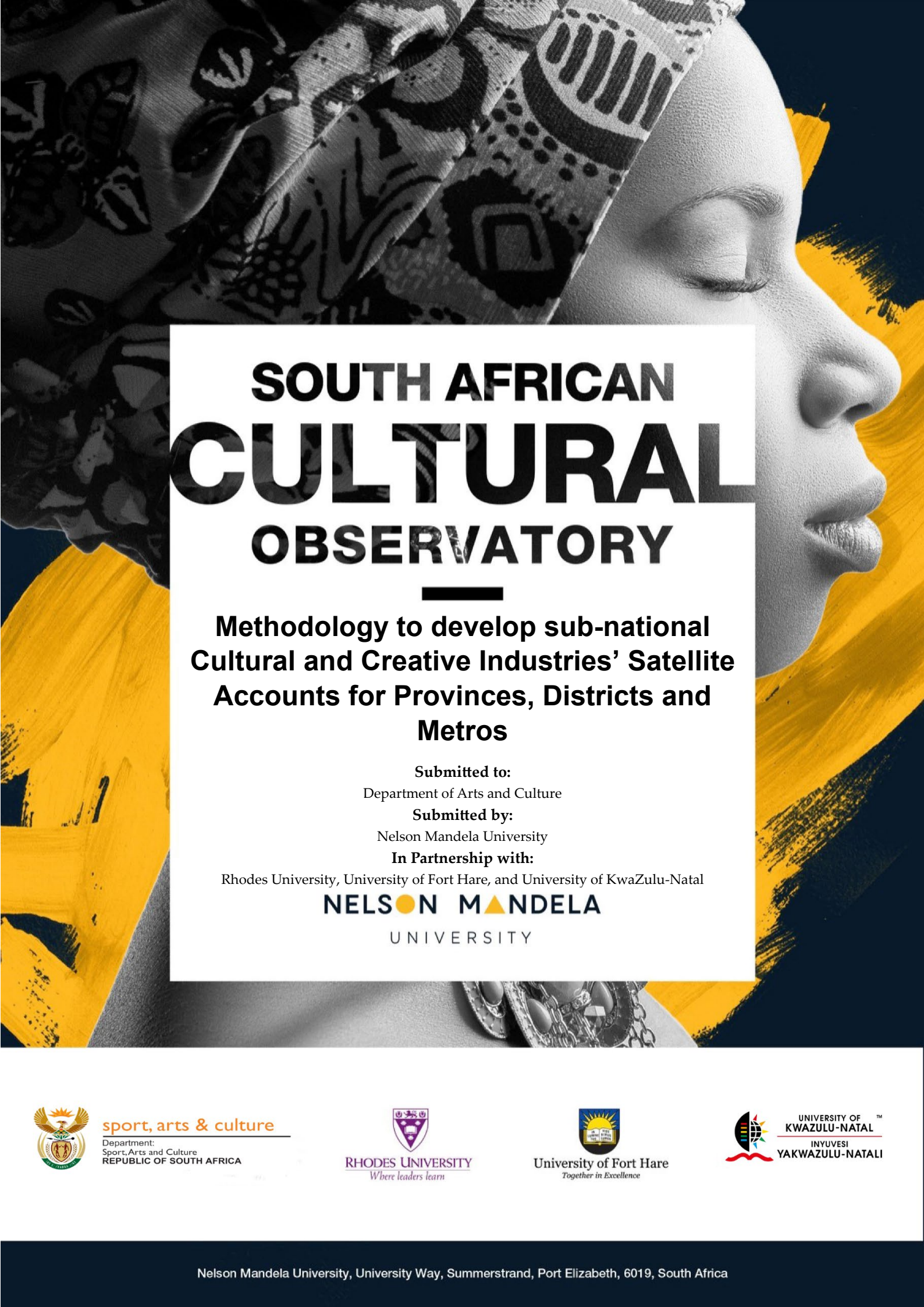




SOUTH AFRICAN CULTURAL OBSERVATORY

**Methodology to develop sub-national
Cultural and Creative Industries' Satellite
Accounts for Provinces, Districts and
Metros**

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South African Cultural Observatory
Report

**Methodology to develop sub-national
Cultural and Creative Industries'
Satellite Accounts for Provinces,
Districts and Metros**

September 2022

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Table of Abbreviations

AFS	Annual Financial Statistics
ASGISA	Accelerated and Shared Growth Initiative for South Africa
CCI	Cultural and Creative Industries
CILQ	Cross Industry Location Quotient
CSA	Cultural Satellite Account
DCMS	Department of Culture, Media and Sport
DSAC	Department of Sports Arts and Culture
FCS	Framework for Cultural Statistics
FLQ	Flegg Location Quotient
GDP	Gross domestic product
GDPR	Gross Domestic Product - Region
GEAR	Growth, Employment and Redistribution
GGP	Gross Geographic Product
GHS	General Household Survey
GOS	Gross Operating Surplus
GVA	Gross Value Added
HS	Harmonised System
ICNPO	International Classification of Non-profit Organisations
IEA	Integrated economic account
IO	Input-Output
IOT	Input-output tables
IP	Intellectual property
ISIC	International Standard Industrial Classification
IT	Income tax
LED	Local Economic Development
LMDS	Labour Market Dynamics Survey
LQ	Location Quotients
MoA	Memorandum of Agreement
NDP	National Development Plan
NGP	New Growth Path
NOS	Net Operating Surplus
NPI	Non-profit Institution
OECD	Organisation for Economic Cooperation and Development
QES	Quarterly Employment Statistics
QLFS	Quarterly Labour Force Survey
R&D	Research and development
RDP	Reconstruction and Development Programme
RoW	Rest of the world
SACO	South African Cultural Observatory
SAM	Social Accounting Matrices
SARB	South African Reserve Bank
SARS	South Africa Revenue Service
SIC	Standard Industrial Classification
SLQ	Simple Location Quotient
SNA	System of National Accounts
TSA	Tourism Satellite Account
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VAS	Volunteer Activities Survey
VAT	Value added tax

Executive Summary: Methodology to develop sub-national Satellite Accounts for Provinces, Districts and Metros

Both the public and private sectors need information to make well-informed decisions. In the public sector, evidence-based policy decisions are informed using both rigorously verified and objective evidence. Further, without reliable data it is very difficult to know whether policies and implementation are successful or not - you cannot manage what you cannot measure.

Data can also help spot policy or implementation gaps that need to be corrected. There needs to be a clearly established metric for success. This will help quantify progress and adjust processes to produce the desired outcome. Measurement is, however, difficult. This is particularly the case in the cultural domain.

A country's System of National Accounts (SNA) constitutes the most important source of information about any state and the performance of its economy. It provides comprehensive and detailed records of the complex economic activities taking place within an economy and of the interaction between the different economic agents. Given the history of national accounts, they are general in nature. As society and technology change, new demands on what data is collected and presented are created. To partially fill this need, Satellite Accounts have been developed.

Two problems are addressed in this report. Firstly, all spheres of government need disaggregated information regarding the Cultural and Creative Industries (CCIs) since the data is not adequately captured in the SNA. Secondly, this information is also necessary for sub-national governments for their planning and monitoring of policies and implementation.

Prior to developing a Cultural Satellite Account (CSA), it is necessary to define all cultural products and services. Since culture permeates society and includes its beliefs, customs, and arts, it is not always an easy task to define and delimit cultural products and services. Although cultural or creative goods and services may have little or no commercial value, they may be paramount to societal concerns. However, many cultural goods and services do have an economic value.

CSAs are not standardised internationally and therefore countries use their own approach and classification of cultural activities. The UNESCO Framework for Cultural Statistics (FCS) published in 2009, is intended to be an international guideline, used for international comparisons and providing a recognised framework for countries wishing to construct their own CSA. It is based on six cultural and two related domains.

The data required depends on the classification of what is included in the definition of cultural industries and CCIs. It will also depend on what the requirements are for both the Department of Sports Arts and Culture (DSAC) and Statistics South Africa. Much, although not all, of the data is already being collected in one way or another by Statistics South Africa. Unfortunately, the format in which it is being collected may not be aligned to the requirements of a CSA. It may be necessary to either change the way

Key Findings

...

- Information is needed to plan and develop the cultural and creative industries in South Africa at national, provincial and local spheres of government.
- There is a paucity of accurate and current information on the cultural and creative industries especially at sub-national (provincial and municipal) level.
- This report reviews the data that is available and highlights the uses and the limitations of using this data.
- Methods are discussed how to accurately estimate the social accounting matrices and input out tables for provinces and municipalities.
- Techniques to estimate the size of the CCIs using the derived social accounting matrices and input out tables for provinces and municipalities are explained and discussed.
- A process is also proposed that could be followed to ensure that reliable accurate data is available for South African provinces, metros as well as district and local municipalities.

...

questions are currently asked in Statistics South Africa surveys, include additional questions, or just to capture the data in a way that the cultural sector can be identified (for example, in spending on “Entertainment”).

The report then goes on to show how a regional I-O or SAM can be derived using both survey and non-survey techniques. Various techniques are discussed pointing out the strengths and weaknesses of each. To ensure that the Sub-national CSA is comprehensive, additional sources of data, including trade and employment data, are discussed.

A proposed process is described graphically that can be used to implement the sub-national CSAs. The process map shows the sequence of events that must occur before the sub-national CSAs can be established.

1. Introduction and Background

Both the public and private sectors need information to make well-informed decisions. In the public sector, evidence-based policy decisions are informed using both rigorously verified and objective evidence. This is necessary given the increasing demands on the fiscus. Similarly, for private sector enterprises to remain profitable organisations, they need accurate information for decision making. Non-governmental organisations (NGOs) also need information if they are to remain relevant and useful services to their constituents.

Some information, such as aggregated national level data, can be obtained without too much trouble. Unfortunately, not all the information is available at a sub-national (provincial or municipal) level. In his 2019 Budget Speech, President Ramaphosa called for the rolling out of “a new integrated district-based approach to addressing our service delivery challenges [and] localise[d] procurement and job creation, which promotes and supports local businesses, and that involves communities...”. To achieve this, information about the district municipalities in South Africa must be available.

Sectoral data is needed by stakeholders, in both the public and private sector. Some sectoral data is readily available while other sectors are included or aggregated into broader sectors. Within the SNA, Satellite Accounts offer a structure that links socioeconomic data to official (national or regional) accounts. Satellite Accounts are focused on a specific sector, field or aspect of economic and social life within the national accounting framework. There are a few Satellite Accounts in South Africa, including the Tourism Satellite Account (TSA. Unfortunately, the official statistical agency in South Africa, Statistics South Africa (StatsSA), has not compiled an official cultural and creative Satellite Account. The SACO compiled two sets of Mapping Studies for the sector in 2018 and 2020.

In 2022, SACO released its CCI Mapping Study. The Mapping Study, which is for all intents and purposes a Satellite Account, provides updated information on how the CCIs contribute to South Africa's economy in terms of its Gross Domestic Product (GDP). This includes GDP's growth, employment, transformation, and international trade. The Mapping Study's aim is to establish a basis for evidence-based policy formulation. Although the Mapping Study did provide the information for national and provincial data, it did not provide the information for either district or local municipalities. The UNESCO (2009) FCS was used to identify and demarcate cultural and creative goods and services. The study found that CCIs contributed nearly 3% to South Africa's GDP and provided employment for close to a million people, which is 6% of all employment in South Africa. These statistics were calculated using the creative trident methodology (Higgs and Cunningham, 2007).

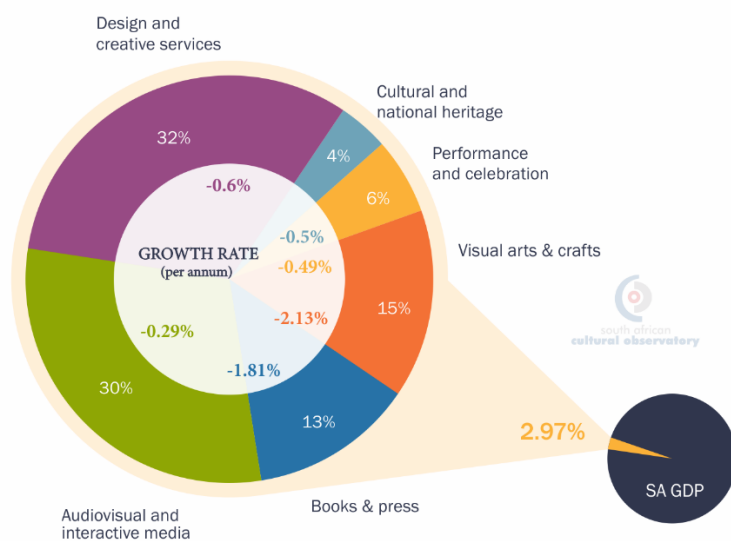


Figure 1. Size and growth rates of the contribution of South Africa's CCI domains

Source: SACO (2021)

At the study's launch, Minister Mthethwa (2022) pointed out that “you cannot manage what you cannot measure.” Given that evidence-based policy aims to make effective and successful policy decisions based on solid data and statistics, more detailed information at district and local municipal levels is needed. This paper discusses methodologies that can be used to develop sub-national CCI Satellite Accounts for provinces, districts and metros.

Further, the National Spatial Development Framework (Departments of Cooperative Governance and Traditional Affairs, 2018) that was prepared in accordance with the provisions of the Spatial Planning and Land Use Management Act, 2013 stresses the spatial inequalities in South Africa. Colonial and apartheid development paradigms have resulted in unequal development. These need to be corrected and disaggregated information is needed for the entire country and not only for national or provinces. The National Development Plan (National Planning Commission, 2013) proposes various corridors that need to be developed. To plan correctly and to ensure that CCIs are adequately included, sub-national data on the sector needs to be available.

This report will review five areas. Firstly, it will look at the definitions of the CCIs and secondly scan the relevant South African Economic Policy and Local Economic Development, with an emphasis on the District Development Model. Thirdly, the report will locate the input-output tables (IOTs), Social Accounting Matrices (SAMs) and Satellite Accounts within the SNA. Fourthly, the report will examine the methods to estimate a sub-national IOT (or SAM) using a national IOT (or SAM). Finally, methods to calculate sub-national IOTs (or SAMs) are discussed and how these can be used to estimate sub-national Satellite Accounts.

2. Defining Culture and the Cultural Industries

CCIs play, or can play, a significant role in national (or regional and local) economic development including economic growth, employment, and international trade. These goods and services are important both as an input into other sectors but also as an output of their own. The following section will revisit the debates relating to the classification. Over the years, many scholars and institutions have tried to conceptualise ideas such as:

- Cultural industries (Theodor and Horkheimer, 1944);
- Creative industries;
- Copyright industries;
- The creative and cultural economy; and
- CCIs.

Some definitions are wide and inclusive while others are more focused and narrower.

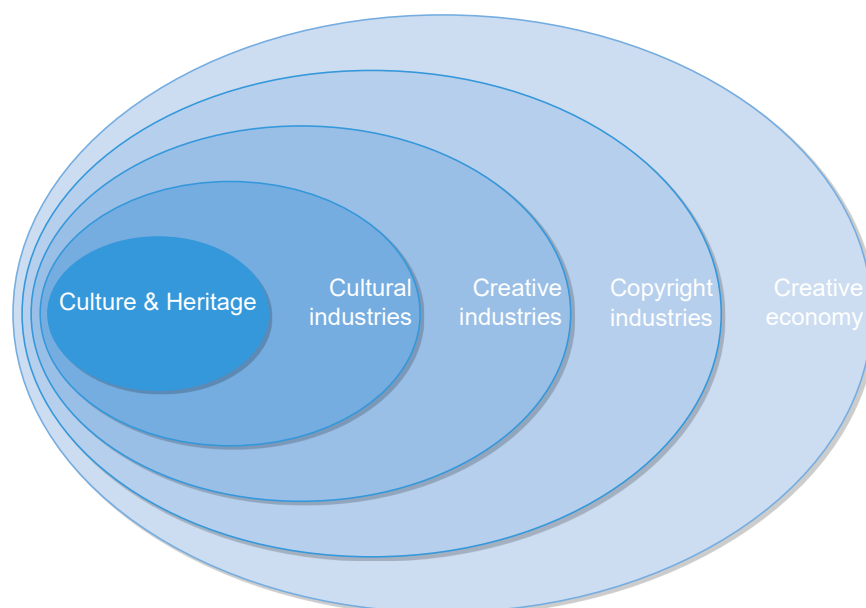


Figure 2. Schema of CCIs

Every society has its own culture which is expressed in the values and identities of its people. In this diagram, “Culture and Heritage” refers to tangible or intangible artistic and creative products (or assets such as natural heritage sites and infrastructure). Although culture and heritage is “owned” by society, it is only when these are exploited to create wealth that they can be referred to as cultural industries. While creative industries build on cultural industries, there is a greater emphasis on creativity where ideas, imagination and ingenuity lead to the creation of goods or services. The copyright industries are a narrower set of the creative industries in that the goods or services enjoy legal protection. The creative economy combines economics, culture and modern technology.

Many classifications of the creative economy have been developed in recent years. A more detailed discussion can be found in Appendix 1. For this paper the UNESCO (2009) FCS is used. UNESCO have divided the CCIs into six domains and two related domains, shown in Figure 3 below.

