

CONFERENCE OF EUROPEAN STATISTICIANS

For discussion and
recommendations

Meeting of the 2018/2019 Bureau
Geneva (Switzerland), 14-15 October 2018

Item 2 (a) of the Provisional
Agenda

IN-DEPTH REVIEW OF STATISTICS AND DATA ON CITIES

Prepared by the Netherlands and Eurostat¹

This in-depth review examines the statistics and data on cities. The Bureau is invited to discuss the issues and challenges in this area and consider how to address them.

I. Introduction

1. The Bureau of the Conference of European Statisticians (CES) regularly reviews selected statistical areas in depth. The aim of the reviews is to improve coordination of statistical activities in the UNECE region, identify gaps or duplication of work, and address emerging issues. The review focuses on strategic issues and highlights concerns of statistical offices of both a conceptual and a coordinating nature. The current paper provides the basis for the review by summarising the international statistical activities in the selected area, identifying issues and problems, and making recommendations on possible follow-up actions.
2. The CES Bureau selected the topic of statistics and data on cities for an in-depth review to be discussed at the CES Bureau meeting on 14-15 October 2018 in Geneva. Statistics Netherlands and Eurostat co-led the preparation of the paper providing the main basis for the review. The paper was prepared in collaboration with Austria, Canada, Finland, European Commission, OECD, UNSD, UNECE, UN-Habitat and the World Bank.

II. Scope/definition of the statistical area covered

3. Cities worldwide show a fast-growing need and ambition to develop data driven, knowledge and evidence based policy making. Cities are looking for tools and guidelines to benchmark themselves against other cities to identify innovations and new ideas to serve their citizens in the best, most efficient and most effective way. In addition, a fast growing number of cities is linking their benchmarking efforts to the UN Sustainable Development Goals (SDGs) due to the fact that cities and human settlements will be key in achieving the global SDGs. SDGs come into effect in a world that is increasingly urban, with a little over half the global population now living in urban areas. All cities aim at increasing prosperity, promote social inclusion and enhance resilience and environmental sustainability. In this perspective, SDGs capture large parts of the existing political agenda in virtually every city. This indicates the necessity of working together with local authorities.

¹ Eurostat has not had the opportunity for providing final comments on the paper and therefore may still provide additional information after the Bureau discussion

4. On the global level there is a strong united focus on developing a global, people-based definition of cities and settlements for statistical purposes linked to the fact that the SDGs contain many indicators with a focus on rural or urban areas and a specific goal dedicated to cities and settlements (Goal 11).
5. Furthermore many universities, research groups, think-tanks, networks of local governments, businesses etc. on various levels (national, European, global) report and produce data and indicators on cities, and support cities in their ambitions to become data driven and benchmark their activities to SDGs.
6. This all leads to the conclusion that statistics and data on cities are of a fast growing importance.
7. The scope of this in-depth review of statistics and data on cities lies on official international and national city statistics. Within this scope the focus lies on two key mandates of the CES and its Bureau, namely:
 - a) To promote close coordination of the statistical activities of international organizations;
 - b) To respond to any emerging need for international statistical cooperation.

III. Overview of international statistical activities in the area

8. This section provides a brief overview of recent and ongoing activities of international organization focusing on city statistics. There is a wide range of organisations: the UN organisations, the EU institutions, OECD, the World Bank, universities, research groups, networks of local governments, businesses etc. that work at various territorial levels (national, regional, global) which report and produce data and indicators on cities. As mentioned in chapter II, this review is focusing on strategic international statistical activities related to statistical offices. Activities and experiences of universities, research groups, think-tanks, networks of local governments, businesses etc. are believed to be of value so they could be involved in a follow up activity on this in-depth review.
9. The initiative to develop a harmonised methodology to delineate cities and settlements at global level is supported by many actors, so it is presented as a multi-organisation activity. The other activities are presented under the leading organisation.

A. Developing a global, people-based definition of cities and settlements

10. The UN SDGs contain many indicators with a focus on rural or urban areas and a specific goal dedicated to cities and settlements. A global definition of these different types of areas, however, is still missing. Many of the indicators included in the SDGs are quite sensitive to where the boundary is drawn. For example, access to public transport quickly drops off as one moves away from the city centre, while public spaces tend to be more prevalent further away from the city centre. To compare cities across national borders in a reliable manner, these areas should be defined in the same way. An analysis of the national definitions revealed that these are so different that they make international comparisons impossible.
11. This is why the European Commission, FAO, OECD, UN-Habitat, the UN Statistical Division and the World Bank are working together to develop such a global definition. This work was launched at the UN-Habitat III conference in 2016. Currently, the above mentioned organisations are testing the two definitions: the degree of urbanisation and the EU-OECD functional urban area definition. A new global population grid was also created by the European Commission Joint Research Centre to show the estimated results of this methodology in every country in the world.

12. The group has initiated pilot projects in 15 countries to test the definitions, compare them to national definitions and gather feedback. The countries are Australia, Brazil, Colombia, Egypt, India, Indonesia, Jordan, Malaysia, Mozambique, Pakistan, South Africa, Tunisia, Turkey, Uganda and United States of America.

13. The UN Statistical Division asked 20 statistical offices to assess the proposed degree of urbanisation definition and evaluate its usefulness for international statistical comparisons. Three quarters of the replies were (very) supportive of this definition.

14. The goal of this work is to have these harmonised methodologies for the delineation of urban and rural areas approved by the UN Statistical Commission in 2020 as a recommended definition for international comparisons and the monitoring of the SDGs.

B. European Commission

15. The so called “Urban Audit Pilot Project”, the first attempt to collect comparable statistics on European cities, was conducted in 1999 by the European Commission. The past 20 years brought along many improvements. Eurostat and the European Statistical System (ESS) have been continuously making efforts to increase the quality of the data – coverage, comparability, relevance.

16. One major improvement was the revision of the delineation of cities for statistical purposes to follow the harmonized EC-OECD city definition (OECD, 2012). In 2017, the European Commission integrated the most important territorial typologies, including the urban area, functional urban area, city and predominantly urban region definition into the NUTS Regulation². By giving them legal recognition, the European Commission ensures a harmonised application of these definitions in all EU Member States. The ongoing data collection exercise seeks information from almost one thousand European cities (across EU Member States, Norway and Switzerland).

17. Currently, Eurostat provides statistics on a wide range of socioeconomic indicators that cover many aspects that relate to the quality of urban life: demography, housing, health, economic activity, the labour market, income disparities, educational qualifications, the environment, travel patterns, tourism and cultural infrastructure.

18. The Directorate-General for Regional and Urban Policy in co-operation with the ESS conducts a perception survey focusing on cities every three years in the EU Member States, Iceland, Norway, Switzerland and Turkey. These surveys cover a range of issues, including: employment, the environment, housing, transport, culture, city services and immigration. The next survey is planned to take place in 2019.

19. The Urban Data Platform (European Commission, 2018) developed by the European Commission is merging traditional information sources, fine-scale satellite imagery, census data, volunteered geographic information and big data to form multifaceted data sets to produce consistent spatial urban indicators for cities.

