Documentation on Regional Tourism Satellite Accounts in Denmark

by

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Maj 2018

Contents

Summary

This is documentation on Regional Tourism Satellite Accounts (RTSA) in Denmark. The RTSA project is part of the co-operative project between Centre for Regional and Tourism Research (CRT) and Visit Denmark (VDK). Since 1996, VDK began to collect the tourist interview data, the target of the tourism project has been to collect the tourism demand data by the survey method and to make regional tourism economic analysis with an interregional macroeconomic model. It has been decided by both partners to further develop the tourism accounting method in order to compile tourism statistics in accordance with the international standard. A tourism satellite account (TSA) is an international standard method for making the tourism statistics. TSA has been recommended to all the member countries by the OECD statistical commission, the Eurostat, the United Nations World Tourism Organisation (UNWTO) and the United Nations (UN) Statistics Division.

The purpose of making the regional TSA is to prepare regional TSA tables and to measure the tourism contribution to the regional economies. The compiling of the TSA tables should be consistent with the national accounts; it should be comparable with the TSA tables from other countries and comparable with the other industries within the economy. The task for TSA is to provide credible, consistent, reliable and comparable tourism statistics and an analytical tool for tourism regional studies.

This documentation is the revised version of RTSA document by Zhang, 2005. It contains six sections. Section 1 is an introduction; the objectives and the guidelines for TSA are given in section 2. Section 3 addresses the definitions of tourism-related terms. The detailed definitions of tourist

and tourism, tourism demand, tourism products and tourism industry are given in the TSA official documents. In this section it is given a brief summary of the definitions, in order to make clear the meaning of the terms of tourism, tourism demand and tourism industries that we apply in the Danish TSA. It is important to define these terms, as they do not exist in the traditional economics terms and in the national accounts. A list of tourism products and tourism industries that are defined in the Danish TSA context is given in the report appendix 1. Section 4 describes the data requirement for the regional model, and the TSA tables required by the Eurostat, the OECD, the UNWTO and the UN Statistics Division. The methodologies adopted for developing the Danish regional TSA are presented in section 5. A more general procedure for making the regional TSA is described in section 5.2; the detailed estimation methods are presented in section 5.3. Section 6 presents the results of the TSA tables in 2015. The seven TSA tables are shown in this section. Some supplementary information and recommendations are given in the last section.

The main part of this report is the methodological documentation for developing the Danish RTSA. It documents the data sources and the methods for compiling the TSA statistics. The TSA statistics consists of two main parts: the tourism supply and the tourism demand. The tourism supply shows the tourism products produced by the tourism-related industries. It is required to measure the tourism supply at both the basis prices and at the market prices. Some methodologies are needed to estimate the tourism supply at the market prices.

The tourism demand estimation is more complicated than the tourism supply. The main data sources for estimating tourism demand are the tourism survey data. The Danish tourism survey data are not directly compatible with the TSA table requirements; they are not consistent with the data in the national accounts either. Therefore, some methods are needed in order to estimate the tourism demand more precisely. Firstly, the consumption components in the tourism survey data have to be transformed into the consumption components at the national accounts, which there is a same list of components in the regional model. Secondly, the components have to be transformed into the products categories that are in accordance with the international standard for the TSA products. Thirdly, a new method is adopted in the Danish TSA development, that is, we combine the tourism survey data

and the tourism supply data to estimate the tourism demand by the TSA products. This is due to the lack of some product categories in the tourism survey data, in which some estimation is needed for filling the gaps in the TSA tables. Therefore, the tourism demand estimation is based upon the three sources: tourism survey information, the national use tables and the national supply tables.

To conclude the Danish regional TSA project we find that the advantages for this work are:

a) It is made in accordance with the official documents and recommendations.
b) It merges the TSA accounting part with the modelling part, and both of them are built based on the national accounts. The Danish TSA is consistent with the Danish national accounts.
c) It has time series and it has possibility for forecasting the TSA tables to the present year.
d) It is regionalised TSA, therefore it is easier to be applied for the tourism regional economic analysis.