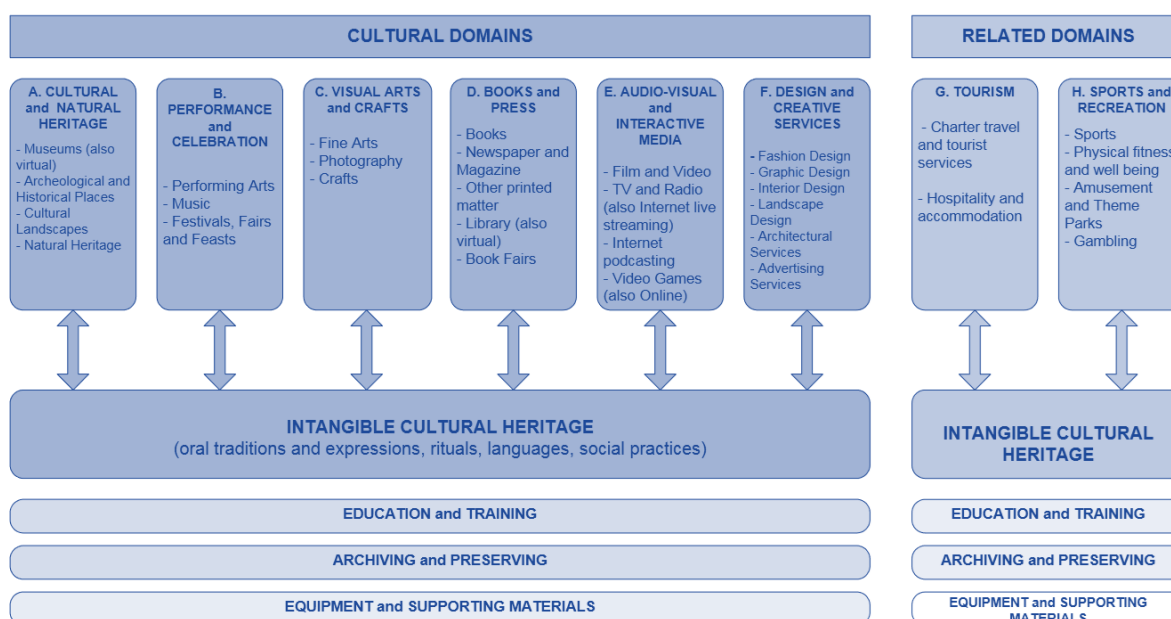


Figure 3. UNESCO's FCS domains

Source: UNESCO (2009, p. 24)

Unfortunately, creative and cultural goods and services are not readily identified in the various international classification systems, including the SNA (United Nations et al., 2009) and the Harmonised System Nomenclature (World Customs Organisation, 2018). CCIs have traditionally not been considered an economic sector in the SNA or its associated classification systems. This has resulted in many cultural and creative products or services being included in broad or aggregated (and very often the narrower or disaggregated) industry definitions. Many official census bureaux, including Statistics South Africa, cannot provide the economic contribution of CCIs.

Most studies estimating the size and relative composition of CCIs have been done at a national level. There are several challenges in obtaining the relevant data, even at a relatively aggregated level, for sub-national regions, metros or cities. Before the data sources and methodologies are discussed in Section 6.4, the relevant policy environment, context and rationale for developing the sub-national CCI indicators is discussed in Section 3 below.

3. CCIs within National, Regional and Local Context

South African sub-national governments (provinces and metros, as well as district and local municipalities) need information for both general planning and for economic development. CCIs are a target sector for Local Economic Development (LED) as the investment requirements are relatively low

and the employment multipliers are high. This section describes the environment in which sub-national governments draft policies and implement them.

3.1. Overview of South Africa's Macroeconomic Policies

Since its first democratic elections in 1994, South Africa has adopted several macroeconomic policies. After years of the apartheid regime's economic isolation, there was an urgent need to rebuild and transform the economy. This was adopted through the Reconstruction and Development Programme (RDP) with the aim to set up a more equal society. Although the programme was successful in areas such as social security, it did not deliver in terms of economic growth. This caused the government to introduce a macroeconomic policy framework, or the Growth, Employment and Redistribution (GEAR) strategy, in 1996 to stimulate faster economic growth. This was needed to provide resources to meet social investment needs. The policy, while retaining the RDP's social objectives, was also aimed at reducing fiscal deficits, lowering inflation, maintaining exchange rate stability, decreasing barriers to trade and liberalising capital flows. GEAR's policy targets (fiscal deficit, inflation, and government consumption) were met and did bring about greater macroeconomic stability, better reporting and increased accountability. Unfortunately, private investment, job creation and GDP growth indicators were disappointing, with low levels of private investment which hampered economic growth with little reduction in unemployment. GEAR was replaced in 2005 by the Accelerated and Shared Growth Initiative for South Africa (ASGISA) which aimed to reduce poverty by 2010 and halve unemployment by 2014, from 28% in 2004 to 14% by 2012. ASGISA was briefly replaced with New Growth Path (NGP) but was unofficially superseded in 2013, with the National Development Plan (NDP)-2030 as South Africa's new long-term socioeconomic development roadmap. It is viewed as a policy blueprint for reducing poverty and inequality in South Africa by 2030. The NDP goals are:

1. Maintain fiscal discipline and macroeconomic stability;
2. Achieve sustained GDP growth of 5.4%;
3. Reduce unemployment to 14% by 2010 and to 6% by 2030;
4. Overhaul the civil service to improve efficiency and implementation;
5. Promote market competitiveness;
6. Reduce the cost of living;
7. Reduce investment impediments;
8. Create jobs via entrepreneurship and reduced regulation as well as a public works programme (Cronje, 2014).

South Africa's economy started to recover in 2021, with GDP growth reaching 4.9% after the COVID-19 induced contraction of 6.4% in 2020. In the first quarter of 2022, South Africa's GDP expanded by 1.9%. The size of the economy reached pre-pandemic levels, with real GDP slightly higher than what it was before the COVID-19 pandemic (South African Reserve Bank, 2022).

Despite strides to improve the wellbeing of the public since its transition to democracy, South Africa, with its dual economy, still has high rates of inequality which are perpetuated by poor economic growth. The weak growth and structural challenges that the country faces have undermined the implementation of policies aimed at achieving higher economic growth and reducing poverty.

3.2. Urbanisation

The role of cities and towns is becoming a critical cog in the strive to improve the welfare of South Africans. Seventy per cent of South Africa's population are found in the country's urban areas, which comprise of 1 200 towns and cities. These generate 86% of all formal economic activities (Le Roux et al., 2017). Urbanisation is expected to continue, with almost 80% of the population living in urban areas by 2050. In addition, migration, both inter-provincial and from Africa, will add to service delivery pressures faced by local towns.

In South Africa there are three categories of local municipalities defined by chapter 7 of the Constitution and further described in Local Government: Municipal Structures Act, 1998 (Act 117 of 1998):

1. **Category A:** A municipality that has exclusive municipal executive and legislative authority in its area (metropolitan municipalities).
2. **Category B:** A municipality that shares municipal executive and legislative authority in its area with a category C municipality within whose area it falls (local municipalities).
3. **Category C:** A municipality that has municipal executive and legislative authority in an area that includes more than one municipality (district municipalities).



Figure 4. Map showing South Africa's local municipalities

Source: Wikimedia (https://commons.wikimedia.org/wiki/File:South_Africa_municipalities_2016_blank.svg downloaded 10 September 2022)

There are 278 municipalities in South Africa, comprising of eight metropolitan municipalities, 44 district municipalities and 226 local municipalities (to simplify this report, these will be referred to as municipalities or local authorities).

South Africa's metros, cities, towns, villages or other regions exhibit various social, technological, demographic and political environments. In addition, there are many historical legacies that affect these areas. These, together with their assets (resource endowments and infrastructure, as well as physical and human capital), impact the region's economic performance either directly or indirectly. However, development is not always spontaneous, as interventions are often necessary.

3.3. Local Economic Development

At local (or municipal) level, interventions to stimulate or develop an area are broadly referred to as Local Economic Development or LED. (Generally, economic development at provincial level is often referred to as Regional Economic Development although there is no firm conventions.) Put simply, it is a component of economic development that focuses on a specific area to facilitate and encourage local stakeholders, enterprises and organisations to work together to achieve sustainable economic growth and development. This will improve welfare, including economic benefits and improved quality of life, for all residents in a local municipal area.

3.4. LED in South Africa

Since the introduction of the local system of government in 2000, many pieces of local government legislation guided by the Constitution (1996) and the White Paper on Local Government (1998), were developed, including:

- Municipal Demarcation Act (1998);
- Municipal Structures Act (1998);
- Municipal Systems Act (2000);
- Disaster Management Act (2002);
- Traditional Leadership and Governance Framework Act (2003);
- Municipal Finance Management Act (2003);
- Municipal Property Rates Act (2004);
- Intergovernmental Relations Framework Act (2005).

More formally stated LED is:

“... a set of policies, institutions, plans and other outcome based on local actions generally driven by local stakeholders to stimulate economic growth and development. Its primary aim is to improve the welfare of an areas citizens by creating sustainable quality employment opportunities, alleviate poverty, redistribute resources, increase wealth and opportunities to the benefit of all local residents” (Miriam Mokoena, 2022).

The South African government describes LED as:

“... an approach towards economic development that allows and encourages local people to work together to achieve sustainable economic growth and development, thereby bringing economic benefits and improved quality of life to all residents in a local municipal area” (Miriam Mokoena, 2022).

The aim of LED is therefore to maximise specifically the municipality’s economy and to strengthen its sustainable economic growth as well as to create quality jobs and employment opportunities. Such initiatives should follow sustainable development principles. The LED interventions must mobilise local resources, stakeholders, role players and other interest groups. The aim is to create favourable locational factors (a conducive business environment) that are good places in which to undertake business. This includes quality infrastructure, low taxes (or rates or property taxes), low price for utilities and a productive workforce. LED should *inter alia* promote:

- a conducive environment in which entrepreneurs can thrive;
- all businesses including existing businesses, startups or external companies and promote local and international business opportunities;
- local ownership that leads to sustainable and equitable local income and wealth creation;
- partnerships (local, national and international) to achieve local economic goals and objectives;
- efficient local markets;
- a creative environment where enterprises can discover, develop, promote and exploit new business ideas; and
- the development of targeted groups (previously disadvantage people, marginalised communities and geographical regions, black empowerment enterprises and Small, Micro, and Medium-sized Enterprises) to participate fully in the economy.

LED therefore must make optimal use of locally available physical and human resources and maximise opportunities for development. It must integrate all initiatives, especially economic initiatives, in a comprehensive economic developmental approach. LED must also be structured so that it can respond rapidly to changing circumstances at local, national and international levels.

3.4.1. Institutional Framework

South African legislation does not prescribe any specific institutional framework. There is therefore no single approach or template to LED that can be applied across South Africa. However, most sub-national governments (provincial, district municipalities and local municipalities) have a designated line-department or unit within the administrative organogram, or have a special purpose vehicle (usually an economic development agency); or a combination of these. For the purpose of this report, reference will be made to an LED unit only.

3.4.2. LED Strategies and CCIs

LED strategies are usually designed by the department concerned and then approved by the relevant political body (Municipal Council). The implementation of the strategy is then undertaken by the LED unit. The LED strategies are designed according to the needs of the region and the political mandate. The strategies and initiatives always take place within a wider context and must take global and national conditions into account as well as relevant national policies and strategies. Although there is no template for LED strategies, but they do usually have a number of common factors (Rogerson, 2009, 2014, 2014; Abrahams, 2018).

LED strategies invariably include an investment component and a trade component. The former is focused on supply-side issues while trade promotion is a demand-side intervention (Abrahams, 2018). The investment component has three elements, namely:

1. Retention of businesses;
2. Growing existing businesses; and
3. Attracting new businesses:
 - i. Foreign direct investment;
 - ii. Domestic investment attraction; and
 - iii. Developing startups and encouraging local entrepreneurs.

Most of a typical LED unit's efforts and resources are directed at attracting foreign investors and developing small local businesses. Attracting foreign investors usually entails promotional activities including advertising and producing directories etc. as well as undertaking foreign trade and investment missions (or inviting potential investors to South Africa). Most of the investment to develop small businesses lies in education, training and mentoring support (although these companies are also supported through the LED unit's trade promotion) (Lawrence and Rogerson, 2018; Mashabela, 2020).

Growing existing businesses usually entails support for developing new products and services or finding new markets for existing products. The focus is generally on the latter, particularly export promotion that tackles both the development of potential exporters and support in entering foreign markets. There is a lot of overlapping support from the private sector (banks and logistic companies) as well as from national and provincial government. There has been some support given to local producers (usually CCIs) to attend local exhibitions to give their products a national promotional platform (Bond, 2018; Rogerson, 2018).

Secondly, LED strategies customarily identify priority sectors that will provide the best returns for the investment and effort expended. This is usually informed by national imperatives and the locality's own comparative advantages. Given the high unemployment rates in South Africa, the employment creation abilities of a sector will also play a big role. CCIs have been identified as one of the ten priority sectors¹. Given the generally low investment requirements of CCIs and the employment potential, CCIs should be a priority in all South African provinces and for all local authorities (Rogerson, 2019; Dlomo, 2021).

Thirdly, local development strategies also look at creating a conducive environment in which businesses and entrepreneurs can thrive. This is usually a multidisciplinary effort involving the town planning, roads,

¹ Other sectors include commercial forestry; poultry sector; clothing and textiles; automotive industry; sugar value; steel and metal fabrication; and furniture industry.

water and sewage, electricity, and parks and recreation departments in a municipality (Mokoena, 2019; Makhathini, Mlambo and Mpanza, 2020; Mashabela, 2020).

Finally, it is important to note that LED is not only an industrial policy, SMME development or export promotion, although these do form an integral part of an LED strategy. Similarly, while it makes an important contribution to its development and implementation, regional or town planning is not LED (Khambule, 2018; Mukwarami, Mukwarami and Tengeh, 2020; Rogerson, 2020).

3.4.3. Culture and Creativity in LED

Culture and creativity influence the development of a region. Firstly, an area's natural heritage contributes not only to its quality of life but influences its culture and art. These indirectly influence the creativity of the region. Importantly, these natural heritage assets are often used in developing the local economy. Extractive resources, though they only play a role for a relatively brief time, can give the region a boost towards a better performing economic trajectory. Other assets, such as farming or tourist attractions, must be well managed to optimise longer term economic performance. Municipalities must therefore exploit the cultural heritage in their areas for the benefit of their citizens.

Secondly, generally the more creative people in an area, the better the economic outcomes. Creative people contribute to the development of new products and services as well as contributing to improving the way goods and services are produced and distributed. Although creativity can be considered an endowment, Florida (2002) and Cerisola (2018, 2019) point out that there are policies and interventions that local authorities can use to either encourage or attract creative people. Many cities across the world (especially the so-called 'creative cities') have developed CCI indices and are striving to grow their CCIs. Florida holds that regions, particularly metropolitan areas, with high concentrations of "high bohemia"2, generally have a higher level of economic development. The creative class promotes an open, dynamic, urban environment that is conducive to attracting more creative people. This in turn attracts more businesses and capital.

Thirdly, CCIs are growing rapidly. Globally, the sector has created 29.5 million job opportunities with a revenue of USD 2 250 billion which exceeds Telecom services revenues (EY, 2015).

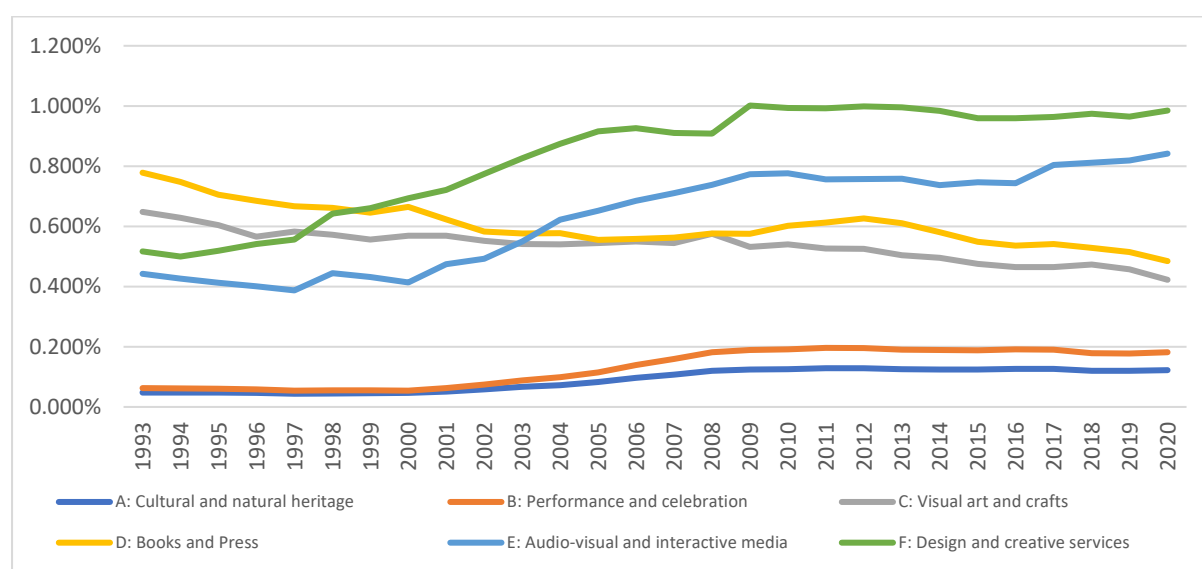


Figure 5.CCI Domain Contribution to GDP

Source: SACO (2022)

The contribution of the CCIs to South Africa's GDP has increased significantly since 1997. This is especially true for the commercial application domains of Design and Creative Services as well as

2 Technology workers, artists, musicians, lesbians and gay men.

Audio-visual and Interactive Media. Unfortunately, CCI growth is more volatile and increases rapidly when the economy is growing, but falls just as rapidly when the economy is in a downswing. Figure 5 shows the relative size of each domain to the South African economy. There have been negative growth rates for all domains because of the general slow-down since 2018 and the impact of the lockdown measures to control the COVID-19 pandemic.

CCIs have the potential to contribute significantly to a local economy's economic growth and generally boost socioeconomic development by providing diverse employment opportunities. CCIs enjoy low barriers to entry, especially in traditional creative sectors. This is due to the use of local materials, knowledge, skills, and technologies. This potential is further supported through LED policies and interventions. This is especially true in crafts and traditional creative sectors where there are low barriers to entry. Generally, CCIs make use of local materials, knowledge, skills, and technologies. Since CCIs embody values, sentiments, beliefs, world views and individual as well as collective memories, these can be packaged and marketed commercially to various audiences. Clearly, CCI-led urban regeneration strategies are an alternative to traditional manufacturing industries. LEDs in South Africa should investigate this potential and include CCI-developmental components in their LEDs.