C. Organisation for Economic Cooperation and Development (OECD)

20. Activities related to city statistics are carried out by the OECD and overseen by the Working Party on Territorial Indicators (WPTI). WPTI is an official body of the OECD Regional Development Policy Committee and it is composed of country representatives mainly from national statistical offices (NSOs). All projects carried out by OECD on the topic of cities with a strong statistical or quantitative approach are

² Regulation (EC) No 1059/2003 of the European Parliament and of the Council of 26 May 2003, on the establishment of a common classification of territorial units for statistics (NUTS), OJ L 154, 21.6.2003

presented and discussed in the meetings (twice per year) of the WPTI. Overall, the activities that are related to city statistics are the following:

- Setting standards on statistical and territorial definitions;
- Measuring socio-economic and demographic phenomena at the city scale;
- Collecting and/or producing indicators on cities for OECD countries;
- Producing analytical reports on topics related to cities;
- Publishing indicators on cities (and regions) in the OECD Data portal, after approval. This ensures a unique source of international comparative analysis at the city level.

21. OECD collects several statistics at city level from NSOs, mainly related to demographic characteristics, income levels, employment, etc. The statistics collected can have different data sources, from census data to administrative data published by the NSOs. The data is collected usually at the municipal level and then aggregated to the geography of interest. The OECD Metropolitan Database provides consistent urban spatial indicators for cities (functional urban areas, FUAs) with more than 250 thousands inhabitants. Indicators are collected or produced by combining traditional sources with satellite imagery, administrative data or other less conventional data sources. The OECD flagship publication *OECD Regions and Cities at a Glance 2018* (OECD, 2018) provides a summary of all indicators at city level that OECD collected or produced at the scale of cities. The main outcomes of the statistical activities carried out by OECD on cities are the following:

- Consistent definition of cities and metropolitan areas in OECD countries through the concept of “functional urban area” (FUA) (OECD, 2012);
- Extension of the concept of FUA at the global level;
- Development of a database of all metropolitan areas (FUAs with at least 500,000 inhabitants) across OECD countries;
- Production of novel indicators on several well-being dimensions at the FUA scale. These indicators include, among others, assessment of income levels, poverty and income inequalities.

D. United Nations Statistics Division (UNSD)

22. UNSD collects population data of cities and respective urban agglomerations from the national statistical offices of all countries and areas. These data are collected via the *Demographic Yearbook* questionnaires and refer to national estimates or census data of total population of the city and its urban agglomeration disaggregated by sex if available. The suggested definitions of a “city” or “urban agglomerations” provided as part of the *Demographic Yearbook* questionnaires are the following:

- City proper is defined as a locality with legally fixed boundaries and an administratively recognized urban status, usually characterized by some form of local government;
- Urban agglomeration is defined as comprising the city or town proper and also the suburban fringe or densely settled territory lying outside of, but adjacent to, the city boundaries.

E. United Nations Economic Commission for Europe (UNECE)

23. The UNECE is supporting the monitoring of SDGs, including urban related SDGs and targets in the UNECE region through coordination and methodological work. In 2017 the ECE Conference of European Statisticians published its road map supporting

the monitoring of SDGs in the UNECE region. This road map also included information on the sub-national level indicators (UNECE CES, June 2017).

24. UNECE also has several projects supporting cities. For example the United Smart Cities project aims to address major urban issues in medium-sized cities. The activities also include among many others training on data collection. Similarly, the project on strengthening national capacities for sustainable housing and urban development in countries with economies in transition also provided guidance for data collection for evidence based policymaking (UNECE, 2018).

F. UN-Habitat

25. UN-Habitat is involved in several activities related to human settlements monitoring especially urban and city statistics. In their recent publication *SDG 11 Synthesis Report*, Chapter 2 gives an overview of these activities in particular the progress made in monitoring urban related SDG indicators. (UN-Habitat, 2018). The chapter focuses on methodological developments, capacity development initiatives and the diversity of tools created by custodian agencies and their partners to enhance data generation and availability. As highlighted in the report, some urban-related SDG indicators require a new reporting territorial level - the city - as a unique entity of analysis. Some of these indicators (11.3.1, 11.3.2, 11.7.1, etc.) shall be collected and computed at city level although the monitoring is to be done at the national level. This underlines the need for a harmonised definition as to what constitutes a city or an urban area for purposes of global monitoring.

26. UN-Habitat along with other custodian agencies also developed methodological guidance for national and local governments to monitor SDG 11 (UN-Habitat, UNESCO, WHO, UNISDR, UN-Women, UNEP, UNDP, 2016), which also includes a guide to apply the concept of the national sample of cities. This sample is vital in ensuring that countries with so many cities that are challenging to monitor and report on concurrently and annually, rely on a consistent set of a representative sample of cities. It allows for analysing time series and measuring national progress in a more structured manner.

27. UN-Habitat has a specialized statistical unit, the so-called Global Urban Observatory unit, which is in charge of global monitoring of the development agendas with an urban linkage such as SDGs, the New Urban Agenda, Paris Agreement, etc. The unit has also developed the City Prosperity Index to measure the wealth and sustainability of cities. The City Prosperity Index is a composite index based on six dimensions and over 15 sub-dimensions that are contextually specific and globally comparable. The index is part of a broader platform, the City Prosperity Initiative (CPI). The City Prosperity Initiative integrates indicators for urban SDGs to concentrate in a single framework the environmental, social and economic components of city prosperity and sustainability. UN-Habitat has supported more than 400 cities across the world to implement the CPI.

28. UN-Habitat is working in close collaboration with United Nations system entities, local governments, city departments, academia, civil society and the UN Statistics Division to complement the SDG monitoring framework by including specific components of the New Urban Agenda that are not covered by SDG indicators (UN-Habitat, 2018).

G. World Bank

29. The World Bank publishes on its “World Bank Open Data” portal a variety of statistics about cities, including population, land use, living standards, etc. For example poverty data (based on the living standards measurement surveys sometimes also called

household income and expenditure surveys or household budget surveys) are collected and published by the World Bank at national level, as well as for the capital city, all other cities within the country and for rural areas. The surveys and resulting poverty data form part of the national official statistics. More information on the surveys is available on the dedicated webpage. (World Bank, 2018) Another example is the business environment data: the “Doing Business” project provides objective measures of business regulations for local firms in 190 economies and selected cities. This data usually does not form part of national statistics. More information on the project is available on the specific website (World Bank, 2018).

30. The World Bank also conducts research and analysis. One recently published report was titled *Cities in Europe and Central Asia: a shifting story of urban growth and decline* (Cineas, Restrepo Cadavid, Quintero, & Zhukova, 2017). The report analysed the transformation of the urban systems in the region using a data base comprising demographic, economic and spatial data from more than 5000 cities in 15 countries. The starting point to construct the database was to obtain from each of the countries the list of official cities and these cities' population data. The official list of "cities" was geo-referenced and overlaid with globally-available spatial data to produce city-level indicators capturing spatial characteristics (e.g. urban footprint) and proxies for economic activity.