Several aspects in the TSA work have to be improved in the future work. Apart from what has been mentioned in the above recommendations, there is still room for TSA improvement. For example, the private consumption in hotels and in some forms of transport (for example air transport) in the national accounts seems to be lower than the data from the tourism survey. Some information is still unavailable from the tourism survey, such as the tourism consumption in car rental and in use of tourism bureaus; the domestic tourists (or visitors) use of private car for the tourism purposes. The future work still requires the co-operation among Statistics Denmark, Visit Denmark and CRT.

1 Introduction

Centre for Regional and Tourism Research (CRT) and the Danish National Tourism Organization – Visit Denmark has revised this document for the Danish tourism satellite accounts (TSA) the project initiated from 2005. This project follows the recommendation for TSA in the field of tourism statistics from the World Tourism Organisation (UNWTO), Organisation of Economic Co-operation and Development (OECD), Commission of the European Communities (Eurostat) and the United Nations (UN) Statistics Division.

It is a tendency in recent years for many countries in the world to set up works on constructing their tourism satellite accounts. Most EU countries have already compiled TSA tables from the recommended manuals. Besides, there is an increasing need from UNWTO, OECD and Eurostat to continue this work and extend the TSA work to the regional level and also make economic analysis on the tourism contribution to the economies.

The national accounts in many countries apply the System of National Accounts (SNA93 and SNA2008) recommended by the United Nations Statistics Division, within the framework of which many tourism-related economic activities, not being »classic economic sectors«, are not identified as SNA sectors. Therefore, it is difficult to show the tourism activities as a whole and to assess the economic importance of tourism in the national or regional economies. Indeed, tourism is really a collection of economic activities that involve transactions in a wide range of economic branches. That is why there is no simple answer to such questions as the contribution of tourism to the gross domestic product (GDP) or to total employment throughout the economy, simply on the basis of the SNA (Rütter and Berwert 1999).

The tourism satellite account was first initiated in 1991 in Ottawa when representatives from 90 countries attended the conference to call for developing tourism satellite accounts. Later in a World Tourism Organisation conference in Nice, France in June 1999, representatives from 120 countries confirmed TSA as a new methodology for tourism assessment and recognised that TSA was the future for measuring the economic impact of tourism. In a later conference held by the WTO in May 2001 in Vancouver, 200 delegates from more than 50 countries met to review the progress of the TSA and they agreed to encourage adoption of TSA following the new UNWTO standard in the next decade.

Quite many countries worldwide have begun the process of developing TSA, either at national level or at regional level. Canada stands out among the countries which publish TSA tables. Statistics Canada also publishes the national tourism indicators (Delisle 1999). Canada, Norway and France, among others, have already built their regional tourism satellite accounts.

Denmark has got more than 20 years of experience in tourism economic impact studies. Since 1996, AKF (i.e. Institute of Local Government Studies) has started co-operation with the Danish Tourist Board, to construct a tourism pre-model, TØBBE. TØBBE which combined together with the AKF's interregional models, AIDA (1996-1999) or LINE (2000- 2006) to assess the tourism regional impact in Denmark. The AIDA model is a macroeconomic model with built-in interregional input-output tables, which has been used by the AKF researchers for different projects during 1994-1999. The LINE is an interregional macroeconomic model developed rather recently. The AIDA is the interregional model that broke up the national account into a county level, while in the LINE model, most data, such as production, employment and income, etc., are constructed based on municipal data. Therefore, the LINE model is a flexible model, which can be aggregated into a regional model. The data structure for LINE is a Social Accounting Matrix (SAM) within which the make and use matrices are applied. The make matrix (supply side) shows an industry-commodity linkage and the use matrix (demand side) shows a component-commodity linkage. Supply and demand in monetary terms are balanced at each commodity level.

After many years of experience in the tourism regional impact analysis by using the interregional model, the Danish Tourist Board and AKF have decided to start this project for developing a regional tourism satellite ac-

count (RTSA) for Denmark. The reason for starting the regional TSA, instead of the national TSA, is that tourist activities and tourism data in Denmark are already regionalised due to the tourism interviewing data based on the regional level. Besides, analysing regional tourism economic consequences in Denmark is far more important than the national tourism impact. Therefore, the regional TSA will be a new tool for analysing tourism's regional impact in Denmark.

2 Aims of TSA and Guideline for TSA Work

The goal of making the regional TSA is to measure the tourism contribution to the regional economies, including regional tourism GDP, tourism employment, tourism demand and supply. To serve this purpose the precise tourism statistics should be constructed under the national accounting system.