3.5. Evidence-driven Policy and Strategy Development

Both provincial and LED planning requires information and statistics if the strategies and policies are going to be effective as well as efficient. Policy makers need to understand the status quo (as well as how the status quo was arrived at) and forecasts of possible future conditions. Often scenarios are developed to determine the possible development path that can be taken as well as the resources and policies required to achieve these. These processes require a lot of information and a careful determination of assumptions that are made in lieu of hard information.

Econometric models are often used to test various scenarios and potential outcomes. Again, these models are information-intensive. The more information and data that is available, the more accurate the forecasts and results are from the modelling.

At a national level, especially in developed and emerging economies, models and data are readily available for most planning and strategy developments. At a sub-national level, especially in emerging economies such as South Africa, there is a paucity of economic data. This is especially true when designing sectoral strategies. In many cases, the data that is available is not useful because of the way in which it is collected and especially how it is aggregated (a full discussion of these problems is included in Section 4.4 on the role and importance of Satellite Accounts).

Over time, certain conventions and classification systems have been adopted and many have been institutionalised at a national level or even internationally through the United Nations and other international organisations. The focus, though not exclusively, is on national accounts. An understanding and appreciation of national statistical data is necessary to understand how both CCI and sub-national data is derived. The following section deals with the SNA, while section 5 describes the process by which CCI data is acquired. Finally, Section 6.4 explains firstly how sub-national data is obtained and secondly the process behind getting sub-national CCI data specifically.

4. The System of National Accounts

The genesis of modern national accounting systems can be traced back to the mid-seventeenth century where William Petty first estimated national income on the notion that political decisions should be based on numbers and statistics (Lepenies, 2016). Petty estimated capital, income, and expenditure for seventeenth century England. Pierre de Boisguillebert estimated the accounts for France (Stone, 1986). However, it is the British economist Richard Stone that created the framework for the United Nations' SNA for which he received the 1984 Nobel Prize in Economics. Although the SNA has been modified, it is the international standard for national income accounting, with virtually all countries using it or subscribing to its principles (Nakamura, 2006). The first internationally accepted standard was the 1953 SNA, which was subsequently updated in 1968, 1993 and 2008.

The advantage of using an international system such as the SNA is that it makes it possible to compare data across the globe and also across time, to an extent. Policy makers are able to plot progress and identify areas of good practice in other countries.

SNA 2008 describes itself as ‘a statistical framework that provides a comprehensive, consistent and flexible set of macroeconomic accounts for policymaking, analysis and research purposes.’ Although it is extraordinarily detailed, it cannot possibly address the individual circumstances of each and every country, which is why Statistics South Africa (Statistics South Africa) has adapted the SNA to meet South Africa’s needs.

4.1. Statistics South Africa

Statistics South Africa produces official statistics to inform decision making and the current state of statistical production in the public need. Its strategic direction is informed by “The South Africa I know, the home I understand”³ with a mission to contribute towards the measurement of development goals and outcomes. Statistics South Africa realise the importance of partnering in the production of statistics. In most cases, Statistics South Africa collects the raw data and then aggregates it so that it can be presented to decision-makers in a format that will accommodate their needs. In other cases, Statistics South Africa has access to the administrative data which they use in a similar fashion. However, third parties can also collect data, and this data is not necessarily considered to be official. Statistics South Africa has to maintain trust and public confidence in statistical information, therefore data collected by third parties must meet the criteria set out by Statistics South Africa to ensure that this trust is upheld.

4.2. Input–Output Tables

The historical origins of Input-Output models can be traced back to the French Physiocrat Francois Quesnay, who compiled the *Tableau Economique* to reflect the nature of exchange between farmers, landlords, and manufacturers in the mid-1700s. However, it was Wassily Leontief, who was awarded a Nobel Prize in economics, who developed the fundamental theoretical framework and undertook empirical research using the Input-Output model.

Input-Output models are structured to reflect various measures of income and output found in the national income and product accounts. These are aligned with the SNA.

The Input-Output table shows:

- interindustry sales of intermediate products⁴ among the industries (or sectors of the economy);

Tableau Économique

Objets à considérer: 1°. Trois sortes de dépenses; 2°. leur source; 3°. leurs avances; 4°. leur distribution; 5°. leurs effets; 6°. leur reproduction; 7°. leurs rapports entr'elles; 8°. leurs rapports avec la population; 9°. avec l'Agriculture; 10°. avec l'industrie; 11°. avec le commerce; 12°. avec la masse des richesses d'une Nation.

DÉPENSES PRODUCTIVES relatives à l'Agriculture, &c.	DÉPENSES DU REVENU, l'impôt prélevé, se partageant aux Dépenses productives et aux Dépenses stériles.	DÉPENSES STÉRILES relatives à l'Industrie, &c.
Avances annuelles pour produire un revenu de 600 ^{ll} sont 600 ^{ll}	Revenu annuel de 600 ^{ll}	Avances annuelles pour les Ouvrages des Dépenses stériles, sont 300 ^{ll}
600 ^{ll} produisent net.....	600 ^{ll}	300 ^{ll}
Productions 600 ^{ll} avec 300 ^{ll} net.....	300 ^{ll}	300 ^{ll}
300 ^{ll} reproduisent net.....	300 ^{ll}	300 ^{ll}
150 ^{ll} reproduisent net.....	150 ^{ll}	150 ^{ll}
75 ^{ll} reproduisent net.....	75 ^{ll}	75 ^{ll}
37 ^{ll} 10 ^{ll} reproduisent net.....	37 ^{ll} 10 ^{ll}	37 ^{ll} 10 ^{ll}
18 ^{ll} 15 ^{ll} reproduisent net.....	18 ^{ll} 15 ^{ll}	18 ^{ll} 15 ^{ll}
9 ^{ll} 7 ^{ll} 6 ^{ll} reproduisent net.....	9 ^{ll} 7 ^{ll} 6 ^{ll}	9 ^{ll} 7 ^{ll} 6 ^{ll}
4 ^{ll} 13 ^{ll} 9 ^{ll} reproduisent net.....	4 ^{ll} 13 ^{ll} 9 ^{ll}	4 ^{ll} 13 ^{ll} 9 ^{ll}
2 ^{ll} 6 ^{ll} 10 ^{ll} reproduisent net.....	2 ^{ll} 6 ^{ll} 10 ^{ll}	2 ^{ll} 6 ^{ll} 10 ^{ll}
1 ^{ll} 3 ^{ll} 5 ^{ll} reproduisent net.....	1 ^{ll} 3 ^{ll} 5 ^{ll}	1 ^{ll} 3 ^{ll} 5 ^{ll}
0 ^{ll} 11 ^{ll} 8 ^{ll} reproduisent net.....	0 ^{ll} 11 ^{ll} 8 ^{ll}	0 ^{ll} 11 ^{ll} 8 ^{ll}
0 ^{ll} 5 ^{ll} 10 ^{ll} reproduisent net.....	0 ^{ll} 5 ^{ll} 10 ^{ll}	0 ^{ll} 5 ^{ll} 10 ^{ll}
0 ^{ll} 2 ^{ll} 11 ^{ll} reproduisent net.....	0 ^{ll} 2 ^{ll} 11 ^{ll}	0 ^{ll} 2 ^{ll} 11 ^{ll}
0 ^{ll} 1 ^{ll} 5 ^{ll} reproduisent net.....	0 ^{ll} 1 ^{ll} 5 ^{ll}	0 ^{ll} 1 ^{ll} 5 ^{ll}
&c.		

REPRODUIT TOTAL..... 600 ll de revenu; de plus, les frais annuels de 600 ll et 1es intérêts des avances primitives du Laboureur, de 300 ll. que la terre restitue. Ainsi la reproduction est de 1500 ll compris le revenu de 600 ll qui est la base du calcul. abstraction faite de l'impôt prélevé, et des avances qu'exige sa reproduction annuelle, &c. Voyez l'Explication à la page suivante.

³ See https://www.statssa.gov.za/?page_id=560 Statistics South Africa's Vision is "Improving lives through data ecosystems", while its Mission is "Transform the production, coordination and use of statistics through optimization, partnerships and innovation"

⁴ In this section products refers to both products and services.

- intermediate products that are produced in one sector of the economy;
- products used as inputs by other sectors in the production of their output;
- sales to final demand—goods and services purchased for personal consumption, investment, government activities;
- trade with the rest of the world (RoW) i.e. exports and imports;
- value added, the wages, interest, profit, and rent paid to factors of production during the production process by each industry.

A fuller technical discussion can found in Appendix 2.

4.3. Literature Review of Satellite Accounts

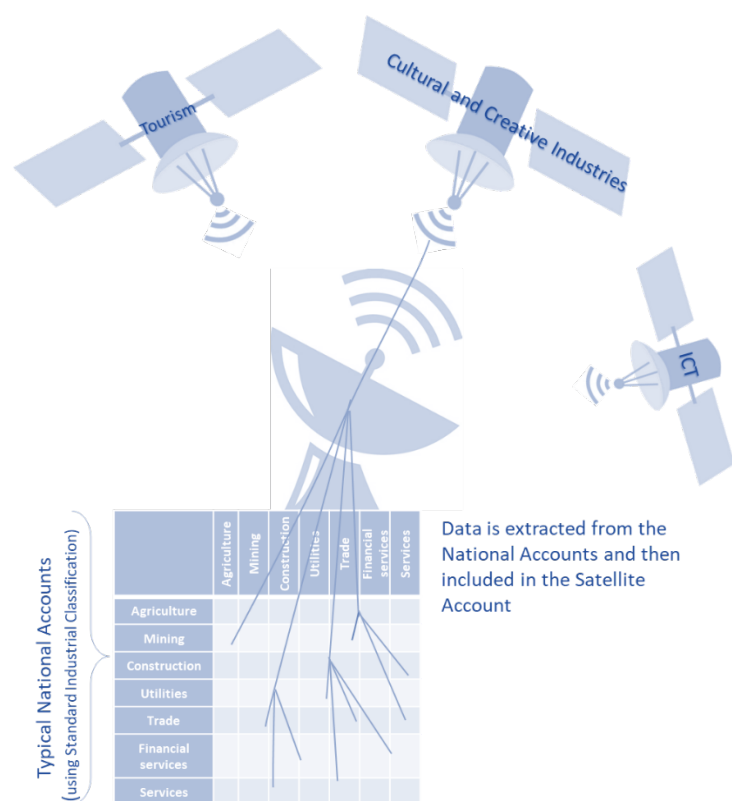
The guidelines and methodologies of SNA are of a general nature to ensure that they are universal. Therefore, the SNA does not fulfil all informational needs. To make national accounts more useful, Satellite Accounts are used. France has been using the term “Satellite Accounts” since the late. A Satellite Account is a set of accounts and tables based on the methodological principles of national accounts. These present different economic parameters of specific areas in an interrelated fashion for a given reference date, therefore providing an economic measuring system of the industries and products that comprise a particular sector or field. These shed further light on data features needed for specialised analyses that are not contained or well-represented in the central SNA framework, but nonetheless reflect important economic, social and political concerns.

4.4. Satellite Accounts in South Africa

Statistics South Africa produced South Africa's first Satellite Account for the tourism industry, the Information, Telecommunications and Communication (ITC) sector and Non-Profit Institutions.

Tourism activities fall under various industries including transport, accommodation and recreation, to mention a few. The Tourism Satellite Account (TSA) is well-supported by departments and agencies in the different spheres of government and data collectors, ranging from Statistics South Africa, the South African Reserve Bank (SARB), the Department of Home Affairs and the Department of Trade Industry and Competition.

Figure 6: Image of Satellite Accounts



Source: Adapted from UNESCO (2015)

The ICT sector has experienced strong growth. The sector's activities are not directly quantified as a sector by the SNA, thus it was well-suited to the application of a Satellite Account, which was drafted in 2005 (see Draft Information and Technology Satellite Account for South Africa, 2005). Key to the development of the ICT Satellite Account was the design of a consistent framework. The structure, as prescribed by the Organisation for Economic Cooperation and Development (OECD), was used as the backdrop of the South African ICT Satellite Account, which allows international comparisons (Stastics South Africa, 2014).

A CSA allows activities within the CCI to be compared with other economic sectors and contributors. Furthermore, policymakers would be well-positioned to design and implement a policy or system which supports the CCI, empowering the sector to provide employment and a sustainable income for creative individuals. A value chain approach sets out the mechanisms needed to achieve this and identifies the industries that provide inputs and receive outputs from the cultural sector. Furthermore, the CSA would enable sectoral roleplayers to delve deeper into the CCI and determine on a object level what the contribution of each is.

5. Methods That Can Be Used to Estimate Other Data

5.1. Adapting the South African SAM for CCIs

This section describes the methodology and data used to compile the South African CCI-SAM and thus to derive CCI economic indicators.

5.2. CCIs

The South African SAM is based on the Standard Industrial Classification (SIC) system (van Seventer and Davies, 2019). The UN has developed the International Standard Industrial Classification (ISIC) system, which is used in the SNA (United Nations *et al.*, 2009). South Africa has adopted the SNA framework and is using an adapted version of the ISIC system. Although the ISIC system has been modified over time and for various countries, CCIs are not specifically catered for. Fortunately, the SIC system is hierarchical. Therefore, it is possible to identify some CCI components within the broader SIC system. Unfortunately, it is not possible to identify all CCIs even at the most disaggregated levels. Therefore, even when a particular SIC is disaggregated to its lowest level, estimates have to be made regarding the proportion of CCI products and services that that particular industry produces.

Although the most accurate way to determine the CCI composition of each industry would be to undertake a census of the industry (or even a large sample survey), the cost of such an undertaking would be prohibitive. Therefore, estimates must be made using available information. Where CCIs are identified within each industry (in other words where a subcategory refers to a CCI) the turnover, total output, net final demand or the value-added components could be used to apportion each industry. Where there is no CCI sub-industry classified, the proportion of creative workers (or the share of total salaries paid to creative workers) can be used.

In principle, the F-matrix should be split according to the turnover of CCI sub-industries. The value-added matrix, or the V-matrix, should be divided according to the returns of the factors of production (compensation or profit⁵). The Y-matrix, representing final demand, can be divided using either the total turnover, output or the proportion of CCI products and services purchased by households, government or exports.

Panagouleas and Kokolakis (2012) and Gratton and Kokolakis (2011) explain the process of developing a Satellite Account for Sport. This process of dividing the various industries is discussed below.

Splitting the V-matrix (Input Requirements by Each Industry)

Before estimating each of the CCI technical coefficients, it is necessary to divide each cell in the matrix, F_{ij} , so that it represents the CCI components of those industries. Each cell is split, where applicable, into CCI and non-CCI components.

$$F_{iujv} = F_{ij} \times u \times v \quad \text{Equation 1}$$

where:

- F_{ij} = represents the requirements of industry i of industry j 's products prior to separating the CCI products from the non-CCI products;
- F_{iujv} = represents the new requirements of industry i of industry j 's products after separating the CCI products from the non-CCI products;
- u = The proportion of CCI output in the buying industry; and
- v = The proportion of CCI output in the selling industry.

Calculating the technical coefficients is performed in the same way as discussed above, i.e.:

$$x_{iujv} = \frac{F_{iujv}}{x_{iu}} \quad \text{Equation 2}$$

To keep it simple, the technical coefficients will be simply referred to as x_{ij} .

⁵ Profit is represented by the Gross Value Added Product (GVA).

Splitting the Value-Added Matrix

The value-added matrix, V-matrix, was split according to the net profit before providing for company tax and dividends (for the Gross Operating Surplus row) and employee costs (for the compensation row).

$$F_{iujv} = F_{ij} \times u \times v \quad \text{Equation 3}$$

where:

- F_{ij} = represents the requirements of industry i of industry j 's products prior to separating the CCI products from the non-CCI products;
- F_{iujv} = represents the new requirements of industry i of industry j 's products after separating the CCI products from the non-CCI products;
- u = The proportion of CCI output in the buying industry; and
- v = The proportion of CCI output in the selling industry.

Splitting the Net Final Demand Matrix

A similar procedure to the one described above was followed to derive a new net final demand matrix, or Y-matrix. To keep the figures consistent, turnover figures from the AFS were used where possible, and estimates were made for the other sectors where this was not possible.

$$F_{iujv} = F_{ij} \times u \times v \quad \text{Equation 4}$$

where:

- F_{ij} = represents the requirements of industry i of industry j 's products prior to separating the CCI products from the non-CCI products;
- F_{iujv} = represents the new requirements of industry i of industry j 's products after separating the CCI products from the non-CCI products;
- u = The proportion of CCI output in the buying industry; and
- v = The proportion of CCI output in the selling industry.

5.3. The New South African SAM

A new South African **SAM** was created using the methods described above, giving a **SAM** comprising of 74 industries. With more data, it would likely be possible to disaggregate further.

One disadvantage of the new **SAM** is the fact that it does not make provision for the informal sector. Since many CCIs are in the informal sector, this could be a problem if they were substantially different from the CCIs in the formal sector. It would be possible for the current 74 x 74 South African CCI-**SAM** to be further split into small, medium, and large enterprises⁶ with data from the AFS. Unfortunately, the sectors are not disaggregated enough to do this meaningfully.

5.4. Developing a Sub-National CCI I-O or CCI -SAM

As discussed above, policy questions and economic analysis at a regional or sub-national level require accurate disaggregated data at the appropriate geographic level. Most approaches for the modelling of sub-national economic impacts require regional **Input-Output (IO)**-tables or SAMs. These are often not available and have to be estimated using available data.

The following section describes how to derive a regional I-O or SAM using non-survey techniques. Section 6.7 describes two processes using the information provided in Section 5 and Section 6.5 to obtain a regional CCI I-O or CCI-SAM.

⁶ According to the National Small Business Amendment Act, 2004.