IV. Country practices

31. This section provides a brief overview of the work, practices, problems, issues and challenges on statistics and data on cities in the following countries: Austria, Canada, Finland and the Netherlands.

A. Austria

32. Statistics Austria is providing national statistics without differencing urban or rural areas. Therefore, no specific cities' statistics are published by Statistics Austria. However, Statistics Austria is providing data on municipality (LAU2) level. With the most important delineations of urban areas based on LAU2 (e.g. functional urban areas, degree of urbanisation) the information needed can be easily obtained. Statistics Austria is also maintaining a national typology that can be used as a basis for the comparison of cities. This national typology delineates urban areas including their commuting zones (Stadtregionen) for LAU2 level and is in use since 1971. Having an update cycle of generally 10 years the methodology has changed of course due to more detailed data and new technologies available.

33. On a regular basis there are reports of the Austrian Association of Cities and Towns (Österreichischer Städtebund) partly based on data provided by Statistics Austria. These reports cover all 255 members (on a voluntary basis) of the Austrian Association of Cities (including all towns with more than 10,000 but also cities with fewer inhabitants).

34. With the availability of statistics based on administrative data sources (registers) on a yearly basis and the possibility to link statistical data to geographic locations publications on very detailed geographical levels are possible. Thus, Statistics Austria is providing socio-demographic data and data on buildings and dwellings on detailed regional levels (100m, 250m grids) or for any other areas of interest. This makes the comparison of cities and urban areas possible independent of administrative boundaries.

35. In Statistics Austria's rich frame, which is used for all person or dwelling samples, the degree of urbanisation (among other typologies) is available for all units. For some surveys it is an important stratification variable or it might be used as one of the variables to estimate response probabilities of certain groups. Based on Statistics

Austria's rich frame there is an EU-funded project currently running at Statistics Austria trying to combine various data sources to improve the spatial resolution for data only available from sample data in the field of social statistics. The project aims to improve the regionalization of poverty indicators in particular, using machine learning algorithms and geospatial data as support information.

B. Canada

1. Introduction

36. The vast majority of Canada's inhabitants live, work and consume in cities – thus making cities a vital component of modern Canadian life. In the context of the Sustainable Development Goals, Canada is also committed to ensure that no Canadian is left behind. To achieve that, relevant, comparable and up-to-date statistics are essential.

37. Therefore, the production of statistics at the city level is highly relevant for Canada. The Canadian statistical ecosystem already ensures the production of many variables about Canadian cities. However, these data are not always comparable and available for all cities.

2. Canadian Statistical Ecosystem

38. In Canada, many organisations collect and publish data at the city level. The three levels of government—the federal, the provincial and territorial, and the municipal—are the main ones, but other organisations such as private corporations, NGOs, and international organisations also produce statistics at this level.

A. Federal level

39. In Canada, many departments and agencies produce and publish data at a geographically disaggregated level, which may include city-level data. However, few produce data systematically at the city level, such as:

- **Environment and Climate Change Canada** collects and publishes data on temperature and precipitation (rain and snow) at a geographically disaggregated level, including cities;
- The **Canada Revenue Agency (CRA)** publishes tax statistics, including revenue distribution and income by source, at the city level. Most information collected by CRA can be used to produce geographically disaggregated statistics, as tax filers usually have to report their address, which can be geolocalized;
- **Natural Resources Canada** manages the *Federal Geospatial Platform*, a collaborative tool that provides geospatial information about different topics. Many datasets include information about cities;
- The **Canada Mortgage and Housing Corporation** collects and publishes a wide variety of data about the Canadian housing market at the city level.

40. However, as Canada's National statistical office (NSO), Statistics Canada is the main department collecting and publishing data at the city level for the country.

41. Statistics Canada publishes data both collected from the cities themselves and at the city-level. Data collected and published at the city level include:

- Health statistics such as the number of smokers, and incidence of major diseases;
- Demographic statistics such as the total population by age and sex, median age, and knowledge of Canada's official languages;

- Labour and income statistics such as the unemployment rate, incidence of low income, and employment by industrial sector;
- Justice statistics such as the number of homicides, incidence of violent and non-violent crimes, and crime severity indices;
- Economic statistics such as gross domestic product (GDP), and consumer price index (CPI); and
- Environmental statistics such as treatment of drinking water, and use of fertilizers and pesticides.

42. Statistics Canada uses different sources of data to produce statistics at the city-level.

- The organisation conducts a census of population and a census of agriculture every five years. The census of population collects information on many different topics such as housing, education, income, immigration and ethnocultural diversity, mobility and migration, and labour and journey to work. Through the Census of agriculture, Statistics Canada collects information on farms and farm operators. Census data are available at the city and even the sub-city levels.
- Statistics Canada produces a lot of statistics using survey data. Because of sample sizes, which are mainly driven by cost and response burden, most statistics produced using survey data are not available at the city level.
- Data are also collected directly from Canadian municipalities. The main data collected from the cities include updated geographic files, building permits data, and financial information and balance sheets.
- Statistics Canada also uses administrative data, including tax data, to produce statistics. Depending on the source, data could be available at the city and even sub-city levels. The development of geolocalisation tools and technologies increases the possibility to produce statistics based on administrative data at the city level.
- Finally, Statistics Canada is currently exploring the possibility to expand the use of other sources such as sensors, scanners and satellite images, to produce statistics. Given the nature of these sources, most of these data are available at a geographically disaggregated level, including cities.

B. Provincial and territorial level

43. Under the Canadian *Constitution Act, 1867*, municipalities are legally subordinate to provincial governments. Thus, municipal responsibilities, powers and even boundaries can be altered by provincial and territorial legislatures. As they are ultimately responsible for them, provinces and territories collect and publish many statistics about municipalities within their jurisdiction. Therefore, these statistics will vary from one province or territory to another. Most Canadian provinces and territories have a bureau of statistics or an equivalent.

C. Municipal level

44. Many Canadian municipalities publish statistical information about their activities and their citizens. According to the Government of Canada Open Government website, there are about 60 Canadian Municipalities that currently have an open data initiative. Published data range from the number of trees by species to the use of treated water per capita. Again, the statistics vary from one municipality to another.

D. Other sources

45. Other organisations also publish data on Canadian municipalities. For example:

- The Federation of Canadian Municipalities publishes data on Federal investment coming from a specific fund called the Gas Tax Fund, by municipality, type and year;
- The World Council on City Data (WCCD) publishes standardized data on cities around the world, including some Canadian cities;
- The Canadian Council on Social Development produces a significant amount of socio-economic data at the city level.

3. Challenges

A. Concepts

46. OECD notes that, “[t]he issue of comparability of metropolitan areas is directly tied to the choice of the unit of analysis, that is to say whether these are defined on the basis of administrative boundaries, continuity of the built-up area or functional measures such as commuting rates or other parameters, and to the size of the components to be aggregated.”

47. Statistics Canada mainly uses the concepts of census metropolitan areas (CMA) and census agglomerations (CA) to publish data at the city level. These entities are formed by one or more adjacent municipalities and are based on commuting patterns and places of work. Usually, CMAs must have at least 100,000 people while CAs must have a population of at least 10,000 people. There are currently 35 CMAs and 117 CAs in Canada.