In many countries tourism statistics is mainly based on the following indicators: tourist arrivals; number of overnight stay; tourism receipt; balance of payment information about tourism payment. The World Tourism Organisation (UNWTO) can only publish the tourism statistics, such as tourist arrivals and tourism receipt for most countries in the world. It is impossible for UNWTO at present to publish the economic indicators that are related to tourism, such as tourism value-added and tourism employment. In order to have common standards so that all countries can compare their tourism indicators on the same basis, the UNWTO together with the other international organisations (i.e. OECD, UN Statistics division and the EU Commission, Eurostat) called for preparation of TSA tables that should be in accordance with the recommended methodological framework.

The tourism arrivals and tourism receipt statistics are two important indicators for tourism statistics; however, they are far from enough to give a full description concerning tourism activities in the regional, national and the world economy. There is a need for accurate measurement of tourism and comparable tourism information in relation to the other economic sectors. For example, various levels of governments (such as state, regional and local governments), different types of businesses (such as hotels and other ac-

commodation businesses, transport and other service businesses) and citizens will like to receive the accurate information about tourism.

Various levels of governments are interested in the tourism economic information, as they are concerned about what kinds of effective policies should be made within the tourism fields. They are keen to know the economic impact of tourism and the costs and benefits of tourism investment. The local tourism relevant businesses have an interest in knowing their operational effects, tourism markets, turnover of total tourism industry, investment returns, etc. The residents inquire about tourism's social, economic and environmental impact. For example, the residents feel overcrowded in the summer period due to many tourists in the area. They want to know the benefits and the costs of having so many tourists around. Therefore, information only concerning the tourist arrivals and overnight statistics cannot meet all the needs and inquiries. Tourism satellite accounts attempt to give a full description about tourism statistics and tourism economic indicators.

The objectives of this project are to build the regional tourism statistics which should be consistent with the national accounts, to provide greater efficiency in the programming and the processing of tourism data from different sources, and to provide an analytical tool and information for tourism authorities, policy makers, tourism businesses and other interest groups. The highly qualified information on tourism industry and tourism demand in Denmark shall offer decision-makers a wide view of tourism; give local governments and local tourism organisations a correct assessment of tourism impact on the regional economies; and to provide tourism businesses and residents a variety of information about tourism.

In general, satellite accounts are frameworks designed to expand the analytical capacity of the »basic« economic accounts without overburdening them with details or interfering with their general-purpose orientation. Tourism satellite accounts follow the same rules, which are meant to supplement rather than to replace the existing national accounts. Actually, tourism satellite account is a way of dipping into a country's conventional industrial sectors and redefining the tourism activities. Therefore, the aim of developing a tourism satellite account is to reorganise information in an internally consistent way that suits the tourism analytical focus, while maintaining links to the existing national accounts.

The concrete purpose for developing a regional tourism satellite account in Denmark can be concluded as to

- better identify tourism or tourism-related industries, those industries deliver tourism commodities and service to tourists;
- identify the tourism commodities and service according to the recommendation from Eurostat, OECD, UN and UNWTO;
- build a regional tourism satellite account based on both the national statistics (i.e. the top-down method) and the visitor survey data (i.e. the bottom-up method);
- provide information of visitors' expenditure by various dimensions, for example, by region, nationality and accommodation type in current prices;
- show the tourism impact on the regional economy, for example, gross value added, governmental tax revenue, personal income and employment;
- provide estimates of tourism consequences on tourism industries;
- offer information about tourism markets.

The guidelines for the Danish TSA work are the two important documents:

- UNWTO/Eurostat/OECD/UN (2008): 2008 *Tourism Satellite Account: Recommended Methodological Framework*, UNWTO, EUROSTAT, OECD and UNSD.
- UNSD (2008): 2008 International Recommendation for Tourism Statistics, United Nations Statistic Commission.

The regional TSAs have potential for and possibilities of providing detailed data on regional tourism. The task is to provide credible, consistent, reliable and comparable tourism statistics and analytical tools for regional tourism studies.

It is known that the single tourism industry does not exist in the national account system, because the tourism commodities are buried into those transactions that involve in a wide range of economic branches. It is a challenge to construct a regional TSA based on the conventional national accounting system.