5.5. Developing Regional Models

As explained above, the construction of IOT and SAM are costly and require considerable resources. Regional SAMs or input-output tables as well as trade flows are rarely observed. These must be estimated using up-to-date information.

This is equally applicable to sub-national IOT and SAM. Nevertheless, given the mathematical simplicity of calculating the various impacts on the economy caused by exogenous shocks, this methodology is still preferred. It is therefore necessary to create matrices that reflect the economic structure of the region being examined before analysis can be undertaken. Various techniques have been proposed to achieve this. The most common method is using LQs to calculate the intermediary input that is required for each sector.

To conduct a comprehensive economic impact assessment using an I-O analysis, it is necessary to produce a transactions matrix and I-O table for the region. There are two main approaches to construct such a regional transactions matrix:

- Surveys of local firms;
- Extract the local transaction matrix from the national transaction matrix.

The limitations, and particularly the cost of surveying methods, have led to the use of non-surveying estimation techniques using national IOs or SAMs.

5.6. Non-survey Methods

The non-survey method of estimating sub-national I-Os or SAMs is to calculate a factor or regional estimator, r_{ij} , that can be used to estimate the sub-national I-O or SAM. Regional estimators are then applied to the intermediate matrix of an industry-symmetric I-O table as follows:

$$r_{ij} = c_{ij}a_{ij} \quad \text{Equation 5}$$

Where:

- i and j represent selling and purchasing industries respectively;
- r_{ij} is regional Input-Output coefficients, representing the fraction of j 's total input that is bought from regional suppliers of i ;
- a_{ij} is the fraction of j 's total input that is bought from national suppliers of i ;
- c_{ij} , $0 \leq c_{ij} \leq 1$, is the propensity of j to purchase from regional suppliers of i rather than national suppliers (hereby known as regional consumption propensities)

Non-survey methods of estimating r_{ij} typically make the assumption that the a_{ij} can be taken from the national IO table.

Generally, c_{ij} uses the concept of Location Quotients (LQs). There are various adaptations of the LQs for estimating sub-national I-Os or SAMs including:

- Simple Location Quotient (SLQ);
- Cross Industry Location Quotient (CILQ); and
- Flegg Location Quotient (FLQ).

5.6.1. Location Quotient

LQs based on the concept of region show the relative position of the economic sectors in a region compared with that of the country. The share could be any economic indicator, but generally use value-added or employment. The simple LQ is calculated as follows:

$$SLQ_i = \left(\frac{V_i^R}{V^R} \right) / \left(\frac{V_i^N}{V^N} \right) \quad \text{Equation 6}$$

Where:

- V_i^R is added value for i^{th} sector of the region;
- V^R is the total added value for the region;
- V_i^N is added value for South Africa's i^{th} section; and
- V^N is South Africa's total added value.

The value added (V) can be replaced by employment.

5.6.2. Estimating Sub-National I-Os or SAMs Using Simple LQ

Perhaps the most popular and one of the simplest non-survey techniques used to calculate sub-national I-Os or SAMs is to use an SLQ and scale the technical coefficients to derive the new I-O. Unfortunately, there is not enough data to create a SAM that is constructed using the Supply and Use Tables published by Statistics South Africa unless the activities and products are aggregated. As such, if the I-O is too disaggregated, similar problems are experienced. This is regrettable because the more disaggregated information available, the more accurate the new CCI I-O or SAM will be. The process is undertaken as follows:

Step1: Calculate the National Technical Coefficients

Let $X^n = [x_{ij}^n]$ and $X^r = [x_{ij}^r]$ be matrices whose elements are the flows for intermediate use from sector i to sector j at national (n) and regional (r) levels respectively, while x^n and x^r are vectors of national and regional total sectoral output. Where the national input matrix elements are:

$$A^n = \left[a_{ij}^n = \frac{x_{ij}^n}{x_j^n} \right] \quad \text{Equation 7}$$

and where the regional input coefficients matrices elements are:

$$A^r = \left[a_{ij}^r = \frac{x_{ij}^r}{x_j^r} \right] \quad \text{Equation 8}$$

Step 2: Calculate the Sub-National Technical Coefficients

The pure LQ methods are used to estimate the matrix of regional input coefficients, A^r by adjusting the national input coefficient as follows:

$$\hat{x}_{ij}^r = a_{ij}^n q_{ij} \quad \text{Equation 9}$$

Where:

- q_{ij} represents a scalar applied to the national coefficient.

With the *simple* LQ, a_{ij}^r , is estimated via the following formula:

$$\hat{x}_{ij}^r = SLQ_i a_{ij}^n \quad \text{Equation 10}$$

Where:

$$SLQ_i = \frac{x_i^r / x^r}{x_i^n / x^n} \quad \text{Equation 11}$$

Where:

- SLQ_i is the degree of specialisation of region r in sector i relative to the nation;
- x_i^r is the total output (production) of the i^{th} regional sector;
- x_i^n is the total output (production) of the i^{th} national sector;

- x^r is the corresponding regional aggregate; and
- x^n is the corresponding national aggregate.

The regional input coefficients are applied using the following rule:

$$\hat{a}_{ij}^r = \begin{cases} a_{ij}^n SLQ_i & \text{if } SLQ_i < 1 \\ a_{ij}^r & \text{if } SLQ_i \geq 1 \end{cases} \quad \text{Equation 12}$$

Step 3: Calculating the Production Factors

The value-added components in an I-O include Compensation and Gross Operating Surplus (GOS). The Gross Operating Surplus is comprised of the Net Operating Surplus (NOS) and consumption (depreciation) of fixed capital. SAMs often disaggregate the compensation component into compensation according to high-skilled labour, skilled labour, low-skilled labour and informal labour. Rather than referring to GOS or NOS, SAMs simply use “Production Factors: Capital.”

With the *simple* LQ, production factor V_i^r is estimated using the following formula:

$$\hat{V}_i^r = SLQ_i V_i^n \quad \text{Equation 13}$$

Where:

$$SLQ_i = \frac{x_i^r / x^r}{x_i^n / x^n} \quad \text{Equation 14}$$

Where:

- SLQ_i is the degree of specialisation of region r in sector i relative to the nation;
- x_i^r is the total output (production) of the i^{th} regional sector;
- x_i^n is the total output (production) of the i^{th} national sector;
- x^r is the corresponding regional aggregate; and
- x^n is the corresponding national aggregate.

Unlike the technical coefficients, there is no adjustment factor because the production factors do not influence the magnitude of the derived multipliers.

Step 4: Calculating the Taxes and Subsidies

With the *simple* LQ, tax factor T_i^r or subsidy factor S_i^r is estimated via the following formulas:

$$\hat{T}_i^r = SLQ_i T_i^n \quad \text{Equation 15}$$

to calculate the taxes, and

$$\hat{S}_i^r = SLQ_i S_i^n \quad \text{Equation 16}$$

to calculate the subsidies.

Step 5: Adjusting the Table to Take Account of the Existing Data

In some instances, disaggregated data is available for a province or municipality. This is because:

1. The survey data sample is large enough and is published at a disaggregated level;
2. The researchers have undertaken their own survey; or
3. Administrative data allows accurate estimation of the variable.

The actual data is of course preferred to the derived data and should be used. It will be necessary to adjust the entire table to ensure that it is balanced, i.e. that the row and column totals are the same.

⁷ Although there are taxes and subsidies on production as well as various taxes and subsidies on products (and services), only one formula is present for the sake of simplicity.

This is carried out either through using the RAS approach or Entropy formulations. Further information can be found in Miller and Blair (2009, p. 366).

5.6.3. Cross Industry Location Quotients

The Cross Industry Location Quotients (CILQ) is more accurate than the SLQ and generally provides lower multipliers. CILQ_{ij} indicates the proportion between the regional value-added share of sector *i* and the regional value-added share of sector *j* compared with similar national values and is calculated as follows:

$$CILQ_{ij} = \frac{SQL_i}{SQL_j} = \frac{\left(\frac{V_i^R}{V_i^N}\right)}{\left(\frac{V_j^R}{V_j^N}\right)} \quad \text{Equation 17}$$

Proportions are used to adjust national input coefficients cell by cell to extract the regional input coefficients.

Miller and Blair's (2009) research found that the CILQ may overestimate the intermediate transactions. Even though the CILQ is better than the SLQ, it is proposed that the FLQ method be used to calculate multipliers.

5.6.4. Flegg Location Quotient

Flegg et al. (1995) pointed out that SLQ used to estimate regional IO coefficients from national data were likely to produce biased estimates of regional multipliers. As such, they proposed a new formula to prevent the over estimation of regional multipliers. An I-O analysis is well-suited to assess the economic impact of a development in both the short and long run. To fully comprehend the economic impact of the development, an I-O or SAM is needed on a local economic level. Generally, an I-O or SAM is only available at a national level.

Flegg et al. (1995) proposed using the CILQ and then adjusting it using a factor they called λ , which is simply a factor determined by the relative size of the region to the nation. It is given by:

$$FLQ_{ij} = CILQ_{ij} \times \lambda^*, 0 \leq \sigma, \lambda^* \leq 1$$

Where:

$$\lambda = \log(1 + v^r/v^n)^3 \quad \text{Equation 18}$$

Where:

- λ is the adjustment factor;
- v^r is the economic size⁸ of the region;
- v^n is the economic size of the nation

This method takes regional specialisation into account.

Flegg et al. (2021) note that “the choice of a suitable value of λ is still an open question.”

5.6.5. Deciding Which Method to Use

In many instances the choice of method will be dictated by the information that is available. However, the method should be determined based on the purpose for which the I-O or SAM is being developed. If the main purpose is to determine various multipliers for the region concerned, the FLQ will be the most realistic. However, if it is to determine the quantum, the SLQ method is preferred, as there are no

⁸ Although the Gross Geographic Product or the GDPGR can be used, the size is usually calculated using employment data since this is more readily available and is updated more often.

adjustments made to either the intermediary input requirements, the value-added components or the demand elements.

5.6.6. Private Service Providers

It is not always possible to get the data to calculate the LQs and it may be easier to buy SAMs from private sector service providers. For example, Quantec provide a South African SAM (91 industries, 4 labour categories by sector and skill level, 13 household categories by decile). In addition, they can provide Supply and Use Tables (SUTs) (for provinces, district municipalities, local municipalities or metropolitan regions) that include the flow of goods between a province and the rest of South Africa for 50 industries. Employment quantities and fixed capital stock data are also included. (Details of private sector service providers are included in Appendix 6).

5.7. A Regional CCI I-O

Section 5 discussed the method to adapt a standard national I-O or SAM into an I-O or SAM suitable for analysing the CCIs. On the other hand, Section 6.5 described how to estimate a sub-national I-O or SAM. The question is which should be carried out first to estimate a sub-national CCI I-O or SAM. Mathematically, it does not really matter, and the answers should be the same, if and only if the data is available and consistent. However, typically detailed CCI information that is necessary to calculate the LQs at a sub-national level is not available. If this is the case, it would be best to estimate the sub-national I-O and then adapt it to reflect the CCI components.

Rather than estimating the regional I-O or SAM, it may be easier and more accurate to buy the I-O or SAM from service providers. This is advisable because they often have additional information that will make the estimates more accurate. The details of the service provider used to formulate the I-Os and SAM is given in Appendix 6.

Nevertheless, one of the challenges using this technique is that the u (proportion of CCI output in the buying industry) and v (proportion of CCI output in the selling industry) would have to be determined for each region. The national proportions could be used but this would only give a rough estimation. It would therefore be necessary to get local input to get more accurate proportions.

6. Available Sources of Data for a CCI Satellite Account

Satellite Accounts are often designed with sector-specific information, such as the number of international visitors coming into the country, and generally have a few common elements. The main factors include the sector's economic size (measured by the contribution to either the Gross Value Added (GVA) or GDP); the volume or value of exports and imports and the sector's employment. These are briefly discussed below.

6.1. Gross Domestic Product

GDP is the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period. The goal of calculating this variable is to estimate the contribution of CCIs to a region's Gross Geographic Product (GGP)⁹ or its GVA.

Since the definition includes the term "all finished goods and services," it is important to ensure that there is no double-counting of goods that are used as intermediary inputs (including raw materials) into a final product.

There are three accepted methods that are used to calculate a country's GDP (or a region's GGP or GDPR).

- The production approach

⁹ In South Africa, Statistics South Africa uses the term GDPR (gross domestic product per region)

- The expenditure approach
- The income approach

These definitions are comprehensive and also avoid double-counting.

Notes on the GDP and GVA

There is often some confusion when referring to GDP and GVA. This is also confusion with regards to concepts such as factor costs, basic prices and market prices. These are briefly defined in Appendix 2.

Most of the indicators mentioned in this report refer to **GVA at factor costs** and generally use the income approach. This includes the compensation of labour as well as the Gross Operating Surplus (which includes profit and depreciation). It does not include taxes, subsidies, production or products.

GDP data is provided nationally by both the SARB and Statistics South Africa. Provincial GDP estimates (GDPR) are provided at a relatively aggregated level by Statistics South Africa. However, the data is provided officially for either municipalities or according to CCI. Despite this, using either SAMs or IOs, it is possible to estimate the GDP at a sub-national level and to then disaggregate the SAM to create a CCI-SAM. Theoretically, it could be possible to use a South African CCI-SAM to estimate the GDP, including the CCI elements, at a sub-national level. However, as will be discussed below, the LQs are difficult to calculate with the official data and other information that is available.

SACO (2022) discusses how the CCI-SAM is constructed. The Annual Financial Statistics (AFS) published by Statistics South Africa provides useful information. The AFS survey collects a range of financial statistics for enterprises in the formal business sector of the South African economy. The purpose of the AFS is to derive a set of measurements of industry performance based on information available from the financial accounts of enterprises. The AFS includes income items, inventory, expenditure items, profit/loss, tax and dividends, current assets, equity, non-current liabilities and current liabilities. Importantly, turnover for each sector is included in the income items, net profit and employment costs. It is therefore convenient to use the 2014 AFS so that the data is more aligned to the Statistics South Africa 2014 South African IO (Stats SA, 2022).

6.2. Trade

The goal here is to estimate the influence that CCIs have on a nation or sub-national localities export volumes. Usually, a Satellite Account estimates the size of the sector's goods and services of trade (export and import). International trade is generally divided in physical goods on the one hand and services on the other.

Physical Goods

The Customs and Excise division of the South African Revenue Services play an integral role in facilitating the movement of goods and people entering or exiting the borders of the Republic. From this and administrative data based on the returns made by importers and exporters, trade data can be extracted. The data is based on the Harmonised System (HS) codes that are commonly used throughout the export process for goods. The HS is a standardised numerical method of classifying traded products and is used globally by customs authorities to identify products when assessing duties and taxes, as well as for gathering statistics. The HS assigns specific six-digit¹⁰ codes for more than 5000 commodity groups.

This allows analysis of trade at a disaggregated basis. Using the UNESCO FCS's six cultural domains¹¹, 85 six-digit HSs are identified as part of cultural trade per domain (Appendix 1). This data can be extracted from the Customs and Excise dataset.

¹⁰ Countries are allowed to add longer codes to the first six digits for further classification.

¹¹ Cultural and Natural Heritage, Performance and Celebration, Visual Arts and Crafts, Books and Press, Audio-visual and Interactive Media, and Design and Creative Services

The data collected also includes the postal codes of the exporter or importer. Although it is not completely accurate, it can be used to identify trade at a sub-national level.

Services Exports

Growing digitisation means that services trade data is becoming increasingly important in identifying cultural trade. Unfortunately, services trade data collection is complex and uneven across countries, with a lack of availability of both disaggregated and bilateral trade data for low and middle-income countries. In the case of South Africa's cultural services trade, data is not yet available at the level of disaggregation required.

6.3. Labour

The third common factor included in many Satellite Accounts is the labour component.

Labour data is available as official national data collected by Statistics South Africa. The Quarterly Labour Force Survey (QLFS) is a household survey conducted every three months, this data is then pooled into an annual dataset to form the Labour Market Dynamics Survey (LMDS).

The survey covers the entire national population based on a master sample. This is divided into four panels, or rotation groups, each of which is surveyed once a year on a rotational (Statistics South Africa, 2008). To ensure that the sample can be extrapolated to represent the population, survey weights are used. Unfortunately, the sample data size that is collected is relatively small. This makes it difficult to collect accurate sub-national employment data at a disaggregated occupational level.

A second method that can be used to estimate CCI employment is through the use of sub-national SAMs. This data does not give the same employment figures but they are nevertheless very close.

Labour data is often disaggregated into:

- highly skilled employment;
- semi-skilled employment;
- unskilled employment; and
- informal employment.

There are two methods that can be used to determine the employment per sector including:

1. Official survey data; or
2. Derived data using SAMs (or I-Os).

The first is data from Statistics South Africa. The two main official sources of labour data include:

- The Quarterly Employment Statistics (QES); and
- The QLFS.

The QES data is collected from enterprises (excluding agricultural undertakings) and only provides data on formal employment. Therefore, the QES exclude

- Domestic workers;
- Informal employment; and
- Agricultural employment.

The QLFS, on the other hand, is a household-based survey conducted every three months and provides figures for total formal and informal employment. It also reports the official unemployment figure. The QLFS is a household survey which is pooled from the quarterly data into an annual dataset called the LMDS. The QLFS that covers the entire national population is based on Statistics South Africa's master sample. This ensures that the survey is as accurately representative of the population as possible. This sample is divided equally into four subgroups that are surveyed in rotation annually (Statistics South Africa, 2008). Survey weights are also included in the LMDS so that the responses can be expanded to represent South Africa's entire population (Statistics South Africa, 2014). Unfortunately, because of

the sample size, weightings may be too large. The sub-national data (or disaggregation of sectors) can result in data being “lumpy” and inaccurate.

The second method using the SAMs uses compensation to derive employment. Since industries tend to have the same intermediary and factor requirements, it can be assumed that these are the same across South Africa. Using the methods discussed above, the compensation for each sector or domain is estimated, then ratios are applied to determine the number of workers.