48. However, other concepts such as administrative boundaries could be relevant depending on the topic. Ideally, many geographic options would be available.

B. Standardizing the data

49. Data published by some organisations, such as federal departments and WCCD are standardized which allows for comparisons. Unfortunately, it is not always the case for data published by provinces, territories, municipalities and other organisations. Those organisations often use concepts, definitions and classifications that make comparisons with other jurisdictions difficult. Data quality frameworks also vary from one organisation to another, which could have an impact on data comparability.

50. As the Canadian NSO, Statistics Canada publishes information on standardized statistical classifications about different topics such as occupations, industries, and products. While Statistics Canada cannot enforce the use of these standards, it undertakes considerable efforts to promote their use.

C. Frequency and availability of the data

51. In theory, the frequency of the data would be based on the necessity for and nature of the data. For example, it is relevant to have data on temperature and precipitation on a daily, if not hourly basis, while quarterly or annual population data could be sufficient.

52. In practice, however, the frequency of the data depends on the data source and other factors such as priorities, cost and response burden constraints.

53. Data availability also depends on the source. Most of the data produced by Statistics Canada and other governmental organisations are publicly available, but this is far from being the case for data produced by other organisations.

54. The recent expansion of open data initiatives amongst public and private organisations considerably improves the availability of Canadian city-level data.

D. One size does not fit all

55. The size of Canadian Municipalities varies greatly, ranging from a few dozen people to a population of millions. Therefore, it would be difficult, even irrelevant to produce the same set of statistics for all Canadian cities.

56. One option is to group cities using concepts such as CMA and CA. However, it is important to keep in mind that data disaggregated at a municipal and even sub-municipal level could be relevant to understand important issues and realities. Therefore, it is preferable to decide on the correct level of disaggregation on a case by case basis.

57. As mentioned before, standard survey estimates are typically not reliable for cities because the city sample sizes are often very small, even zero. Small Area Estimation techniques (SAE) have recently been considered at Statistics Canada to address this issue. These techniques complement the small amount of survey data in cities with model assumptions that link survey data to external auxiliary data. Auxiliary data usually come from administrative sources but could also be obtained through Web surveys or other big data sources. Small area estimation techniques are currently used at Statistics Canada in the Labour Force Survey to estimate monthly employment counts and unemployment rates for around 150 cities in Canada. Small area estimation techniques were also applied to estimate total sales by industry group for 12 large Census Metropolitan Areas using data of the Monthly Survey of Manufactures. Other applications of SAE estimation techniques are currently being investigated.

E. New data sources

58. Recent technological progress has multiplied the possibilities for new types of data collection. With the resolution, accuracy and affordability of satellite images improving daily and the apparition of phenomena such as the Internet of Things and smart cities, we now have access to many data that could be used to produce statistics at the city level. One of the main challenges is to process and integrate all of this information into frameworks that allow for the production of accurate and relevant statistics.

59. Statistics Canada is currently implementing a system of integrated core and satellite statistical registers, including a geographic register. By linking key concepts such as businesses, buildings, people, and geographic areas, and maintaining this information as a coherent whole, the NSO can produce much more information using the same data, and also increase the speed and flexibility with which it can be produced.

F. Data are scattered

60. As mentioned previously, many organisations produce data at the city level in Canada. One consequence is that datasets are scattered and often difficult to integrate and compare, occasionally even within the same organization.

61. Statistics Canada is currently exploring the possibility to create a City Data Hub, where users could access many data sets about Canadian cities in a one-stop shop. The Hub would provide many functionalities and options such as the ability to compare cities with one another, cross-tabulate variables, download datasets in different formats, create infographics, import new data sets, and analyze time series data.

G. Supporting cities to be more data driven

62. Sharing relevant information is an important challenge and opportunity for Canadian municipalities. About 60 Canadian municipalities currently have an open data initiative, and organisations such as the Federation of Canadian Municipalities and the Municipal Information Systems Association, which identifies itself as the “national voice of municipalities relating to information and communications technology”, provide support to cities in terms of data.

63. Statistics Canada also provides important support, in different ways. It not only provides municipalities with relevant and good quality data, but it also offers different services such as workshops, training, conference, consulting services and even a Data

quality toolkit on its website. This support is important, given that Canadian municipalities are producing more and more statistics.

C. Finland

1. No official definition of city in Finland

64. Finland is divided into 311 municipalities (2018). According to the Local Government Act, a municipality may use the designation “city” when it considers that it meets the requirements of an urban community. 117 municipalities in Finland uses this possibility. There is no official definition of the designation “city”. There are nine municipalities in Finland with over 100 000 inhabitants. The Metropolitan area Helsinki (consisting of the municipalities Helsinki, Vantaa, Espoo and Kauniainen) has over one million inhabitants.

65. Hence most city statistics in Finland are in fact municipal statistics.

66. Municipalities can be classified through the statistical grouping of municipalities, which is a classification that is based on a yearly delimitation of settlements and data on population originating from that delimitation.

2. The National Statistical Service and Official Statistics of Finland

67. The National Statistical Service covers 14 agencies and institutions, of which 12 produce statistics for the Official Statistics of Finland. Statistics Finland is the national statistical institute (NSI) within the National Statistical Service, whose one key task is to manage and develop the national statistical service. Statistics Finland compiles around two-thirds of official statistics.

68. Statistical authorities produce both Official Statistics of Finland (OSF) and statistics for the European Statistical System (ESS).

69. In addition to Statistics Finland, Official Statistics of Finland are produced also by 11 other public administration organisations.

70. Official Statistics of Finland (OSF) are a comprehensive collection of statistics describing the development and state of society. OSF statistics are produced by expert organisations in the field of public administration. They guarantee the continuation of statistics and are committed to common quality criteria. The OSF quality criteria are compatible with the quality criteria of the European Statistical System (ESS).

71. Compliance with the quality criteria is monitored by the Advisory Board of Official Statistics of Finland. It also has the task of developing the statistical system and the dissemination of statistics.

A. *Type of cities’ statistics collected at the national level in official statistics*

72. OSF comprise nearly 300 sets of statistics on 26 different topics. The basic data of the Official Statistics of Finland are available to all users free of charge.

73. Statistics are produced for the following topics:

- Agriculture, forestry and fishery
- Construction
- Culture and the media
- Education
- Elections
- Energy
- Enterprises
- Environment and natural resources
- Financing and insurance
- Government finance

- Health
- Housing
- Income and consumption
- Justice
- Labour market
- Living conditions
- Manufacturing
- National accounts
- Population
- Prices and costs
- Science, technology and information society
- Services
- Social protection
- Trade
- Transport and tourism
- Wages, salaries and labour costs.

74. Statistics Finland produces approximately 160 sets of statistics, of which well past 20 per cent are available also by municipality.

75. For different reasons not all statistics can be produced by municipality, for example national accounts and environment and natural resources. There are also sample-based statistics like the Labour Force Survey, the Household Budget Survey and the European Union Statistics on Income and Living Conditions which cannot be produced by municipality.