3 Definitions of Tourism-Related Terms

Before making any tourism statistics and tourism measurement, it is important to give a clear definition on tourism. Which areas does tourism cover? What is tourism demand? What are the definitions for tourism products and tourism industry? Different countries might have different definition about tourism. Some countries may cover wider areas of tourism than other countries do. Even within the same country, the definition of tourism can be changed during different periods. For example, tourism activities can include or exclude domestic same-day tourism. For the domestic same-day tourism, the distance definition should be given in order to decide which trips are within the spectrum of tourism, or which trips are simply local shopping. In general, all the countries define the foreign tourist expenditure within one country's territory as tourist expenditure.

3.1 Tourism

The World Tourism Organisation defines travel & tourism as the »activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes« (UNWTO, Eurostat, OECD and UN Statistics Division, *RMF*, 2008).

According to the above-mentioned document, the persons referred to in the definition of tourism are termed »visitors«. Visitor is any person travelling to a place other than that of his/her usual environment for less than 12 months and whose main purpose of the trip is other than the excise of an activity remunerated from within the place visited.

We shall notice that in the TSA documents the tourism activities also include the potential visitors' purchases, such as purchases of camping equipment or travel insurance, or by visitors after they have returned home, such as having film developed of pictures taken during the trip. TSA defines activities related to vacation homes and other secondary residences as tourism activities.

Tourism is a demand-oriented definition. The demand-side definition of tourism focuses on the economic activities of visitors and argues that tourism industry does not produce or supply a homogenous product or service like traditional industries (agriculture, mining, steel, etc.). Instead, travel and tourism is a collection of products, including durable and non-durable, consumer and capital goods, and all sorts of services, such as from airline to cruise ship fares, from accommodations to restaurant meals, from museums to amusement park services, from automobiles to normal souvenirs, and so on.

The supply-side definition focuses on the commodities that industry produces. Commodities are so central to the concept of supply-side definition that a generic definition of tourism can be readily articulated such as: »tourism is the aggregation of all businesses that directly provide goods or services to facilitate business, pleasure, and leisure activities away from the home environment«.

The phrase »usual environment« is introduced to exclude from the concept of »visitor«, persons commuting every day between their home and place of work or study, or other places frequently visited. TSA documents also address the terms for duration of visitor stay, the purpose of the visit and classification of visitors. The characteristics of tourism can be further clarified as follows:

1. *Environment*: Tourism should happen outside visitors' usual environment.
2. *Duration*: A visitor's stay in a place should not last more than one consecutive year. If the duration is more than one year, this place becomes part of his/her new usual environment, and he/she ceases to be considered as visitor. There are two classes of visitors: tourists, who stay one or more nights in the place visited; and same-day visitors, who visit a place for less than one day, or can be called »day-trippers«.

3. *Motives*: Generally speaking, tourists are individuals who travel for leisure, recreation and holidays. The RMF document gives a much broader definition with regard to the purpose of the visit. It includes a) leisure, recreation and holiday; b) visiting family, relatives and friends; c) business and professional; d) health treatment; e) religion, pilgrimages; f) others.
4. *Classification of visitors*: There are two types of visitors, international visitors and domestic visitors.

In accordance with the TSA documents and the TSA tables, the visitors/tourists are classified in this report as follows:

- Foreign same-day visitors;
- Foreign overnight tourists, including both business and leisure visitors;
- Domestic same-day visitors;
- Domestic overnight leisure (or other purposes) tourists;
- Domestic business overnight visitors;
- Domestic business same-day visitors;
- Domestic outbound overnight tourists (data are not available yet).

3.2 Tourism Demand

While the notion of visitors, tourists and tourism is clearly explained, it is also important to define the tourism demand. The definition of tourism demand will influence the measurement of tourism expenditure, hence, the tourism economic analysis.

Tourism demand represents »the expenditure made by, or on behalf of, the visitor before, during and after the trip and which expenditure is related to that trip and which trip is undertaken outside the usual environment of the visitors« (OECD, 2000). A direct physical relationship is normally involved at the time when visitors' expenditure took place and within the place where the expenditure was made.