7. Proposed Way Forward

Unfortunately, with budgetary constraints, it is unlikely that any government departments or agencies will have the resources to develop and maintain an official CSA. Even though Statistics South Africa have the ability to develop and maintain a CSA or a sub-national CSA, resources are tight. Further, given the complexity of the process and the granularity of the data that is required, the legal and quality requirements that Statistics South Africa have to comply with and resource constraints, it will take up time to produce the tables required for the CSA. Nevertheless, it proposed that SACO with support from DSAC, continue with the process to develop sub-national CSAs.

7.1. Prioritisation and sequencing

SACO have already developed a South African CSA and provincial CSAs during the mapping study. It is proposed that SACO work with the various provinces to ensure that the provincial CSAs are updated. Following this, SACO should work with the metros and district municipalities to develop an initial set of sub-national CSAs. After this, SACO can start working with local municipalities to develop local CSAs.

During the process, SACO should work with DSAC, SALGA and the South African Cities Network to ensure there is access to all relevant data and other resources required for this.

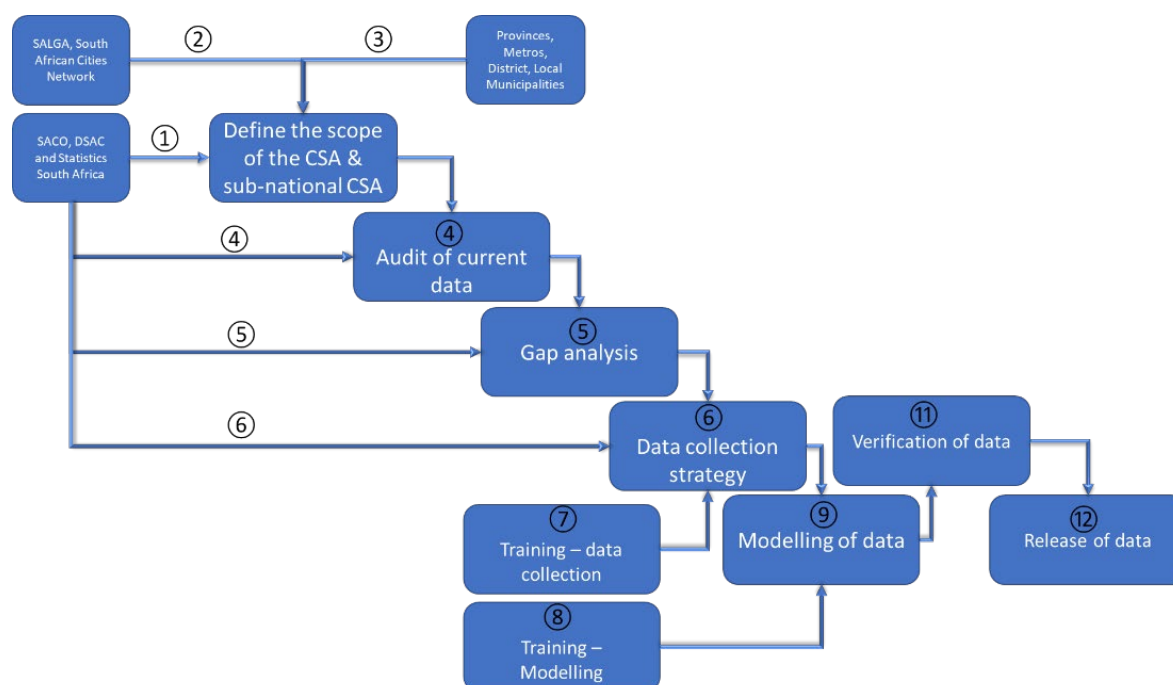


Figure 7. Roadmap towards sub-national CSAs

7.2. Audit, Verification of Current Data and Gap Analysis

Once the data requirements and availability have been determined, SACO and Statistics South Africa should undertake an audit of all information that is currently available and that can be used without too

much adaptation in the CSA. This needs to be followed by a gap analysis that will identify what additional information is required and how this could be obtained.

Identification of Existing Data

Statistics South Africa has already undertaken some surveys that include data relevant to the cultural sector. A full audit, with the assistance SACO and DSAC of this information, especially unpublished information needs to be embark on. Where possible, Statistics South Africa should share this information with SACO and DSAC. SACO and DSAC, on the other hand, need to advise Statistics South Africa of what comprises the cultural sector.

Gap analysis

The gap analysis phase identifies areas where it is necessary to collect data.

7.3. Collection of Data

Collection strategies

The goal will be to use as much current and available data as possible and then to collect additional data.

Database

SACO has a database of thousands of organisations, companies, and individuals involved in the creative industries. SACO needs to build on this database. This entails ensuring that all the current information is correct. SACO will also have to make sure that the database is more comprehensive by contacting all other stakeholders and role players. Database management is important - especially as the volume of business data grows. The database could be put on a website where the organisations, companies, and individuals can update the information when necessary (at least annually). SACO will need to take responsibility to ensure that each entity on the database is contacted either by email, telephone and even by mail annually, to ensure that they update their information.

7.4. Modelling and verification of the data

Using the data that has been collected, it needs to be verified within a SNA framework discussed above. It is necessary to build econometric models to do this.

As discussed above, it is possible to develop an input-output tables or SAMs for the economy and splitting cultural sectors from the other SIC sectors that are currently being used.

8. Conclusion

Culture is important for any society. South Africa, given its heritage, has a rich cultural diversity. Culture is not only important from humanity's perspective, but also from an economic perspective. CSAs are gathering popularity across the world with more and more countries developing them both at a national as well as sub-national levels. To promote cultural development and align it with economic development as set out in South Africa's planning and macroeconomic strategies, it is important that socio-economic data is made available. Although the information discussed in this report is socio-economic in nature, it is important to note that cultural and creative activities have an intrinsic value.

This report discusses techniques to derive general socio-economic data at sub-national level and these provides additional methods that can be used to estimate the values relative for the cultural and creative sectors. Although the data derived from the techniques discussed in this report are estimates, the data is accurate enough to plan and develop strategies and policies as well as to evaluate the impact that these are having on CCIs in the province or municipality.

Importantly, systems need to be put in place to ensure that information is collected regularly to create time series of sub-national CCI data. Once the data is collected on CCIs in South Africa and sub-national regions on a more regular basis, the platform will be developed that inform both planning and policy development on the one hand and monitoring and evaluation on the other.

The development of sub-national CCI socio-economic indicators will play a valuable role in the promotion and development, not only of the sector itself, but also more broadly for economic development.

Bibliography

- Abrahams, D. (2018) 'Local economic development in South Africa: A useful tool for sustainable development', in *Local Economic Development in the Developing World*. Routledge, pp. 131–145.
- Adorno, T. (1981) *The schema of mass culture*.
- Adorno, T.W. (1992) 'Art, autonomy and mass culture', *Art in Modern Culture: An Anthology of Critical Texts*, pp. 74–79.
- Adorno, T.W. (2005) *The culture industry: Selected essays on mass culture*. Routledge.
- Adorno, T.W. and Horkheimer, M. (2020) '3. The Culture Industry: Enlightenment as Mass Deception', in *Philosophers on Film from Bergson to Badiou*. Columbia University Press, pp. 80–96.
- Australia (1994) *Creative Nation: Commonwealth Cultural Policy, October 1994*. Department of Communications and the Arts (Australia.).
- Bin Zhang (2011) 'Origins of Creative Industries Policy Introducing Creative Industries: The UK DCMS Task Force', in T. Flew (ed.) *The creative industries: culture and policy*. Sage. Available at: <https://books.google.co.za/books?hl=en&lr=&id=WYYQAgAAQBAJ&oi=fnd&pg=PP9&dq=unctad+culture&ots=NvLNkMxgsM&sig=bqRNkKZ8tpICoMQl04rRnm-tmZg> (Accessed: 6 February 2017).
- Bond, P. (2018) 'Debates in local economic development policy and practice', in *Local Economic Development in the Developing World*. Routledge, pp. 57–74.
- Cerisola, S. (2018) 'Creativity and local economic development: The role of synergy among different talents', *Papers in Regional Science*, 97(2), pp. 199–215.
- Cerisola, S. (2019) *Cultural heritage, creativity and economic development*. Edward Elgar Publishing.
- Department for Digital, Culture, Media & Sport, U. (1998) *Creative industries mapping document*. London: Department for Digital, Culture, Media & Sport. Available at: <https://www.gov.uk/government/publications/creative-industries-mapping-documents-1998>.
- Departments of Cooperative Governance and and Traditional Affairs (2018) *National Spatial Development Framework*. Pretoria: Departments of Cooperative Governance and Traditional Affairs. Available at: <https://www.dpme.gov.za/keyfocusareas/gwmeSite/The%20PME%20Forum%202018/FINAL-DRAFT-NSDF-September-2018-B-1.pdf>.
- Dlomo, T.O. (2021) *Tourism as a Tool for Local Economic Development in King Sabata Dalindyebo Municipality*. University of Johannesburg (South Africa).
- EY (2015) *Cultural times The first global map of cultural and creative industries*.
- Flegg, A.T. et al. (2021) 'A new approach to modelling the input–output structure of regional economies using non-survey methods', *Journal of Economic Structures*, 10(1), p. 12. Available at: <https://doi.org/10.1186/s40008-021-00242-8>.
- Flegg, A.T., Webber, C.D. and Elliott, M.V. (1995) 'On the Appropriate Use of Location Quotients in Generating Regional Input–Output Tables', *Regional Studies*, 29(6), pp. 547–561. Available at: <https://doi.org/10.1080/00343409512331349173>.
- Florida, R.L. (2002) *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community And Everyday Life*. Basic Books.
- Gouws, A. (2016) *A position paper on the nature, requirements and operationalisation of a Cultural Satellite Account for South Africa*. Port Elizabeth: SACO.

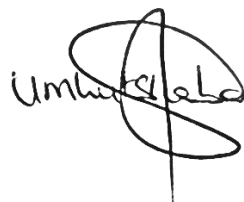
- Higgs, P. and Cunningham, S. (2007) 'Australia's creative economy: Mapping methodologies'.
- KEA European Affairs (2006) *The Economy of culture in Europe: A study prepared for the European Commission (Directorate-General for Education and Culture)*. Brussels: European Commission.
- Khambule, I. (2018) 'Enhancing business development through local economic development agencies (LEDAs) in KwaZulu-Natal', *Skills at Work: Theory and Practice Journal*, 9(1), pp. 34–44.
- Kroeber, A.L. and Kluckhohn, C. (1952) 'Culture: A critical review of concepts and definitions.', *Papers. Peabody Museum of Archaeology & Ethnology, Harvard University* [Preprint].
- Lawrence, F. and Rogerson, C.M. (2018) 'Local economic development agencies and place-based development: Evidence from South Africa', *Bulletin of Geography. Socio-economic Series*, (41), pp. 29–43.
- Le Roux, A. et al. (2017) 'Profiling the vulnerabilities and risks of South African settlements', *Understanding the social & environmental implications of global change. Stellenbosch: African Sun Media*, pp. 26–35.
- Lepenes, P. (2016) *The Power of a Single Number: A Political History of GDP*. Columbia University Press. Available at: <https://doi.org/10.7312/columbia/9780231175104.001.0001>.
- Makhathini, M.S., Mlambo, V.H. and Mpanza, S. (2020) 'Infrastructure provision as a catalyst for local economic development in South Africa.', *Strategic Review for Southern Africa*, 42(1).
- Mashabela, C.M. (2020) 'Assessing the implication of local economic development initiatives on job creation in South Africa: A Case of Polokwane Local Municipality', in. International Conference on Public Administration and Development
- Miller, R.E. and Blair, P.D. (2009) *Input-Output Analysis: Foundations and Extensions*. 2 edition. Cambridge University Press.
- Miriam Mokoena (2022) *South Africa Yearbook 2020/21*. 28th edn. Pretoria: Government Communications (2020/21). Available at: <https://www.gcis.gov.za/sites/default/files/docs/gcis/Cover%20and%20Foreword.pdf>.
- Mokoena, S.K. (2019) 'The Role of Local Economic Development on Small, Medium and Micro Enterprises', *Acta Universitatis Danubius. Administratio*, 11(1).
- Moore, I. (2014) 'Cultural and Creative Industries Concept – A Historical Perspective', *Procedia - Social and Behavioral Sciences*, 110, pp. 738–746. Available at: <https://doi.org/10.1016/j.sbspro.2013.12.918>.
- Mukwarami, S., Mukwarami, J. and Tengeh, R.K. (2020) 'Local economic development and small business failure: the case of a local municipality in South Africa', *International Journal of Business and Globalisation*, 25(4).
- Nakamura, L.I. (2006) 'National income accounts'.
- National Planning Commission (2013) *National Development Plan: Vision 2030*. Pretoria: National Planning Commission.
- Rogerson, C.M. (2009) 'Strategic review of local economic development in South Africa', *Final report submitted to Minister S Shiceka of Department of Development Planning and Local Government (DPLG). Commissioned by DPLG and GTZ* [Preprint].
- Rogerson, C.M. (2014) 'Reframing place-based economic development in South Africa: The example of local economic development', *Bulletin of Geography. Socio-economic series*, (24), pp. 203–218.

- Rogerson, C.M. (2018) 'Towards pro-poor local economic development: the case for sectoral targeting in South Africa', in *Local Economic Development in the Developing World*. Routledge, pp. 75–100.
- Rogerson, C.M. (2019) 'Revamping local economic development policy in South Africa', in *The geography of South Africa*. Springer, pp. 253–259.
- Rogerson, C.M. (2020) 'Using municipal tourism assets for leveraging local economic development in South Africa', *Bulletin of Geography. Socio-economic Series*, 48(48), pp. 47–63.
- van Seventer, D. and Davies, R.H. (2019) *A 2016 social accounting matrix for South Africa with an occupationally disaggregated labour market representation*. WIDER Working Paper (2019/56).
- South African Cultural Observatory (2022) *The macroeconomic impact of the Cultural and Creative Industries in South Africa: 2022*. Gqeberha: South African Cultural Observatory.
- South African Reserve Bank (2022) *Quarterly Bulletin*. Pretoria: South African Reserve Bank.
- Stats SA (2022) *Annual financial statistics*. Pretoria: Stats SA.
- StatsSA (2011) *Living Conditions of Households in SA 2008/2009*. P0310. Pretoria: Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/P0310/P03102008.pdf>.
- StatsSA (2012) *The status of the Non-profit Institutions satellite account for South Africa*. D0407.1. Pretoria: Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/D04071/D04071.pdf>.
- StatsSA (2015) *Volunteer Activities Survey*. P0211.3. Pretoria: Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/P02113/P021132014.pdf>.
- StatsSA (2016a) *2010 Supply and Use Tables*. Report 04-04-03 (2010). Pretoria: Statistics South Africa. Available at: http://www.statssa.gov.za/?page_id=1854&PPN=Report-04-04-03.
- StatsSA (2016b) *Quarterly Labour Force Survey*. P0211, Quarter 2. Pretoria: Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/P0211/P02112ndQuarter2016.pdf>.
- StatsSA (2016c) *Tourism satellite account for South Africa (TSA), final 2012 and provisional 2013 and 2014*. Report 04-05-07. Pretoria: Statistics South Africa. Available at: http://www.statssa.gov.za/?page_id=1854&PPN=Report-04-05-07.
- Stone, R. (1986) 'Nobel memorial lecture 1984: The accounts of society', *Journal of Applied Econometrics*, 1(1), pp. 5–28.
- Theodor, A.W. and Horkheimer, M. (1944) 'The Culture Industry: Enlightenment as Mass Deception', *Dialectic of Enlightenment*. Trans. John Cumming. First pub [Preprint].
- Throsby, D. (2001) *Economics and culture*. Cambridge university press.
- UNCTAD (2008) *Creative Economy Report 2008: The challenge of assessing the creative economy towards informed policy-making*. Geneva: UNCTAD. Available at: <http://unctad.org/en/pages/PublicationArchive.aspx?publicationid=945> (Accessed: 4 October 2016).
- UNESCO (2009) *UNESCO Framework for Cultural Statistics*. Geneva: UNESCO.
- UNESCO, José Pessoa, and Lydia Deloumeaux (2009) *The 2009 UNESCO Framework for Cultural Statistics*. Montreal: UNESCO Institute for Statistic. Available at: <http://www.uis.unesco.org/culture/Documents/framework-cultural-statistics-culture-2009-en.pdf> (Accessed: 6 October 2016).

United Kingdom and Department of Culture, Media and Sport (1998) *Creative industries mapping document*, 1998. London: Department of Culture, Media and Sport.

United Nations (ed.) (1999) *Handbook of input-output table compilation and analysis*. New York: United Nations (Studies in methods, no. 74).

United Nations *et al.* (eds) (2009) *System of National Accounts 2008*. New York: United Nations.

APPROVALS FOR THE SOUTH AFRICAN CULTURAL OBSERVATORY – Methodology to develop sub-national Cultural and Creative Industries' Satellite Accounts for Provinces, Districts and Metros - September 2022				
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Approved by:	<i>Lisa Combrinck</i>	<i>DSAC SACO Project Manager</i>		
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Appendix 1. The Creative and Cultural Industries

CCIs typically bring together the arts, media, and design sectors. However, there is increasing attention on the digital technologies, especially dematerialised produced and services.

8.1. Culture

Culture is difficult to define. Kroeber and Kluckhohn (1952) compiled a list of over 150 different definitions after extensive research. The esoteric nature of culture has led to vagueness in the development of cultural policy, the analysis of culture, and the collection of culture-related data. Madden (2004) summarises the problem as follows:

Different countries have different definitions of culture (i.e. differences in the scope or boundaries of culture) and different classifications of culture (i.e. the cultural domain is broken down in different ways). Many of these fundamental differences result from differences in institutional arrangements in the cultural policy arena (for example, some cultural ministries have responsibility for the design sector, others do not, and their definitions will reflect this difference). Other differences may be philosophical, theoretical, historical, or simply arbitrary. However they arise, differences in definitions reduce the degree of comparability of cultural data. Therefore, though many organisations and governments have attempted to define the concept, it is very much fluid based on location and ironically cultural embeddedness.