76. Statistics Finland also produces municipal statistics outside the OSF. These municipal data sets can be free of charge, for example the *Municipal key figures* database and the *Financial data reported by municipalities and joint municipal authorities* database or chargeable like the *Urban and regional indicators* database. Statistics Finland also produces a variety of data sets with different regional classifications that are non-administrative. The municipalities are for example offered chargeable demographic data by municipal sub-area.

77. Municipal statistics can also be produced using the urban-rural classification, which is geographical information-based area classification system that has been created by the Finnish Environment Institute and the Department of Geography of the University of Oulu.

78. All data in Statistics Finland's databases that are free of charge, are also open data. In addition Statistics Finland also makes geographic data available free of charge and open, for example population by municipality and municipality-based statistical units.

79. Statistics Finland has also for several years participated in EU's data collection for sub-national statistics (former Urban Audit). The results are presented in Eurostat's Urban Audit database.

80. Other publishers of municipal data, who mainly use statistics produced by others, are among others the Association of Finnish Local and Regional Authorities and the regional councils.

B. Reporting mechanisms of cities statistics from city-level to national level

81. By law, Statistics Finland has the duty to use primarily data collected by other authorities. Data are collected from data providers directly when data are not available from elsewhere. Hence the majority of the data needed for the production of statistics is derived from existing administrative registers of general government and requires no input from municipalities.

82. The statistical production process is centralized in Statistics Finland and follows the Generic Statistics Business Process Model (GSBPM). Data is aggregated from unit-level data to coherent, high-quality statistics that are presented by different regional divisions when possible. Data protection is a fundamental principle of official statistics, by which to ensure the availability of reliable basic data and the confidence of data suppliers.

83. Only when the necessary data cannot be obtained else, Statistics Finland collects it with inquiries. The municipalities are the target group for the following collections:

- [Annual survey on foreign financial assets and liabilities \(BOPA\)](#)
- [Business Register inquiry for municipal groups](#)
- [Data collection on local government finances](#)
- [Data on students and qualifications attained in vocational education in educational institutions during the calendar year](#)
- [Education of educational institutions not leading to a qualification](#)
- [Inquiry on local government sector wages and salaries](#)
- [Inquiry on reimbursement based on municipality of residence in pre-primary or basic education](#)
- [Job Vacancy Survey](#)
- [Municipal parking control](#)
- [Participants and/or completers of a qualification in apprenticeship training in the calendar year](#)
- [Price inquiry for cost indices](#)
- [Production of heat](#)
- [Public sector research and development](#)
- [Pupils and students on organiser and educational institution levels](#)
- [Quarterly data collection on local government finances](#)
- [Quarterly inquiry on financial assets and liabilities \(BOPQ\)](#)
- [Quarterly statistics on labour costs in the public sector](#)
- [Renovation building of commercial and office buildings](#)
- [Renovation building of industrial buildings and warehouses](#)
- [Renovation building of public service buildings](#)
- [Review of educational institution network](#)
- [Students in upper secondary general schools](#)
- [Subject choices in upper secondary general school education](#)

84. Statistics Finland produces most of the variables in EU's data collection for sub-national statistics, but the cities included in the data collection also contributes to the collection with a few variables on city level.

C. Frequency and availability of cities statistics

85. Statistics are published, depending on the subject, yearly, quarterly or monthly.

86. All statistics free of charge are published on Statistics Finland's web-page www.stat.fi. The site includes databases and other tables, releases, articles and blogs.

87. Regardless of producer, all OSF statistics are listed on Statistics Finland's web-page. The list includes a short description of each data set. The descriptions include links to the statistics released on the web pages of the organisations producing them.

D. How are cities supported by national statistical institutes to become more data-driven

88. One of the Finnish government's key projects is the digitalisation process in the public sector. As a governmental institute, Statistics Finland tries to promote digitalisation and easy access to statistics by offering all its official statistics free of charge as open data. In addition to the more traditional use of databases, Statistics Finland also makes the retrieval of data available through API interfaces and geographical interfaces.

D. Netherlands

1. CBS, the national statistical institute of the Netherlands

89. CBS (the Dutch abbreviation for Central Bureau of Statistics) produces 100% of official national statistics in the Netherlands.

90. CBS provides statistical information to society to provide insight in complex societal phenomena. It aims to provide this information as much as possible in the form of ‘actionable intelligence’ so that this information can be used directly for policy making, decision making and opinion forming. This goal puts high standards on the information provided by CBS and, therefore, the organisation is moving away from a traditional ‘single indicator approach’ towards a phenomenon oriented approach. Where single consensus indicators do have a limited information content, other approaches such as a multiple indicator information or phenomena mapping provide much more actionable information.

91. CBS uses three major data sources:

(a) First source: around 20 national surveys.

(b) Second source: 200 national administrative (register) data sources coming from (semi-)governmental organizations. Under the Dutch statistics law all these organizations are obliged to provide CBS with their administrative data (register) data sources.

(c) Third source, and of fast growing importance, is ‘big data’. One of the major innovation objectives at CBS is to create official statistics by using more and more sensor data sources. The enormous amount of data created daily by companies, governments and citizens is a potentially rich source of information that, when needed and possible in combination with survey data and administrative data can create a vast and solid basis for evidence based policy making. It is the vision of CBS that in the future big data will become more and more important for all NSIs worldwide as well as for the international statistical community as a whole. For this reason in September 2016 CBS initiated the ‘CBS Center for Big Data Statistics (CBDS)’. Over the last 2 years the CBDS created an international open ecosystem in which around 70 NSIs, academia, NGOs, research institutes and high tech private organizations worldwide work together to get a grip on big data, conduct pilot projects to see if and how big data can be used in and for official statistics and to explore if and how big data can be linked to and integrated with data coming from surveys and administrative data sources to quickly create the added value that sensor or big data entail. In collaboration with the Erasmus School of Social and Behavioural Sciences of the Erasmus University in Rotterdam and the Leiden-Delft-Erasmus Center for BOLD Cities (BOLD =Big, Open, Linked Data) CBS performs in-depth studies into urbanisation and family networks. Other relevant themes are regional declining population, relocation and jobs. Recently CBS researcher Prof. Dr. Marjolijn Das has been installed as Urban Statistics Professor by special appointment at the Center for BOLD Cities. This position is funded by CBS and established at Erasmus University in Rotterdam.

2. Cities, municipalities and provinces in the Netherlands

92. There is no official definition of a ‘city’ in the Netherlands.

93. Unofficially there are 62 ‘cities’ over 50,000 inhabitants of which 27 cities are over 100,000 inhabitants. The biggest Dutch cities are Amsterdam, Rotterdam, The Hague, Utrecht and Eindhoven with 859,732, 641,326, 534,158, 349,234 and 229,637 inhabitants (per 31 May 2018).

94. In the Netherlands there are 2 layers of subnational governments: municipalities on the local level and provinces on the regional level.