In principle, the demand induced by tourism will happen before, during and after the trip. For example, a traveller buys a travelling bag, a camera and a film before the trip, or he gets his photos developed in his residential local photo shop after the trip. This expenditure is made before (or after) the

trip at the traveller's home place. When the tourism expenditure data are collected by a tourism destination country, the residents' expenditure before (or after) the trip made by the outbound visitors will not be included. Only the expenditure made in the tourism destination country (i.e. during the trip) is normally collected at the host country. Therefore, the total tourism demand in the world tends to be underestimated if all the countries collect the tourism data in such a way. It is suggested by the TSA documents that the tourism demand also comprises the tourism consumption by the residents' outbound trips before leaving the country of reference and after returning to the country of reference.

OECD and UNWTO called for a special attention to the following expenditure related to tourism:

- expenditure on international aeroplane tickets;
- expenditure on package tours;
- expenditure at tourist bureau in the home country;
- expenditure on car rental in the home country;
- expenditure on all kinds of tourist products (durable and non-durable) related to the trip made before and after the trip in the home country.

In conclusion, travel and tourism demand includes four parts: 1) travel and tourism consumption; 2) travel and tourism capital investment (both private and public); 3) travel and tourism government expenditure (collective consumption); 4) travel and tourism foreign trade. This is a more broad definition of tourism demand; however, in many analyses the tourism demand is defined narrowly as the same as tourism consumption.

The definition of tourism demand used in this report is a narrow one, which means that the spectrum of the tourism demand is defined in the same area as the tourism consumption, in which it includes the tourist expenditure made by both domestic and foreign »tourists« in Denmark. The governmental and collective consumption on travel and tourism is not included, and neither is the tourism capital investment. The expenditure made by the foreign tourists at their home countries or third countries is not included in the tourism demand in Denmark. On the other hand, the tourism consumption made by the domestic outbound tourists before or after their trips abroad is not included for the time being. This category will be included when the data are available.

3.3 Tourism Products

Tourism consumption covers the total consumption made by visitors and tourists, both domestic and foreign visitors and tourists. It should be further divided by domestic tourism consumption and foreign tourism consumption, or further divided into foreign same-day visitor consumption and foreign overnight tourism consumption, etc.

For the purpose of international comparison of the tourism statistics between countries, it is required to present the tourism consumption by category of products. Products are defined here as both commodities and services. According to the RMF document, all the goods and services in the national accounts can be divided into two categories: (1) tourism-specific products; (2) non-specific tourism products. The first category, tourism-specific products, can be further divided into (a) tourism-characteristic products; (b) tourism-connected products.

Tourism-characteristic products: Products which, in the absence of visitors, in most countries would probably cease to exist in meaningful quantity or for which the level of consumption would be significantly reduced and for which it seems possible to obtain statistical information (RMF, 2008, p.29). One important feature of tourism characteristic activities is that they must serve the visitors themselves, in other words, there must be a *direct contact* between the provider of the product and the consumer. For example, hotel service is a typical tourism-characteristic product. Museums and theme parks are also tourism-characteristic products.

Tourism-connected products: A residual category, including those that have been identified as tourism-specific in a given country, but for which this attribute has not been acknowledged on a worldwide basis (RMF, p.39). The tourism-connected products are defined here in order to have room for some countries that have special tourism products, but have not been listed in the recommendation.

Tourism-specific products: The sum of the two previous categories. The main objective of the list of tourism-specific products is to make international comparability possible in the economic analysis of tourism.

Non-specific tourism products: All those commodities and services which are considered of no major direct tourism interest, but are consumed by tourists. For example, tourists may also buy food and drinks in the supermarkets, or they buy clothes, footwear or cameras in the tourism destination countries. These products are normal consumer products, which are defined as non-specific tourism products.

A note is given here about the definition of a product and a commodity. As mentioned above that products include both commodities and services, however, in the context of this report, we use interchangeable terms for products and commodities. This means that when the term of commodity is used, it also includes the service.

A list of tourism-specific products and non-specific tourism products is given in appendix 1.

3.4 Tourism Industry

Industries are normally understood as »groups of establishments engaged in the same kind of productive activities«. According to the TSA documents, a tourism industry is defined as »a group of establishments whose principal productive activity is a tourism characteristic activity« (ref. RMF, 2008, p. 30).