8.2. Cultural Industries

The term “cultural industries” is usually trace back to the Frankfurt School and particularly Adorno and Horkheimer (2020) who used the term to designate firms and organisations which harnessed culture for new forms of production and consumption. They were particularly concerned that under monopoly capitalism, art and culture had been sucked up into the broader economy. Adorno (1981, 1992, 2005) lamented that the Culture Industry was an extension of the new industries of mass reproduction and distribution.

Moore (2014) defines cultural industries as those that “have industrial production and organisation to produce and disseminate symbols.” These products and services generally include popular part of culture because these tend to be profitable and allow for are commercialisation, reproduction and distribution of cultural goods.

8.3. Creativity

Creativity is the action of using the imagination to develop original ideas to create a new product or service. These can include works of art, literature, musical compositions, choreographies, or designs. It can be tangible or intangible. These need not be new but can include innovative interpretations or applications of existing works. Generally, creativity is associated with the development of intellectual property (IP) which includes patents, trademarks or copyright.

Internationally, UNESCO’s Institute for Statistics, the United Nations Development Programme (UNDP) and the United Nations Conference on Trade and Development (UNCTAD) collectively and individually played a central role to come closer to common definitions. So too did collaboration between the European Statistical System Network for Culture (ESSnet-Culture) and Mercosur’s cultural statistics agency (Bina et al., 2012; Olarte & Belloo 2006).

The UNDP, in publications such as Culture and Diversity (UNDP 2005), stressed the fundamental relationship between culture and sustainable growth and development. The United Nations’ first Creative Economy Report published by UNCTAD (2008) included the description of economic creativity as a dynamic process leading towards innovation in technology, business practices and marketing. UNESCO’s subsequent FCS formalised the shift to CCIs (UNESCO 2009).

The concept of 'CCI,' though now widely accepted, is giving ground in some quarters to a wider 'creative economy' as a more incorporative signifier (e.g. NESTA 2016); and in certain policy circles, the question of a separate category and focused support for 'cultural industries' has been raised (Lee 2017).

8.4. Creative Industries

Creative Industries have an element of IP. The Australian Department of Communications and the Arts (1994) was first documented concept of creative industries in 'Creative Nation.' They embraced the economic aspects stating: "The strength and creativity of our culture depends on sustainable and self-reliant cultural industries. These industries also provide an increasingly important avenue for employment creation. The growing significance of the cultural industries within the economy and to employment is becoming apparent" (Australia, 1994, p. 74). 'Creative Nation' enabled the development of IT opportunities. Importantly the document was presented as cultural policy but it was also essentially an economic policy.

Bin Zhang (2011) argues that of the concept of creative industries can be traced to the Creative Industries Task Force in the UK's Department of Culture, Media and Sport (DCMS). In 1998, in the UK, a now seminal 'Creative Industries – Mapping Document' was (Department for Digital, Culture, Media & Sport, 1998). DCMS' Thirteen Creative Industries Sectors included:

- Advertising;
- Interactive leisure software (electronic games);
- Architecture;
- Music;
- Arts and antique markets;
- Performing arts;
- Crafts;
- Publishing;
- Design;
- Software and computer services;
- Designer fashion;
- Television and radio; and
- Film and video.

Moore (2014) identifies synonyms for creative industries" including the "creative sector," "copyright industries," "content industries," "experience economy," "creative business sector," "art centric business," "cultural and communication industries," "media industries" and "knowledge economies."

However, there is an overlap between what may be considered a cultural industry and a creative industry and therefore the terms are seldom used independently. The term "CCI" came into being.

8.5. UNESCO

UNESCO's (2009) FCS provide the following classifications for CCIs:

Cultural¹² and Natural¹³ Heritage

- museums (also virtual);
- archaeological and historic places;
- cultural landscapes;
- natural heritage

Performance and Celebrations

- performing arts;
- music;
- festival, fairs and feasts

12 Cultural heritage - represents artefacts, monuments, a group of buildings and sites that have historic, artistic, aesthetic, ethnological or anthropological, scientific and social significance. Cultural landscape represents combined works of nature and by humans, and they express a long and intimate relationship between people and their natural environment.

13 Natural heritage - consists of natural features, geological and physiographical formations and delineated areas that constitute the habitat of threatened species of animals and plants and natural sites of value from the point of view of science, conservation or natural beauty. It includes nature parks and reserves, zoos and aquaria and botanical gardens

Visual Arts and Crafts

- fine arts
- photography
- crafts

Books and Press

- books;
- newspapers and magazines;
- other printed matter;
- library (also virtual);
- book fairs

Audio-visual and Interactive Media

- film and video;
- TV and radio (also internet live streaming);
- Internet broadcasting;
- videogames (also online)

Design and Creative Services

- Fashion design
- graphic design
- interior design
- landscape design
- architectural services
- advertising services

Transversal domains

- * Intangible Cultural Heritage
- * Education and Training
- * Archiving and Preserving
- * Equipment and Supporting Materials

Tourism (related domain)

- charter travel and tourist services;
- hospitality and accommodation

Sports and Recreation (Related Domain)

- sports;
- physical fitness and wellbeing;
- amusement and theme parks;
- gambling

8.6. UNCTAD

UNCTAD's (2008) Creative Economy Report 2008: The challenge of assessing the creative economy towards informed policymaking uses the following classifications for the creative economy

Heritage

Cultural heritage is identified as the origin of all forms of arts and the soul of CCIs. It is the starting point of this classification. It is heritage that brings together cultural aspects from the historical, anthropological, ethnic, aesthetic and societal viewpoints, influences creativity and is the origin of a number of heritage goods and services as well as cultural activities. This group is therefore divided into two subgroups:

- **Traditional cultural expressions:** art crafts, festivals and celebrations; and
- **Cultural sites:** archaeological sites, museums, libraries, exhibitions, etc.

Arts

This group includes creative industries based purely on art and culture. Artwork is inspired by heritage, identity values and symbolic meaning. This group is divided into two large subgroups:

- **Visual arts:** painting, sculpture, photography and antiques; and
- **Performing arts:** live music, theatre, dance, opera, circus, puppetry, etc.

Media

This group covers two subgroups of media that produce creative content with the purpose of communicating with large audiences (“new media” is classified separately):

- **Publishing and printed media:** books, press and other publications; and
- **Audio-visuals:** film, television, radio and other broadcasting.

Functional Creations

This group comprises more demand-driven and services-oriented industries creating goods and services with functional purposes. It is divided into the following subgroups:

- **Design:** interior, graphic, fashion, jewellery, toys;
- **New media:** architectural, advertising, cultural and recreational, creative research and development (R&D), digital and other related creative services;
- **Creative services:** architectural, advertising, cultural and recreational, creative R&D, digital and other related creative services.



Figure 8. UNCTAD's classification of creative industries

Source: UNCTAD (2008)

8.7. Organisation of the Andres Bello Agreement

The Andres Bello Agreement (CAB)¹⁴ released its first manual in 2009 providing guidelines to estimate a CSA. The manual was released in Spanish to a Latin American audience. As such, the methodologies did not receive the attention it deserved. But in 2015 the Organisation released English guidelines (National Administrative Department of Statistics, Colombia, 2015) making their methodologies available to a wider audience.

¹⁴ or Convenio Andres Bello

The CAB defines 12 cultural domains which are:

- | | |
|---|-----------------------------------|
| 1. Creativity; | 7. Design; |
| 2. Scenic Arts and Artistic Spectacles; | 8. Games and Toys; |
| 3. Plastic and Visual Arts; | 9. Material Heritage; |
| 4. Books and Publications; | 10. Natural Heritage; |
| 5. Audio-Visual; | 11. Intangible Cultural Heritage; |
| 6. Music; | 12. Artistic Education |

8.8. UK DCMS Model

This model derives from the impetus in the late 1990s in the United Kingdom to reposition the British economy as an economy driven by creativity and innovation in a globally competitive world. “Creative industries” are defined as those requiring creativity, skill and talent, with potential for wealth and job creation through the exploitation of their IP (United Kingdom and Department of Culture, Media and Sport, 1998).

Virtually all of the 13 industries included in the DCMS classification could be seen as “cultural” in the terms defined earlier; however, the Government of the United Kingdom has preferred to use the term “creative” industries to describe this grouping, apparently to sidestep possible high-culture connotations of the word “cultural.”

- | | |
|----------------------------|----------------------------|
| • Advertising; | • Film and video Music; |
| • Architecture; | • Performing arts; |
| • Art and antiques market; | • Publishing; |
| • Crafts; | • Software; |
| • Design; | • Television and radio; |
| • Fashion; | • Video and computer games |

The UK DCMS model makes no distinction between the industries included, but the other three designate a group of “core” industries, i.e. those whose inclusion is central to the definition adopted in each case. It is apparent that the contents of the core differ markedly among these three models; for example, the creative arts, which are the epicentre of the concentric circles model, are regarded as peripheral in the symbolic texts construction. There is no “right” or “wrong” model of the creative industries, simply different ways of interpreting the structural characteristics of creative production. The attractiveness of the various models may therefore be different, depending on the analytical purpose. From the viewpoint of statistical data collection, however, a standardised set of definitions and a common classification system are needed as a basis for designing a workable framework for dealing with the creative industries within the larger SIC systems that apply across the whole economy.

8.9. Symbolic Texts Model

This model is typical of the approach to the cultural industries arising from the critical-cultural studies tradition as it exists in Europe and especially the United Kingdom (for example, Hesmondhalgh, 2002). This approach sees the “high” or “serious” arts as the province of the social and political establishment and therefore focuses attention instead on popular culture. The processes by which the culture of a society is formed and transmitted are portrayed in this model via the industrial production, dissemination and consumption of symbolic texts or messages, which are conveyed by means of various media such as film, broadcasting and the press.

Core Cultural Industries

- | | |
|----------------|-----------------------------|
| • Advertising; | • Publishing; |
| • Film; | • Television and radio; |
| • Internet; | • Video and computer games. |
| • Music; | |

Peripheral Cultural Industries

- Creative arts

Borderline Cultural Industries

- Consumer electronics;
- Fashion;
- Software;
- Sport.

8.10. Concentric Circles Model.

This model is based on the proposition that it is the cultural value of cultural goods that gives these industries their most distinguishing characteristic. Thus the more pronounced the cultural content of a particular good or service, the stronger is the claim to inclusion of the industry producing it (Throsby, 2001). The model asserts that creative ideas originate in the core creative arts in the form of sound, text and image and that these ideas and influences diffuse outwards through a series of layers or “concentric circles,” with the proportion of cultural to commercial content decreasing as one moves further outwards from the centre. This model has been the basis for classifying the creative industries in Europe in the recent study prepared for the European Commission (KEA European Affairs, 2006, pp. 53–57).

Core Creative Arts

- Literature;
- Music;
- Performing arts;
- Visual arts.

Other Core Cultural Industries

- Film;
- Museums and libraries.

Wider Cultural Industries

- Heritage services;
- Publishing;
- Sound recording;
- Television and radio;
- Video and computer games.

Related Industries

- Advertising;
- Architecture;
- Design;
- Fashion.

8.11. WIPO Copyright Model.

This model is based on industries involved directly or indirectly in the creation, manufacture, production, broadcast and distribution of copyrighted works (World Intellectual Property Organisation, 2003). The focus is thus on IP as the embodiment of the creativity that has gone into the making of the goods and services included in the classification. A distinction is made between industries that actually produce the IP and those that are necessary to convey the goods and services to the consumer. A further group of “partial” copyright industries comprises those where IP is only a minor part of their operation).

Core Copyright Industries

- Advertising;
- Collecting societies;
- Film and video;
- Music;

- Performing arts;
- Publishing;
- Software;

- Television and radio;
- Visual and graphic art

Interdependent Copyright Industries

- Blank recording material;
- Consumer electronics;
- Musical instruments;

- Paper;
- Photocopiers, photographic equipment

Partial Copyright Industries

- Architecture;
- Clothing, footwear;
- Design;

- Fashion;
- Household goods;
- Toys.

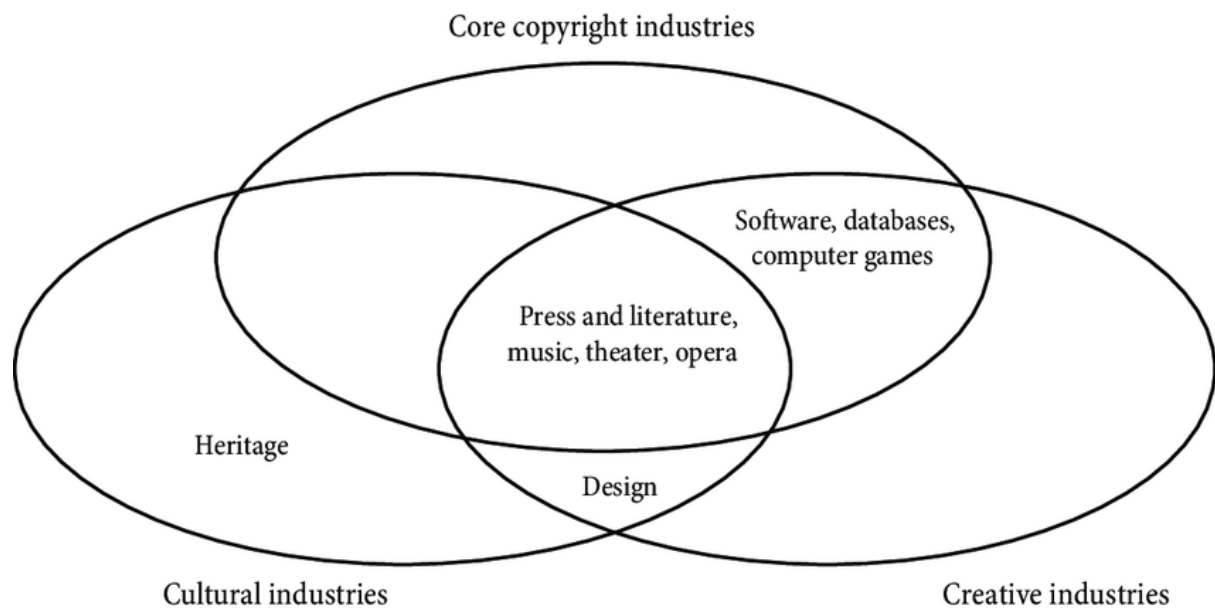


Figure 9. WIPO's classification system of CCIs and Copyright Industries

Appendix 2. A few notes on calculating the Gross Domestic Product

The Gross Domestic Product (GDP) is defined as the total value of all final goods and services produced within the geographic boundaries of a country in a particular period. It is important to recognise that production gives rise to income, which in turn is spent on production. The value of the total product will therefore always equal the value of total income.

There are three approaches to measuring the GDP

- the production method
- the income method
- the expenditure method

The production method looks at the value added of each process needed to produce the final goods or services.

The income method focuses on the income earned in the form of rent, interest, wages and profits in the production process. In the national accounts the income is generally reported (By the South African Reserve Bank) as follows:

compensation of employees
+ net operating surplus
+ consumption of fixed capital
= gross value added at factor cost
+ taxes on production
- subsidies on production
= gross value added at basic prices
+ taxes on products
- subsidies on products
= gross domestic product at market prices

Expenditure on GDP is calculated as follows:

final consumption expenditure by households
+ final consumption expenditure by general government
+ individual consumption expenditure
+ collective consumption expenditure
+ gross capital formation (gross fixed capital formation plus change in inventory)
= Gross domestic expenditure (including a residual item)
+ exports of goods and services
- imports of goods and services
=Expenditure on gross domestic product (GDP at market prices)

Appendix 3. A simple Input-Output framework

Although a SAM provides additional information that is required to construct a Satellite Account, it is necessary to develop and explain an important component of the SAM namely I-O table. This focuses on the interrelationship between industries in an economy with respect to the production and uses of their products and the products imported. Generally, the **IO** framework is represented in a table. In this form, the economy is viewed as each industry listed across the top is a consuming sector and down the side is a supplying sector.

Table 1. Basic IO Transactions Table

		Producers as Consumers								Final Demand			
										Personal Consumption Expenditure	Gross Private Domestic Investment	Govt. Purchases of Goods and Services	Net Export of Goods and Services
		Agric.	Mining	Const.	Manuf	Trade	Transp	Services	Other				
Producers	Agriculture												
	Mining												
	Construction												
	Manufacturing												
	Trade												
	Transport												
	Services												
	Other Industry												
Value Added	Employees	Employee Compensation								Gross Domestic Product			
	Business Owners	Profit-type income and capital consumption allowance											
	Government	Indirect business taxes											

Source: Miller and Blair (2009, p. 3)

Although most industries will provide goods and services for final consumption, they will also provide inputs into the productive process of other industries. Besides buying inputs from other industries, producers need labour and capital to produce the goods and services. In addition, firms may receive subsidies or required to pay taxes. In an open economy, companies would also import part of their input for production. The “recipe” for the manufacture of an industries products or services can be seen down each column.

Similarly, firms will produce products that will be used as inputs for the production in other industries. However, they will supply goods and services (final demand) for consumers, investors and government. They will also provide goods and services to foreign markets.

The **I-O TABLE**, as discussed above, therefore shows how the GDP for a country is calculated using the production method, the expenditure method and the income method. The table shown above includes only a few industries. Many **IO**-tables have considerably more industries listed. However, the greater number of industries the more complex and complicated it becomes to “balance” the table, bearing in mind that the three methods used to calculate the GDP must arrive at the same value.

Although the table makes it easier to grasp the economic concepts behind the analysis, and **IO** model primarily consists of a system of linear equations. Each equation describes the distribution of an industry’s product throughout the economy.

Leontief introduced the assumption of fixed-coefficient linear production functions relating to input used by an industry. These matrices, including the **F**-matrix, is shown in Figure 3.