95. In the last century Dutch municipalities have been in a process of merging small(er) municipalities in creating bigger, more robust municipalities. From 1,121 municipalities in 1900 the number shrunk to 483 in 2004 to 380 on 1 January 2018. This process of merging municipalities will continue leading to 355 Dutch municipalities in 2019.

96. In the last century the number of provinces in the Netherlands has been stable. In 1986 a new province, Flevoland, was created in 1986 in addition to the existing provinces of Drenthe, Friesland, Gelderland, Groningen, Limburg, North-Brabant, North-Holland, Overijssel, South-Holland, Utrecht and Zeeland bringing the total number of Dutch provinces to 12.

3. City statistics or municipal statistics?

97. Because there is no official Dutch definition of a city in the Netherlands most city statistics are in fact municipal statistics. Municipalities can vary from being predominantly urban to rural and a large variety of hybrid situations in between. On a larger, global scale the Netherlands a whole could be seen as one big urbanized region, linking to and with large urbanized regions in the bordering countries of Belgium and Germany.

4. Data on or for municipalities?

98. In the Netherlands a distinction is made between data *on* and *for municipalities*.

99. Statistics *on or about* municipalities are used for official, predominantly obligated, national and international statistical purposes. CBS publishes many data on small areas such as municipalities and provinces. Other common aggregations are: neighbourhood level, 500 by 500 meter and 100 by 100 meter grids and postal/zip codes.

100. In addition to these (official) data *on or about* municipalities (and provinces) CBS also produces data *with and for* municipalities (and provinces). For this reason the concept of the CBS Regional Data Centers (Urban, Rural and Provincial) has been created.

5. The concept of the CBS Regional Data Centers (Urban, Rural and Provincial)

101. In the Netherlands there is the tendency of the national government to delegate more and more tasks to local and regional governments. This has increased the need of these governments for factual data-driven information (statistics) to come to real evidence based policy making.

102. Therefore, and to intensify its interaction with society and adapt its services more to users' needs CBS is looking at ways of translating national data to data at regional and local levels. CBS has a wealth of knowledge and experience with respect to data structures, data governance, metadata, secure data storage and confidentiality. This knowledge and experience is valuable for local and regional governments. By experimenting together with innovative municipal councils, CBS can test new information products in practice at local levels, while the cities involved can help CBS convert innovative ideas into actual products. Statistics Netherlands in turn can make cities smarter by providing physical data facilities to carry out innovation.

103. Against this background, CBS in the summer of 2016 initially started setting up CBS Urban Data Centres (UDCs) jointly with city councils. These UDCs aim to broaden, deepen and improve municipal statistics by linking them to Statistics Netherlands data and using Statistics Netherlands' expertise. The underlying idea is that this will result in a broader and better basis for decision-making at municipal level, and provide a solid basis for municipal forecasts. Pilots of the concept of the CBS Urban Data Centers started in the cities of Eindhoven and Heerlen. They explored the form and substance of the partnership, including legal, staffing and financial implications of the concept. The interest of municipalities is in the public added value of data for their inhabitants, businesses and visitors. Smart use of data will make it easier to put human

and technological resources in place, implement measures more relevantly in the public domain, and develop new products and services which the city needs and which citizens themselves can use directly. As such CBS data and expertise support municipalities in their drive and ambition to become more data driven, evidence based smart cities, smart villages and/or smart regions.

104. The city of Eindhoven kicked off as the first municipality to apply the concept of the CBS Urban Data Centers in September 2016 followed by the city of Heerlen in November 2016. In 2017 another 5 urbanized municipalities (Zwolle, Venlo, Leiden, Den Haag and Leidschendam-Voorburg) followed in creating a CBS Urban Data Center. In December 2017 the first CBS Rural Data was created with 5 collaborating rural municipalities in the Kempen region (near Eindhoven) feeding into their ambition to jointly become a fully data driven region. In 2016 the Kempen region was nominated by the European Commission as one of the 21 smartest rural regions in the world.

105. In 2018 the first CBS Provincial Data Center has been created with the province of Limburg. The arguments for this province to collaborate are similar to those of the municipalities that are working intensively with CBS in an Urban or Rural Data Center.

106. Since the summer of 2016 a total of 10 CBS Regional Data Centers (8 Urban, 1 Rural and 1 Provincial) have been created. CBS foresees that his process of connecting national (survey, administrative and big) data to local and regional data and as such creating data with and for municipalities and provinces to support their ambition to become more data driven and data-“smarter” will continue to grow in the next years. By the end of 2019 a total of 20 CBS Regional Data Centers all over the Netherlands is expected to have been created.

107. In the longer term the further development and implementation of the concept of the CBS Regional Data Centers will enable Statistics Netherlands to provide relevant statistical products to all municipalities and provinces in the Netherlands.

108. Through the development and implementation the interaction between CBS and Dutch municipalities has intensified. As a result CBS experiences a growing knowledge and awareness with regards to data related needs of municipalities and views and visions of municipalities on national and international developments in data related topics. As a result of this CBS understands municipalities better and as a result comes into a better position to support them in their ambition to become more data driven.

109. Recently CBS and Statistics Canada started to prepare a collaboration based on the Dutch experiences with the concept of the Urban Data Centers. CBS and Statistics Canada are also preparing collaboration on SDG reporting in two regions in the Netherlands and Canada.

6. Standardization and harmonization: international, national, and subnational (local and regional) statistics and SDGs

110. In the Netherlands national statistics are standardized and harmonized according to international (European and UN) standards. More and more this process of standardization and harmonization is linked to the SDGs. CBS is a member of the UN IAEG-SDGs (Inter Agency and Expert Group) and has been one of the first NSIs to publish a national report on SDGs (October 2016). In May 2018 a second report has been published.

111. In addition there is a growing need and desire amongst Dutch municipalities and provinces to standardize and harmonize their data with national and international standards. This is also an important reason why Dutch municipalities and provinces seek intensive collaboration with CBS (through the concept of the CBS Regional Data Centers and otherwise) as “Bureau of Standards”. It is the ambition of CBS to standardize and harmonize international, national, and subnational (local and regional) statistics and SDGs. Some Dutch municipalities and provinces are, supported and advised by CBS in a process of “strategic data-redesign” as a result of which all

municipal or provincial data are standardized and harmonized with national and international (SDG related) standards.

112. This desire and the need of local governments to standardize and harmonize their data with national and international standards was also emphasized strongly by cities at a EU conference in which CBS took part in Brussels on 19 October 19 2017 with the title “Conference on cities set standards to be smarter and more sustainable in Brussels”. There it became apparent that many cities encounter such a large number of standards and standardizing organizations that it becomes very unclear to them which one to follow. CBS feels that NSIs could play a role in this process of standardizing and harmonizing their data with national and international standards

113. Following up on the growing need and desire amongst Dutch municipalities and provinces to standardize and harmonize their data with national and international standards CBS has searched for international organizations that could, in collaboration with CBS, support this process.

114. In order to certify cities, CBS works closely together with the certifying organization WCCD (World Council on City Data) based in Toronto, Canada. The set of indicators that has been developed for this purpose resembles to a certain extent the set of indicators that has been established for the monitoring of the SDGs. The possibility to use the city indicators as building blocks for the reporting on the national SDG indicators is very attractive, as it creates a better and more detailed overview of the development of the country with respect to the Sustainable Development Goals. This very well fits with CBS' goal of creating actionable and more phenomenon oriented information to the end users.