It is observed that a single tourism industry does not exist according to the Standard Industrial Classification (SIC) code. This is because SIC categorises an industry according to the goods or service it produced. To be precise, it is suggested to use the »tourism-related industry« as the notion. However, the »tourism industry« mentioned here indicates the same concept as the tourism-related industry. The degree of tourism characteristic activity is different in the different tourism industries according to their relevance to tourism. Generally speaking, accommodation and catering industries are highly related to tourism-characteristic activities. Recreational, cultural and

travel services are also highly related to tourism activity, even though they also serve the local residents. Transport services have quite different degrees of relevance to tourism.

As shown in table A1.2 in appendix 1 the tourism industries are including those industries that have more or less extended connections with tourism. Ten of the industries are listed as tourism industries; however, most of them provide services to local residents as well. Transport industries should, by all means, be transport industries by definition. As transport industries are also important industries for tourism, they are also defined as tourism-related industries by the TSA.

For the purpose of the detailed classification for both tourism products and tourist industries, it is suggested to acquire as detailed information of tourist expenditure as possible in the tourism data collection. For example, in the tourist interview questionnaire, it is better to let tourists break down their total expenditure into several categories that are in accordance with the TSA products.

For example, according to the TSA documents, the following tourist expenditure categories are most important:

- Accommodation – hotel, camping, holiday centre, second home or summer cottage, etc.;
- Catering – restaurant, night club or food and drink from supermarket;
- Long-distance transport – airplane, train, ferry or own car;
- Petrol (in case of using their own cars, how much they spend on petrol and car repair services);
- Local transport – subway train, bus, taxi, touring coach and car rental;
- Travel service – tourist bureau, tour operator, tourist guide, package tour;
- Entertainment – amusement parks, museums, zoo, botanical garden, sports events, others;
- Other services – financial service, insurance, post, telephone communication, private service;
- Shopping – clothes, footwear, electronic equipment, data processing equipment, gold/silver/watches, souvenirs, etc.

4 Data Inputs for the Model and the TSA Tables as Output

This section describes the data requirement for the interregional model with the regional TSA (LINE/RTSA). The regional TSA tables will be the output from this special version of the model. These tables are in accordance with the TSA tables recommended by UNWTO, Eurostat, OECD and the UN statistical division.

4.1 Data Requirement for the LINE/RTSA Model

Several sources from Statistics Denmark are used in constructing LINE/ RTSA.

Production Data at Regional Level

The national accounting data at regional level from Statistics Denmark are one of the main sources to build the regional model and the regional TSA. It includes the variables, such as production output, intermediate consumption, gross domestic products at factor costs, and 'other production tax less subsidies on production', compensation to employees, gross operating surplus and number of employees. The variables contain several dimensions:

(a) Region at municipal level (there are 98 municipalities in Denmark)
(b) Sector at detailed level of 117 classified industries
(c) Yearly data cover 1996-2016 (updated every year)
(d) Price in fixed and current prices.

Make-use Data at National Level

Make-use tables from Statistics Denmark are national account data at national level. They are actually supply and use tables. The data cover both industrial supply and final demand with very detailed information about commodities and service. They include variables, such as production, intermediate consumption, private consumption, public consumption, investment, stocks, imports and exports. These variables have the following dimensions:

(a) Sector at detailed level of 117 classified industries
(b) Commodity dimension covers about 2800 products and service
(c) Yearly data cover 1996-2014 (updated every year)
(d) Price in fixed and current prices.

Tourism Data

The TØBBE data are a tourism survey database, which is collected by Visit Denmark, i.e. the National Tourism Organization in Denmark. The data are including both number of tourist nights and tourist daily consumption. The data have the following dimensions:

(a) Overnight at municipality: The data for the number of tourist nights are based on a municipal level (98 independent municipalities).
(b) Form of accommodation: 13 different accommodation forms are included in the database.
(c) Nationalities: 30 different foreign nationalities are included in the database. Instead of the nationalities for the Danish tourists, we distinguish them by place of residence at municipality. For the Danish business travel, we distinguish them by place of firms' location at municipality.
(d) Consumption components: Daily consumption data have 13 consumption groups.
(e) Time series: Tourism survey started in 1996 and it has been carried on until now.

Regional Census Data

The regional census data that include population, employment, primary income, and various income taxes, and product taxes, etc. are also obtained from Statistics Denmark. The variables have two or more of the following dimensions.