Figure 10: A highly simplified IO accounting framework

	Industries	Net final demand	Total output
Industries	F	Y	X
Value added (Primary inputs)	V		
Total input	X		

Source: United Nations (1999, p. 4)

If we assume that there are only three industries present in an economy, Industry 1 would require inputs from Industry 2 and Industry 3 as well as from its own industry. Although the **I-O TABLE** which shows the actual amount used, it is more useful to assume how much of the other industries are required to make one unit. This is demonstrated by an example in the table below.

Table 2: IO flow table and accounts

	Industry 1	Industry 2	Industry 3	Final demand	Total output
Industry 1	0	20	45	35	100
Industry 2	30	0	30	140	200
Industry 3	0	80	0	70	150
Value added	70	100	75		
Total input	100	200	150		

Source: United Nations (1999)

The value-added row corresponds to the “V” matrix in the figure above. The shaded area refers to the “F” matrix above. The total input row is equal to the total output row and corresponds to matrix “X.”

Table 3: IO interindustry flows and value added

	Industry 1	Industry 2	Industry 3
Industry 1	0	20	45
Industry 2	30	0	30
Industry 3	0	80	0
Value added	70	100	75

When Leontief introduced the assumption that there are fixed-coefficient linear production functions relating to each industry, **IO** analysis became an economic tool. These fixed-coefficient linear functions relate the inputs used by an industry along each column to its output flow. In other words, for every one unit of an industries output, the fixed amount of input from other industries is required.

This is shown in the table below:

Table 4: IO coefficient table: inputs per unit of output

	Industry 1	Industry 2	Industry 3
Industry 1	0.00	0.10	0.30
Industry 2	0.30	0.00	0.20
Industry 3	0.00	0.80	0.00
Value added	0.70	0.50	0.50

This table can also be written in more general terms.

Table 5: IO coefficient table: general terms

	Industry 1	Industry 2	Industry 3	Net final demand
Industry 1	a_{11}	a_{12}	a_{13}	Y_1
Industry 2	a_{21}	a_{22}	a_{23}	Y_2
Industry 3	a_{31}	a_{32}	a_{33}	Y_3
Value-added	V_1	V_2	V_3	

These relationships can be written as follows:

$$a_{11}X_1 + a_{12}X_2 + a_{13}X_3 + Y_1 = X_1$$

$$a_{21}X_1 + a_{22}X_2 + a_{23}X_3 + Y_2 = X_2$$

$$a_{31}X_1 + a_{32}X_2 + a_{33}X_3 + Y_3 = X_3$$

Equation 19

In matrix form these equations can be written as:

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \times \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} + \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \end{bmatrix} = \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix}$$

Equation 20

However, in any economy, they are considerably more than three industries and the more general way of denoting these is as follows:

$$a_{11}X_1 + a_{12}X_2 + \cdots a_{1n}X_n + Y_1 = X_1$$

$$a_{21}X_1 + a_{22}X_2 + \cdots a_{2n}X_n + Y_2 = X_2$$

$$\cdot + \cdot + \cdots \cdot + \cdot = \cdot$$

$$a_{n1}X_1 + a_{n2}X_2 + \cdots a_{nn}X_n + Y_n = X_n \quad \text{Equation 21}$$

In matrix form, this is donated as:

$$\begin{bmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{n1} & \cdots & a_{nn} \end{bmatrix} \times \begin{bmatrix} X_1 \\ \vdots \\ X_n \end{bmatrix} + \begin{bmatrix} Y_1 \\ \vdots \\ Y_n \end{bmatrix} = \begin{bmatrix} X_1 \\ \vdots \\ X_n \end{bmatrix} \quad \text{Equation 22}$$

Table 6: Technical coefficients of an I-O TABLE (Matrix A)

		Buying sector				
		1	...	j	...	n
Selling sector	1	a_{11}	...	a_{1j}	...	a_{1n}
		$\vdots$		$\vdots$		$\vdots$
	i	a_{i1}	...	a_{ij}	...	a_{in}
		$\vdots$		$\vdots$		$\vdots$
	n	a_{n1}	...	a_{nj}	...	a_{nn}

Using matrix notation, it is usually written as:

$$AX + Y = X \quad \text{Equation 23}$$

This relationship is the basic **IO** system of equations, where:

- Matrix A is the **IO** coefficient matrix;
- Matrix X is the output vector; and
- Matrix Y is the net final demand vector.

The solution of an **IO** model is described in discussed below.

Final demand (Y) consists of the household, government and rest of the world sectors. Value-added (V) to the producing sector consists of the returns to factors of production (capital and labour) that receive interest and wages.

An **I-O TABLE** and associated model is generally constructed from observed data for a particular area. Most often this area refers to a nation. It could however also refer to sub-national areas. The data are also collected for a given period of time, usually a year. Although theoretically, the **I-O TABLE** applies to units of production, this is impractical, and it is generally presented in monetary terms.

The discussion above referred to a closed economy and therefore did not include international trade (imports and exports). This is necessary because very few industries produce goods or services without using some imported components.

8.12. The Use of IO-Tables

Equation 5 is very useful in that it is used to calculate the impact on an economy of particular shock. In other words, **IO** analysis can use to calculate the economic effects of exogenous changes in y (the net final demand vector). For example, the economic impact (in terms of industrial output, employment, and income) of a new sound stage for the production of motion pictures, in both the short- and long-term, on a particular (national or regional) economy.

Using equation 5, the impact of an exogenous shock is given by equations 6, 7 and 8. The model begins with a formula that states output is equal to final demand plus industry inputs:

$$x = y + F \quad \text{Equation 24}$$

Where:

- x = output;
- y = final uses; and
- F = industry inputs.

To simplify the formula and enable algebraic manipulation, industry inputs are expressed in terms of portions of industry output by dividing industry inputs by industry output.

1.1 First Round Effects

The technical coefficients matrix(A) is derived by dividing interindustry transactions by output,

$$A = \frac{F}{x} \quad \text{Equation 25}$$

Where A is the coefficient matrix, and where each element is calculated as follows:

$$a_{ij} = \frac{f_{ij}}{x_j} \quad \text{Equation 26}$$

This formula is usually referred to as the direct coefficients or the direct requirements matrix.

Matrix A describes the direct, first round impact of any change in final demand. It shows how much input from sector i is used to produce the output of sector j .

1.2 Leontief Inverse Matrix

Rearranging the coefficient formula in terms of F gives:

$$Ax = F \quad \text{Equation 27}$$

Substituting for F in the equation 6 expresses the equation in similar terms:

$$x = Ax + y \quad \text{Equation 28}$$

The formula is rearranged to solve for y , in order to show the relationship between output and final uses. The formula is then solved to describe output as a function of final uses:

$$x - Ax = y \quad \text{Equation 29}$$

This formula can be simplified by applying the distributive rule:

$$(I - A)x = y \quad \text{Equation 30}$$

Where:

I is an identity matrix.

The Leontief Inverse matrix is calculated when this is solved for production as a function of final demand. The model is solved for x in terms of y by dividing $(I-A)$ into both sides of the equation. In matrix algebra, the division is accomplished by inverting the matrix. In **IO** terminology, the inverse—that is, the function that relates final uses to output—is referred to as the total requirements matrix:

$$x = (I - A)^{-1}y \quad \text{Equation 31}$$

For this model to be valid, it is assumed that:

The structure of the economy does not change. This is particularly relevant for the production functions.

The economy is well described with linear production functions. This is particularly relevant when considering changes in final demand.

These assumptions are defensible for assessments over short time spans and small changes in final demand, respectively. Another assumption is that the region is large enough to make imports by individuals insignificant.

$$L_{ij} = (I - A)^{-1} \quad \text{Equation 32}$$

Where $(I - A)^{-1}$ and L_{ij} are generally referred to as the Leontief Inverse matrix.

It is often referred to as a Type I inverse matrix and shows how much of each industry's output is needed, in terms of direct and indirect requirements to produce one unit of a given industry's output.

8.13. Leontief Inverse and Further Rounds of Impacts

A Type II inverse matrix that shows the induced requirements (in terms of industry's output) of a production of one unit of a given industry's output can also be calculated. It not only takes the direct and indirect requirements included in the Type I inverse matrix, but also the flows of money in and out of households and the effect this has on each industry.

A similar process is used to derive a Type II inverse matrix as the Type I inverse or Leontief matrix. However, it is necessary to include households in the analysis. These are treated as an additional industry by adding an extra row "compensation of employees" and column final "consumption expenditure by households" to the direct requirements matrix.

This is given by:

$$A = \begin{bmatrix} (A_{II})_{ij} & (A_{IH})_i \\ (A_{HI})_j \end{bmatrix} \quad \text{Equation 33}$$

Where:

- $(A_{II})_{ij}$ is the Direct Requirements matrix A, or the amount of industry i required per unit of industry j; the amount of industry i required per unit of total household income from all sources;
- $(A_{IH})_i$ is the amount of industry i required per unit of total household income from all sources;
- $(A_{HI})_j$ is the income paid to households per unit of output of industry i (compensation of employees divided by the total output of the industry).

Appendix 4. Social Accounting Matrices

A SAM is a comprehensive, economy-wide data framework that contains systemised information about the flow of financial and economic aggregates between the different economic interest groups and institutions in an economy (i.e. business enterprises, households, government, etc.) on a logical basis during a given period of time – usually one calendar year. The SAM, therefore, makes it possible to clearly distinguish between these interest groups and their role in the economy, to research the effects of interaction between groups, and to measure how the economic/financial welfare of each group is affected. The SAMs are converted by economists into user-friendly macroeconomic impact models that can be used to calculate the economic impact of “interventions” of programmes and projects on the economy. (Conningarth, <http://conningarth.co.za/overview/> accessed September 18, 2017).

Depiction of a SAM

SAMs (in much the same way that IOs do), simplify the representation of the economy being modelled. SAMs are currently in widespread use, and many statistical bureaux, (particularly in OECD countries and South Africa), create both a national account and this matrix counterpart.

Table 7: Representation of a SAM¹⁵

	Firm	Household	Government	Rest of Economy	Net Investment	Total (Received)
Firm		C	G _F	(X-M) _K	I	C+G _F +(X-M) _K +I
Household	W		G _H	(X-M) _C		W+G _H +(X-M) _C
Government	T _F	T _H				T _F +T _H
Rest of Economy	(X-M) _K	(X-M) _C				(X-M) _K +(X-M) _C
Net Investment		S _H	S _G			S _H +S _G
Total (Expended)	W+T _F +(X-M) _K	C+T _H +(X-M) _C +S _H	G _F +G _H +S _G	(X-M) _C +(X-M) _K	I	

Once the SNA flows have been set up, other flows in the economy can be easily extended to include in SAMs simply by adding more columns and rows. Often rows for capital and labour are incorporated, and the economy can be disaggregated into many sectors. Each extra disaggregated source of funds must have an equal and opposite recipient. SAMs form the backbone of Computable General Equilibrium Models and various types of empirical multiplier models.

¹⁵ Abbreviations: Capital letters: Taxes, Wages, iMports, eXports, Savings, Investment, Consumption, Government Transfer Subscripts: Firms, Households, Government, Consumption Goods, K: Capital Goods

Appendix 5. Data Requirements and Sources¹⁶

1. Available Data in South Africa

This Appendix discusses available data sources that already exist that can be utilised to produce the South African CSAs. The table below provides an overview of the data followed by a brief description of the data source. Typical sectors are provided as an example for each source that can (depending on the definition of CSAs), be considered.

Table 8: Potential data sources that can be used in the CSA

Survey/administrative data	Coverage	Frequency	Demand or supply-side data	Conducted by whom	Classification
Annual Financial Statistics	12 922 (2014 AFS)	Annually	Supply side	Statistics South Africa	SIC
Large sample surveys	-	Periodically	Supply side	Statistics South Africa	SIC
Income and expenditure of households survey	31 419 dwelling units (2010/11 IES)	Every 5 to 6 years	Demand side (expenditure data)	Statistics South Africa	COICOP
Living conditions of households		Every 5 to 6 years	Demand side (expenditure data)	Statistics South Africa	COICOP
QLFS	Approximately 30 000 dwellings	Quarterly	Employment demand	Statistics South Africa	-
TSA	-	Annually	Supply and demand	Statistics South Africa	CPC
Non-profit Institutions Satellite Account	-	In progress	Supply and demand	Statistics South Africa	-
SUT	62 industries by 104 products 171 industries by 104 products	Annually Periodically	Industry supply and demand	Statistics South Africa	SIC (industries), CPC (products)
Quarterly employment statistics	20 000 formal non-agricultural business	Quarterly		Statistics South Africa	SIC
Volunteer Activity Survey	Approximately 2 909 individuals	Periodically	Supply	Statistics South Africa	-
Financial statistics of consolidated general government	-	Annually	Supply	Statistics South Africa	-
National Treasury, Budget Vote data	Budgeted and actual	Annually	Supply	National Treasury	-

¹⁶ This appendix is based on Gouws (2016) and updated as necessary.

Survey/administrative data	Coverage	Frequency	Demand or supply-side data	Conducted by whom	Classification
	expenditure data				
Trade data	Approximately 5 300 at six-digit level	Monthly	Import (demand) Export (supply)	SARS	HS

2. Statistics South Africa

In South Africa, the Statistics Act, 1999 (Act No. 6 of 1999) provides for a Statistician-General as head of Statistics South Africa, who is responsible for the collection, production, and dissemination of official and other statistics. The purpose of official statistics is to assist organs of state, businesses, other organisations or public planning; decision making or other actions; monitoring or assessment of policies and decision making or other measures.

3. Statistics South Africa's Annual Financial Statistics

The AFS survey collects a range of financial statistics in respect of enterprises in the formal business sector of the South African economy. The purpose of the AFS is to derive a set of measures of industry performance based on information available from the financial accounts of enterprises. The AFS includes incomes items, inventory, expenditure items, profit/loss, tax and dividends, current assets, equity, non-current liabilities and current liabilities. Importantly turnover for each sector is included in the incomes items, net profit and employment costs. It is therefore convenient to use the 2014 AFS so that the data are more aligned to the Statistics South Africa 2014 South African IO. (http://www.Statistics South Africa.gov.za/?page_id=1854&PPN=P0021)

As discussed above, not all industry sectors have subcategories that include CCIs. In such cases, estimates can be based on the number of CCI employees as a percentage of total employees of the sector concerned. These data are based on the QLFS (2014, Quarter 3) provided by Statistics South Africa.

4. Large Sample Surveys

The large sample surveys are periodic surveys done by Statistics South Africa. The personal services industry survey covers Divisions 92 (Educational services) to Division 99 (Other service activities). Division 96 covers recreational, cultural and sporting activities. The sample for the surveys is drawn from Statistics South Africa's Business Register that is based on units registered for value added tax (VAT) and income tax at SARS. Results from these surveys are used for compiling SA's national accounts including GDP and gross fixed capital formation. The 1993 edition of the Standard Industrial Classification of all Economic Activities (SIC), Fifth Edition, is used to classify the statistical units in these surveys. The SIC is based on the 1990 International Standard Industrial Classification of All Economic Activities (ISIC) with suitable adaptations for local conditions¹⁷.

5. Income and Expenditure of Households Survey and Living Conditions Survey

The Income and Expenditure¹⁸ Survey and Living Conditions Survey provides household income information and household expenditure (demand). These survey data are collected by Statistics South Africa using the Classification of Individual Consumption According to Purpose (COICOP). The

¹⁷ StatsSA, 2009. Personal services industry, 2008. Statistical release P9001. <http://www.statssa.gov.za/publications/P9001/P90012008.pdf>

¹⁸ StatsSA, 2012. Income and expenditure of households, 2010/11. Statistical release P0100. http://www.statssa.gov.za/?page_id=1854&PPN=P0100

2010/11 IES has a sample size of 31 419 dwelling units. The 2005/06 IES has a sample size of 22 617 dwelling units that were covered during the 12 months of data collection. The COICOP for the 2010/11 IES covered 755 consumption categories, 36 in-kind consumption categories, and 15 non-CPI consumption categories. It also covers income, in-kind income, savings taxes, transfers, and debts.

6. Living Conditions of Households

Statistics South Africa conducts the Living Conditions of Households Survey that aims to provide data that will contribute to better understanding of living conditions and poverty in South Africa. Data for the 2008/2009 survey (Statistics South Africa 2011) was collected from 25 075 households across the country over 12 months using a combination of the diary and recall methods. Data is collected using the COICOP classification.

7. The General Household Survey (GHS)

The GHS presents the results of the survey conducted annually by Statistics South Africa since 2002 of South African households. The survey collects information on a variety of subjects including education, health, the labour market, dwellings, access to services and facilities, transport, and quality of life. The survey replaced the October Household Survey which was introduced in 1993 and was terminated in 1999.

8. QLFS

The QLFS is a household-based sample survey conducted by Statistics South Africa. It collects data on the labour market activities of individuals aged 15 years and above who live in South Africa. The survey sample is of approximately 30 000 dwellings in which households reside. This data can provide insight into employment (Statistics South Africa 2016b).

9. TSA

The TSA (StatsSA, 2016c) quantify cultural services as one of its “characteristics products.” This is expressed in terms of domestic demand, international demand (exports), total domestic supply and tourism spending abroad (imports). The first five digits correspond to the CPC¹⁹, Version 2.0 code, and the sixth digit is used exclusively for the TSA.

Cultural services include:

Performing arts

- Performing arts facility operation services (96230.0)
- Services of performing artists (96310.0)

Museum and other cultural services

- Museum services except for historical sites and buildings (96411.0)
- Preservation services of historical sites and buildings (96412.0)
- Botanical and zoological garden services (96421.0)
- Nature reserve services including wildlife preservation services (96422.0)

10. Volunteer Activity Survey

The Volunteer Activities Survey (VAS) collects detailed information on volunteer activities. Statistics South Africa conducted its second VAS in the second quarter of 2014, after the first one had been carried out in 2010. The survey is household-based and collected information on the volunteer activities (a maximum of three activities) of individuals aged 15 years and older in South Africa. The

¹⁹ Cultural services according to the ISIC, Rev. 3 includes 9232, 9233 (9232-1, 9232-2, 9233-1, 9233-2)

respondents were selected from the households enumerated during the QLFS. It covers unpaid non-compulsory work; that is, the time individuals give without pay to activities performed either through an organisation or directly for others outside their household in the four weeks preceding the survey interview. The survey covers three of the main volunteer activities in which respondents were involved. The volunteer activities could be conducted directly, through an organisation, or through both (direct and organisation-based volunteering). Approximately 2 909 individuals eligible for VAS were followed up to conduct detailed interviews about their volunteer activities during the reference period.