V. Issues and challenges

115. As indicated in chapter II, this in-depth review covers both official international and national city statistics. Within this scope the focus lies on two key mandates of the CES and its Bureau, namely:

- a) To promote close coordination of the statistical activities of international organizations;
- b) To respond to any emerging need for international statistical cooperation.

116. The issues and challenges that emerge from chapters I to IV link to these mandates. After formulating the issue and challenge conclusions and recommendations are defined. Chapter VI summarizes these conclusions and recommendations.

A. Issue 1: Standardising, harmonising and benchmarking

117. This in-depth review leads to the conclusion that there is a strong need for standardisation, harmonisation and benchmarking on all levels: local, national, regional, global. On all territorial levels there is a strong effort to connect the standardisation, harmonisation and benchmarking activities to SDGs. In addition to the statistical community's focus on SDGs, cities and regions are also looking for tools and guidelines to benchmark themselves against other cities in the best, most efficient and most effective way. In some countries (the Netherlands is one of them) projects started in which data of cities/municipalities are standardised and harmonised with regional data, national data and international/global data so benchmarking – related to SDGs – becomes a feasible option. NSIs can be stimulated to share experiences and create joint pilot projects as CBS and Statistics Canada are doing.

118. With regards to standards there seems to be several options. Some have been developed at national level taking into account local needs and possibilities while some

have been developed by the thematic domain experts. Eurostat has been developing and harmonising methodologies at the European level for city statistics which lead to the recently published manual (Eurostat, 2017) which allows data collection and comparison at the European level. Standards have been also developed on a global scale. It is recommended to make further efforts to standardize and harmonize city data with national and international/global data in line with SDGs. A Task force could be installed to work on this topic.

119. In addition there is a clear need for harmonised spatial definitions. The international statistical community is already working on this topic (see Issue 2).

1. Conclusions and recommendations

- There is a strong need for standardization and harmonization on all levels: local, national, regional, global. Most of these standardization, harmonization and benchmarking activities are related to SDGs;
- The international statistical community, NSIs as well as cities and regions are looking for tools and guidelines to benchmark themselves focusing on SDGs against other cities in the best, most efficient and most effective way;
- In some countries (the Netherlands is one of them) projects started in which data of cities/municipalities are standardised and harmonised with regional data, national data and international/global data so benchmarking – related to SDGs – becomes a feasible option;
- NSIs can be stimulated to share experiences and create joint pilot projects as CBS and Statistics Canada are doing;
- It is recommended to make further efforts to standardize and harmonize city data with national and international/global data in line with SDGs. A Task force could be installed to work on this topic.

B. Issue 2: Harmonising methodologies to define cities and settlements to enable international statistical comparisons

120. A group of international organizations (European Commission, FAO, OECD, UN-Habitat, World Bank) have committed themselves to develop a global, people-based definition of cities and settlements to support the monitoring of the SDGs for cities, urban areas and rural areas. The goal of this group is to have the harmonised definition approved by the UN Statistical Commission in 2020 as a recommend definition for international comparisons and the monitoring of the SDGs.

121. Several of the SDG 11 indicators are highly sensitive to where the boundary of a city is drawn. For example, access to public transport tends to be higher in the city centre than it is on the outskirts of a city. A city boundary that excludes those outskirts will make the access to public transport seem much higher than if those outskirts were included.

122. The same is true for many of the SDG indicators to be monitored in rural areas. For example, the share of population within 2 km of an all-season road will be much higher if settlements with up to 100,000 inhabitants are defined as rural, as is the case in China, than if only settlements with less than 5,000 are defined as rural, as is the case in India.

1. Conclusions and recommendations

- The creation of a joint, shared and globally accepted official definition of a city, an urban area and a rural area for international statistical comparisons is

imperative for the monitoring of progress in achieving SDGs and to facilitate meaningful comparisons;

- The results of this work and the results of the pilot projects testing the global definitions in national contexts should continue to be presented and shared in international conferences, workshops, etc.;
- NSIs should be encouraged to attend the seven workshops in Africa, Asia and South America that UN-Habitat is organizing to present this definition, provide clarification and gather feedback;
- NSIs should be encouraged to participate in a pilot project to test these definitions in their country.

C. Issue 3: Need for indicator development using novel methods and new data sources like big data, open data and geospatial data

123. The domain of city statistics is very broad in terms of topics: ranging from governance, city finance, spatial planning, environment, economy, demography, social aspects, poverty, homeless, etc. The new data sources like big data, open data and geospatial data open up new possibilities to develop new statistical indicators on cities.

124. In many countries and also on European and global scale many new initiatives and plans are being explored, developed and implemented already. The CBS Center for Big Data Statistics is only one of those country level examples in which big data are being used to improve city data and support cities in becoming more data driven while the Global Human Settlement Layer produced by the European Commission is another example at the global scale.

1. Conclusions and recommendations

- Worldwide many novel methods and new data sources like big data, open data and geospatial data that are being explored, developed and used to improve statistics and data on cities;
- The range of topics and potential new data sources are very broad. It is recommended to focus new indicator development on topics areas which are close to the core competences of the National Statistical Systems and UNECE, and at the same time considered relevant by cities;
- The ambition would be to develop indicators which are relevant, based on accessible new data sources, and their production can be accomplished with limited resources.

D. Issue 4: How are cities supported by NSIs to become more data driven?

125. Many city data are created *for* cities. This feeds into the ambition of many cities to become smart, data driven and evidence based cities. In this field NSIs can play an important role. Cities want and need to work with data to become data-driven organizations. But statistical data is not the core business nor is it the core competence of cities. It is however the core business and core competence of NSIs.

126. Some NSIs have developed substantial experience and expertise in supporting cities to become more data driven while other NSIs are not (yet) active in this field nor had any experience with this while others are making first steps. However, the drive of cities to become smart, data-driven organizations seems to be an ambition with a worldwide presence. Almost on a weekly basis conferences, seminars, workshops and summits are organized on the topic of smart cities (and smart villages) all over the world.

So, there seems to be a need and desire of cities to be supported by NSIs in realizing and implementing this ambition.

1. Conclusions and recommendations

- Cities have a strong desire and ambition to become smart, data driven organizations;
- Some NSIs have developed substantial experience and expertise in supporting cities to become more data driven;
- Best practices of NSIs with regard to supporting cities to become more data driven can be shared amongst NSIs;
- Seminars and conferences can be organized in which experienced NSIs share information and experiences with other NSIs in supporting cities to become more data driven;
- In addition to sharing information and experiences, programs including sufficient budgets could be organized to stimulate NSIs with substantial experience and expertise in this field to share their knowledge with other NSIs by organizing pilot projects in interested countries. Experts from NSIs that are experienced in this field could be invited to manage these pilot projects.