The 2014 survey include estimates on the number, hours and value of volunteer work for different organisations including and culture and recreation (Statistics South Africa 2015b).

11. Non-profit Institutions Satellite Account

Statistics South Africa (2012) is in the process of developing a Non-Profit Institutions Satellite Account and published the first working paper in 2012. They gradually started, to begin with a consolidated account of the Non-profit Institution (NPI) sector, that is, the short form of NPISA, and particularly excluding the details of volunteer labour with the non-market output of market NPIs. Statistics South Africa concluded that it is not currently possible to compile the full elaboration of the NPISA tables to a required standard. As a result, the compilation of the full set of integrated economic account (IEA) per institutional sector and for the total economy is still in a development phase (the household sector and NPISA are combined, and the balance sheet section is not yet compiled). There is, unfortunately, lack of sufficient data for the compilation of the full IEA. The proposed NPISA is proposed to consist of six tables, most with multiple parts including:

- Aggregated NPI sectors (transactions, flow and stock and other variables like number of volunteers);
- Categories of expenses (operating expenses, intermediate consumption, compensation of employees), sources of revenue, transfer payments, paid and volunteer employment and compensation and asset accumulation and position;
- IEAs by sector and type of institution;
- Output, value added, employment and final consumption expenditure by sector and type of institution; and
- Non-profit entities, members, and membership.

The International Classification of Non-profit Organisations (ICNPO) includes 12 groups of which one is:

- Culture and recreation (Group 1) with subdivisions:
 - Culture and arts (1100)
 - Sport (1200)
 - Other recreation and social clubs (1300)

12. Supply and Use Tables

Supply and Use (SU)-tables are the cornerstone of the SNA. The SU-tables provide a coordinating framework for checking both the accuracy and the consistency of the data contained in national accounts. One of the many other uses of the SU-tables is that they can be extended to Satellite Accounts (accounts linking the SNA with specific fields of enquiry). The intent of Satellite Accounts is to make apparent and to describe in more depth aspects that are hidden in the national accounts framework or surface only in a limited number of points (Statistics South Africa, 2014). Culture, like tourism, is not an industry and cannot be classified separately.

The supply table shows the source or the origin of the goods and services produced within the economy for a given year in a matrix format. The supply of goods and services is measured at basic prices, which is the preferred method of valuing output in the SNA. The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output

minus any tax payable plus any subsidy receivable on that unit as a consequence of its production or sale. Basic prices exclude any transport charges invoiced separately by the producer.

The use table displays the demand for various goods and services, which may be used as intermediate inputs (goods and services that are purchased by an industry from other industries or imported to produce its outputs) or for final consumption by households, government, etc. The SNA recommends that intermediate and final consumption expenditure be valued at purchasers' prices. The purchasers' price is the amount paid by the purchaser, excluding any deductible VAT or similar deductible tax, to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchasers' price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place (Statistics South Africa 2016 a).

The SU-tables are available annually in a 64x104 product matrix and periodically available in a 171x104 matrix.

The SU-table includes for example recreation, cultural, sport activities.

13. National Treasury, Budget Vote Data

These datasets provide information on government expenditure given the annual budget cycles²⁰. Vote 37 provides for example medium-term budgets for arts and culture. This includes for example expenditure on:

- National Language Services;
- Pan South African Language Board;
- CCI Development;
- Performing Arts Institutions;
- National Film and Video Foundation;
- National Arts Council;
- Capital Works of Performing Arts Institutions;
- Heritage Promotion;
- National Archive Services;
- Heritage Institutions;
- National Library Services;
- Public Library Services;
- South African Heritage Resources Agency;
- South African Geographical Names Council; and
- National Heritage Council.

14. Trade Data

SARS is the legislatively empowered entity for statistics on the importation and exportation of goods²¹. This data is categorised according to the HS. At the international level, the HS for classifying goods is a six-digit code system comprising approximately 5.300 article/product descriptions that appear as headings and subheadings, arranged in 99 chapters and grouped in 21 sections.

- H95080: Roundabouts, swings, shooting galleries and other fairground amusements; travelling circuses and travelling menageries; travelling theatres.
- H59070: Textile fabrics otherwise impregnated, coated or covered; painted canvas being theatrical scenery, studio back-cloths or the like.
- H85233: Prepared unrecorded media for sound recording or similar recording of other phenomena (excl. products of chapter 37).

²⁰ National Treasury. Documents, Medium term budget policy statements. <http://www.treasury.gov.za/documents/mtbps/2015/tablesAENE.aspx>

²¹ SARS, Trade statistics. <http://www.sars.gov.za/ClientSegments/Customs-Excise/Trade-Statistics/Pages/default.aspx>

- H85241: Records, tapes and other recorded media for sound or other similarly recorded phenomena, incl. matrices and masters for the production of records (excl. products of chapter 37).
- H97050: Collections and collectors' pieces of zoological, botanical, mineralogical, anatomical, historical, archaeological, palaeontological, ethnographic or numismatic interest.
- H97060: Antiques of an age exceeding one hundred years.

Appendix 6. Private Sector Service Providers

1. Quantec

Quantec is a South African firm that has been collecting and supplying international, national and sub-national economic data since the early 1990s.

Quantec's EasyData service provides online access to South African macroeconomic, industry, international trade and regional indicators and analysis. The Economic Impact Analysis data sets are available at national or regional level. The regional impact tables cover nine provinces, 52 district municipalities, and all 234 local municipalities; the larger metropolitan areas are subdivided into 42 metropolitan developmental regions.

Quantec also provide a South African SAM (91 industries, 4 labour categories by sector and skill level, 13 household categories by decile). In addition, they can provide Supply and Use Tables (SUTs) (for provinces, district municipalities, local municipalities or metropolitan regions) that include the flow of goods between a province and the rest of South Africa for 50 industries. Employment quantities and fixed capital stock data are also included.

2. Global Insight

Global Insight was formed in March 2001 from the merger of WEFA (formerly Wharton Econometric Forecasting Associates), DRI (formerly Data Resources Inc), Primark Decision Economics and Primark Poland (<https://ihsmarkit.com/about/history.html> downloaded 15 September 2022).

IHS Global Insight's Regional eXplorer (ReX) is a consolidated platform of integrated databases that provide South African municipal statistics, including economic, socioeconomic, demographic, and development data.

Appendix 7. Components of the CSA for South Africa

Table 9. Components of the CSA for South Africa

Cultural Domains	SIC 7/ ISIC 4.1	Cultural and Creative Industry Activities
A. Cultural & Natural Heritage	9000	Creative, Arts & Entertainment Activities
	9102	Museums Activities & Operation of Historical Sites & Buildings
	9103	Botanical & Zoological Gardens & Nature Reserves Activities
	4774	Retail Sale of Second-Hand Goods
B. Performance & Celebration	9000	Creative, Arts & Entertainment Activities
	3220	Manufacture of Musical Instruments
	5920	Sound Recording & Music Publishing Activities
	4762	Retail Sale of Music & Video Recordings in Specialised Stores
C. Visual Arts & Crafts	9000	Creative, Arts & Entertainment Activities
	7420	Photographic Activities
	5819	Other Publishing Activities
	3211	Manufacture of Jewellery & Related Articles
	7220	Research & Experimental Development on Social Sciences & Humanities
D. Books & Press	9101	Library & Archives Activities
	5811	Book Publishing
	5813	Publishing of Newspapers, Journals & Periodicals
	5819	Other Publishing Activities
	4761	Retail Sale of Books, Newspapers & Stationary in Specialised Stores
	6391	News Agency Activities
	6399	Other Information Service Activities NEC
	4649	Wholesale of Other Household Goods
	9000	Creative Arts & Entertainment Activities
E. Audio-Visual & Interactive Media	5820	Software Publishing
	5911	Motion Picture, Video & Television Programme Production Activities
	5912	Motion Picture, Video & Television Programme Post- Production Activities
	5913	Motion Picture, Video & Television Programme Distribution Activities
	5920	Sound Recording & Music Publishing Activities
	5914	Motion Picture Projection Activities
	6010	Radio Broadcasting
	6020	Television Programming & Broadcasting Activities
	6312	Web Portals
	7722	Renting of Video Tapes & Discs
	6391	News Agency Activities
	4762	Retail Sale of Music & Video Recordings in Specialised Stores
	4791	Retail Sale Via Mail Order Houses or via the internet
F. Design & Creative Services	7410	Specialised Design Activities
	7110	Architectural & Engineering Activities & Related Technical Consultancy
	7310	Advertising
Transversal Cultural Education Domain	8522 & 8530	Technical and Vocational Secondary Education; and Higher Education

Appendix 8. Establishing the Magnitude of the CCIs

There are two methods for establishing the magnitude of the CCIs, namely, the Direct Method, and the Indirect Method.

1. The Direct Method

The Direct Method involves using SIC sector Production/Turnover as a measure of the magnitude of the CCIs. There are two approaches that can be used in applying the Direct Method. Firstly, where a CCI corresponds directly with a SIC sector, the full 100% amount of the SIC sector's Production can be used as the CCI's production. In cases where the CCI represents only a portion of the SIC's Production, it is necessary to derive an appropriate portion of the SIC sectors Production by making use of secondary data sources.

2. The Indirect Method

The Indirect Method is used in cases where it is difficult to establish the proportion that a specific CCI represents of a SIC sector. In these cases, it is necessary to establish where the output of the CCI is used as an input to the production process of a SIC sector. An example of this is the contribution that fashion designing makes to the process of producing clothing. In an I-O TABLE, the demand for intermediate inputs for the production of clothing includes Business Services, which is mostly made up of the CCI activity of fashion designing for clothing. As such, a portion of the value of Business Services reflected in the I-O TABLE as an intermediate input in the clothing sector is used to establish the magnitude of the CCI clothing fashion design activity in the CSA.

Bearing in mind that ISIC 7410 Specialised Design Activities includes other types of design activities, i.e. graphic design, interior design, landscape design, etc. The same approach is used to establish the magnitude of these other CCI design activities within the SIC sectors that include design activities as an intermediate input to their production processes. The adding together all of these intermediate design activities results in a total production figure for the total ISIC 7410 Specialised Design Activity.

The table below indicates how the Direct and Indirect Methods have been applied in establishing the magnitude of the various CCIs included in the CSA compiled in this study. Of the 39 CCI activities incorporated into the CSA, seven correspond directly with AFS 2018 SIC sectors; 26 have a less than 100% direct correspondence with AFS 2018 SIC sectors; 4 have a less than 100% direct correspondence with the Income and Expenditure of Households Survey (HI&E); 1 has a less than 100% direct correspondence with the Supply and Use Table; 1 has a less than 100% direct correspondence with the September 2019 SARB Quarterly Bulletin; and only one CCI activity - ISIC 7410 Specialised Design Activities required an Indirect Method in order to establish its magnitude.

The percentages reflected in the Direct Method (less than 100% correspondence) and Indirect Method columns of the table below reflect the proportion of production associated with the various secondary sources of information (i.e. AFS 2018 ISIC sectors, HI&E categories, and S-U Table sectors) that has been incorporated into the CCI activities in the CSA. The percentages have been determined using a Delphi technique after having examined other secondary data sources.

Appendix 9. Estimating the Magnitude of Production in the CCI Activities

Table 10. Estimating the Magnitude of Production in the CCI Activities

Domains	SIC 7/ ISIC 4.1	Cultural and Creative Industry Activities	Allocation
A. Cultural & Natural Heritage	9000	Creative, Arts & Entertainment Activities	AFS: 6239: Other retail trade in specialised store. Trade Margin - 1%
	9102	Museums Activities & Operation of Historical Sites & Buildings	SANParks Annual Report 2018 AFS: 2018
	9103	Botanical & Zoological Gardens & Nature Reserves Activities	HCS: Museums and Zoo's-80%; Government Subsidy
	4774	Retail Sale of Second-Hand Goods	AFS 6240: Retail trade in second-hand goods in stores
B. Performance & Celebration	9000	Creative, Arts & Entertainment Activities	AFS 9614: Dramatic arts, music and other arts activities; AFS:9649: Other recreational activities-30%; Government Subsidy
	3220	Manufacture of Musical Instruments	AFS: 3922; 3930: Manufacture of musical instruments; other manufacturing n.e.c.- 1%
	5920	Sound Recording & Music Publishing Activities	AFS: 3243; 3249: Publishing of recorded music; other publishing - 30%
	4762	Retail Sale of Music & Video Recordings in Specialised Stores	HI&E: VCDs (excluding software and video games; including pre-recorded and unrecorded VCDs)-10%/DVDs (excluding software and video games, including pre-recorded and unrecorded DVDs)-10%/Compact discs- CDs (excluding software and video games; including pre-recorded and unrecorded discs) -10%
C. Visual Arts & Crafts	9000	Creative, Arts & Entertainment Activities	AFS: 3922; 3930: Manufacture of musical instruments; other manufacturing n.e.c.- 1%
	7420	Photographic Activities	AFS: 8894: Photographic activities
	5819	Other Publishing Activities	Conningarth RSA SAM:Printing-6%
	3211	Manufacture of Jewellery & Related Articles	AFS: 3921; Manufacture of jewellery and related articles
	7220	Research & Experimental Development on Social Sciences & Humanities	AFS: 8720; Research and experimental development on social sciences and humanities
D. Books & Press	9101	Library & Archives Activities	AFS: 9631; 9632; 9633; Library and archives activities; museum activities and preservation of historical sites and buildings; botanical and zoological gardens and nature reserve activities
	5811	Book Publishing	Conningarth RSA SAM: Printing - 73%
	5813	Publishing of Newspapers, Journals & Periodicals	AFS: 3242; Publishing of newspapers, journals and periodicals
	5819	Other Publishing Activities	Conningarth RSA SAM: Printing - 4%
	4761	Retail Sale of Books, Newspapers & Stationary in Specialised Stores	HI&E: Magazines and periodicals – 67 %; newspapers - daily weekly – 67 %; Books – 67 %

Domains	SIC 7/ ISIC 4.1	Cultural and Creative Industry Activities	Allocation
E. Audio-Visual & Interactive Media	6391	News Agency Activities	AFS: 9619; 9620; Other entertainment activities n.e.c.; news agency activities - 44%
	6399	Other Information Service Activities NEC	AFS: 9619; 9620; Other entertainment activities n.e.c.; news agency activities -18%
	4649	Wholesale of Other Household Goods	HI&E: Magazines and periodicals -33%; Newspapers - daily weekly-33%/Books -33% (Trade Margin)
	9000	Creative Arts & Entertainment Activities	AFS: 9909; Other service activities n.e.c.- 2%
	5820	Software Publishing	AFS: 862; Software consultancy and supply – 50%
	5911	Motion Picture, Video & Television Programme Production Activities	AFS: 9613; Radio and television activities -10%; 9611; Motion picture and video production and distribution - 80%
	5912	Motion Picture, Video & Television Programme Post- Production Activities	AFS: 9613; Radio and television activities - 5%; 9611; Motion picture and video production and distribution -10%
	5913	Motion Picture, Video & Television Programme Distribution Activities	AFS: 9613; Radio and television activities - 5%; 9611; Motion picture and video production and distribution -10%
	5920	Sound Recording & Music Publishing Activities	AFS: 3243; 3249; Publishing of recorded music; other publishing - 70%
	5914	Motion Picture Projection Activities	AFS: 9612; Motion picture projection
	6010	Radio Broadcasting	AFS: 9613; Radio and television activities - 39%
	6020	Television Programming & Broadcasting Activities	AFS: 9613; Radio and television activities - 41%
	6312	Web Portals	AFS: 862; Software consultancy and supply – 4.5%
	7722	Renting of Video Tapes & Discs	HCS: Renting of tapes
	6391	News Agency Activities	AFS: 9619; 9620; Other entertainment activities n.e.c.; news agency activities - 21%
	4762	Retail Sale of Music & Video Recordings in Specialised Stores	HI&E: VCDs (excluding software and video games; including pre-recorded and unrecorded VCDs) - 90%; DVDs (excluding software and video games, including pre-recorded and unrecorded DVDs) - 90%; Compact discs- CDs (excluding software and video games; including pre-recorded and unrecorded discs) - 90%
	4791	Retail Sale Via Mail Order Houses or via the Internet	AFS: 6251; 6252; 6259; Retail trade via mail order houses; retail trade via stalls and markets; other retail trade not in stores -3%

Domains	SIC 7/ ISIC 4.1	Cultural and Creative Industry Activities	Allocation
F. Design & Creative Services	7410	Specialised Design Activities	AFS 3112: Finishing of textiles -1%; 3121: Manufacture of made-up textile articles, except apparel - 3%; 3130: Manufacture of knitted and crocheted fabrics and articles - 3%; 3140/3150: Manufacture of wearing apparel; dressing and dyeing of fur; manufacture of articles of fur - 2%; AFS 8831: Advertising - 11%; 8862: Software consultancy and supply - 5%; 3241: Publishing of books, brochures, musical books and other publications - 12%; 3242: Publishing of newspapers, journals and periodicals - 12%; 3243; 3249: Publishing of recorded music; other publishing - 34%; 9611: Motion picture and video production and distribution - 24%; 9613: Radio and television activities - 8%
	7110	Architectural & Engineering Activities & Related Technical Consultancy	AFS: 8821; Architectural and engineering activities and related technical consultancy -50%
	7310	Advertising	AFS: 8831; Advertising
Transversal Cultural Education Domain	8522 & 8530	Technical and Vocational Secondary Education; and Higher Education	SARB QB: Education and other training services - 5%