E. Issue 5: Create data with cities

127. City-data are often created *without* cities. It is recommended to complement these and create data *with* cities. NSIs can do more efforts towards combining data with cities, for cities and on/about cities so harmonization, standardization and benchmarking becomes possible from city to national to global level. By doing so cities are in the same time supported by NSIs and the international statistical community in their ambitions to become more smart, data driven, evidence based.

1. Conclusions and recommendations

- City-data are often created without cities;
- Therefore it is recommended to also create data with cities and integrate city data with national data aimed at the cities' ambitions to become more data driven. The concept of the CBS Urban Data Centres in which an NSI and cities/municipalities interact intensively and collaborate in a structural way can serve as an example that CBS is eager to share;
- NSIs can do more efforts towards combining data with cities, for cities and on/about cities so harmonization, standardization and benchmarking becomes possible from city to national to global level.

F. Issue 6: City statistics versus municipality statistics

128. Country practices indicate that many NSIs do not produce *city statistics* but *municipality statistics*. On a national and even more, sub-national (local and regional) level this makes a lot of sense since municipalities and regional authorities (like provinces) are the legal entities that can decide to produce municipal data and statistics and can take formal, democratically embedded decisions to become smart and data driven. Many municipalities, urban, rural or mixed, want to monitor *their own* achievements with regards to SDGs. Since this is linked to the territorial boundaries of the municipality within which they have a legal role and obligation. NSIs can support municipalities in achieving both the ambition of monitoring their performance and comparing it to similar areas both inside their own country and other countries.

1. Conclusions and recommendations

- Many NSIs produce municipality statistics instead of city statistics;
- Although many municipalities, whether urban, rural or mixed, want to monitor their own achievements with regards to the SDGs, they can only assess their performance or compare their performance taking into account their degree of urbanisation; NSIs can support municipalities in achieving both the ambition of monitoring their performance and comparing it to similar areas both inside their own country and other countries;
- Best practices of NSIs supporting municipalities in monitoring their progress on SDGs should be shared with other NSIs and the international statistical community;
- It should be studied if and how a connection can be made between NSIs and the international statistical community on one hand and organizations outside the official statistical community on the other hand to support municipalities in realizing positive results on SDGs and monitoring the progress in this field.

G. Issue 7: Reporting mechanisms of cities statistics from city level to national level

129. On one side the international community and NSIs collect, share and disseminate many statistics and data *on and about* cities. This is done in a consistent and professional way. On the other side, reporting mechanisms of statistics from city level to national level seem to differ between countries. Some countries have created a well-functioning system while others are in the process of exploring ways of improvement.

1. Conclusions and recommendations

- Countries differ when it comes to reporting mechanisms of cities statistics from city level to national level.
- Best practices with regards to reporting mechanisms of statistics from city level to national level can be shared amongst NSIs. This can be done through the organization of international conferences and the creation of a knowledge base. This could include an inventory of NSIs' activities and experiences in this area.

H. Issue 8: Limited knowledge about content, level of involvement and connectivity of the “unofficial” community on city data with the international statistical community

130. There is no complete inventory of city statistics and data produced, collected and disseminated by non-governmental international organizations, think-tanks, academia, networks of local governments, businesses etc. Also it is unclear what is the level of involvement and connectivity of this 'unofficial' community on city data with national level official statistics.

1. Conclusions and recommendations

- There is only a limited knowledge about content and level of involvement of non-governmental international organizations, think-tanks, academia, networks of local governments, businesses etc. in activities related to city statistics;
- It is recommended to make an inventory of the city data activities of non-governmental international organizations, think-tanks, academia, networks of local governments, businesses;

- Representatives of this 'unofficial' city data community could be invited to connect and become involved with the international statistical community as well as NSIs.

VII. Conclusions and recommendations

131. In this chapter all conclusions and recommendations formulated in chapter VI will be summarized.

A. Need for further harmonisation

132. The international statistical community, NSIs as well as cities and regions are looking for tools and guidelines to benchmark themselves focusing on SDGs against other cities. In some countries projects have started in which data of cities are harmonised with regional, national and international data so benchmarking related to the SDGs is a feasible option. NSIs can be stimulated to share their experiences and create joint pilot projects.

133. It is recommended to make further efforts to **standardize and harmonize city data** with national and international/global data in line with the SDGs. A task force could be installed to work on this topic with the ambition to compile good practices.

134. The **creation of a joint, shared and globally accepted official definition of a city, an urban area and a rural area for international statistical comparisons** is imperative for the monitoring of progress in achieving the SDGs and to facilitate meaningful comparisons. The results of the on-going work and the results of the pilot projects, testing the global city and settlement definitions in national contexts, should continue to be presented and shared in international conferences, workshops, etc. Furthermore, NSIs should be encouraged to participate in pilot projects to test these definitions in their country.

B. Need for developing existing indicators and creating new ones

135. Worldwide many novel methods and new data sources like big data, open data and geospatial data are being explored, developed and used to improve statistics and data on cities. The range of topics and potential new data sources are very broad. It is recommended to **focus new indicator development on topics which are close to the core competences of the National Statistical Systems and UNECE, and** at the same time considered **relevant by urban policy makers**. The ambition would be to develop indicators which are relevant for cities, are based on accessible new data sources, and their production can be accomplished with limited resources.

C. Improve the co-operation with cities

136. Cities have a strong desire and ambition to become smart, data driven organizations. Some NSIs have developed substantial experience and expertise in **supporting cities to become more data driven**. Seminars and conferences can be organized in which experienced NSIs **share best practices and experiences** with other NSIs. In addition, programs could be organized to stimulate NSIs with expertise in this field to share their knowledge with other NSIs by organizing pilot projects in interested countries.

137. City-data are often created *without* cities. It is recommended to **create data also with cities**. The concept of the CBS Urban Data Centers in which an NSI and

cities/municipalities interact intensively and collaborate in a structural way can serve as an example that CBS is eager to share.

138. Many NSIs produce **municipality statistics**. Although many municipalities, whether urban, rural or mixed, want to monitor *their own* achievements with regards to the SDGs, they can only assess their performance or compare their performance taking into account their degree of urbanisation. NSIs can support municipalities in achieving both the ambition of monitoring their own performance and comparing it to similar areas both inside their own country and other countries.

139. Countries differ when it comes to **reporting mechanisms of statistics from city level to national level**. Best practices with regards to reporting mechanisms can be shared amongst NSIs. This can be done through the organization of international conferences and/or the creation of a knowledge base providing an inventory of NSIs' activities and experiences in this area.

D. Improve co-operation with the “unofficial” city data community

140. There is only a limited knowledge about content and level of involvement of non-governmental international organizations, think-tanks, academia, networks of local governments, businesses etc. in activities related to city statistics. It is recommended to **make an inventory of the city statistics related activities of non-governmental international organizations, think-tanks, academia, networks of local governments, businesses**. Representatives of this “unofficial” city data community could be invited to connect and become involved with the international statistical community as well as NSIs.

141. It should be studied if and how a connection can be made between NSIs and the international statistical community on one hand and organizations outside the official statistical community on the other hand to support municipalities in realizing positive results on SDGs and monitoring the progress in this field.

* * * * *