(a) Place of production (98 municipalities)

(b) Place of residence (98 municipalities)
(c) Sector (117 industries)
(d) Education (aggregated into 9 groups)
(e) Age (aggregated into 7 groups)
(f) Sex (2 groups)
(g) Households (4 groups).

Detailed Industry Data at Regional Level

This databank from Statistics Denmark mainly includes two kinds of variables, i.e. primary income and employment. This has two dimensions as follows:

(a) Region at place of production (by 98 municipalities)
(b) Sector and branches at detailed level (by 820 detailed branches).

4.2 Recommended TSA Tables

According to RMF and EIM documents, the TSA tables should, at least, include 6 tables at present. Tables 7-10 can be included when the data are available. A brief description of the tables and availability in the Danish TSA is given in the following:

Table 1: Inbound tourism consumption, by products and categories of visitors (i.e. same-day visitor and overnight visitors): This is equal to our database for foreign tourism in Denmark: available, but the product categories should be constructed by RTSA framework.

Table 2: Domestic tourism consumption, by products and ad hoc sets of resident visitors (for example, resident visitors within their own region, resident visitors to other regions and business visitors): The tourism consumption for the Danish overnight tourism and Danish business same-day visitors is available, but the product categories should be constructed by RTSA framework.

Table 3: Outbound tourism consumption, by products and categories of visitors: Unavailable at present.

Table 4: Internal tourism consumption, by products and types of tourism: This is the output from table 1 and table 2.

Table 5: Production accounts of tourism industries and other industries, by industry and products: available.

Table 6: Domestic supply and internal tourism consumption, by products: this table is a compilation from table 4 and 5. Available.

Table 7: Employment in the tourism industry. Available.

The following tables are not required and are unavailable at present:

Table 8: Tourism gross fixed capital formation of tourism industry and other industries.

Table 9: Tourism collective consumption, by functions and levels of government.

Table 10: Other non-monetary indicators, for example, number of trips and overnight stays by type of tourism and category of visitor, inbound tourism: Number of arrivals by means of transport, number of establishments and capacity by forms of accommodation.

According to the TSA documents, it is not required to compile all of the 10 tables as the first step, because it will face the problems to collect the data. Therefore, it is recommended that we compile the first 7 tables as the first step then table 8 and 10 can be made as the second step.

5 Methodology Used in Constructing the Danish Regional TSA

The task of making the regional TSA is to expand the analytical capacity of the »basic« economic accounts without overburdening them. Another task is to supplement the existing national accounts at regional dimension with tourism survey information and redefine (or classify) the tourism activities.

The regional TSA should be able to give information on the tourism activities by the designed TSA tables. However, the main purpose of constructing the regional TSA is not only for making the TSA tables, but it should be able to make tourism statistics that is consistent with the national accounts, it should be produced on a regular basis and it should be used in the regional economic model to measure the economic consequences of tourism activities more accurately.

5.1 The Principle for RTSA

The principle for making the regional TSA is addressed as follows:

1. Industrial sectors should be consistent with the national account
The selection of TSA industrial sectors should be based on recognised national economic sector accounts. In the case of the Danish national accounts, the industrial sector is classified into 117 standard sectors. However, they are built up from about 800 detailed industrial branches.

2. Tourism industries should be comparable with other industries
Once the tourism industries are identified, one should be able to compare them with other conventional industries. For example, one should be able to compare labour productivity between a tourism industry and agricultural industry.

3. Regional data should be balanced between the supply and demand at commodity level
The RTSA will be based on both regional production account and national make and use tables. The national make and use tables are transformed into regional make and use tables by using the regional production accounts or the regional disposable income as distribution keys. The principle of making the RTSA is to make a tourism supply and demand balance at the commodity level. This is called the »top-down method«, as it is based on the national statistical data. As the RTSA is a special account and a large amount of tourism information does not exist in the national accounts, the tourism survey data are therefore used to supplement the national accounts data. This is called the »bottom-up method«. The tourism demand estimation should also be consistent with the national accounts.

5.2 The Methodology

The methodological procedure of making the RTSA is shown in Figure 5.1. We apply the data inputs described in section 4 and carry out the following steps:

Figure 5.1 Methodological procedure of making RTSA

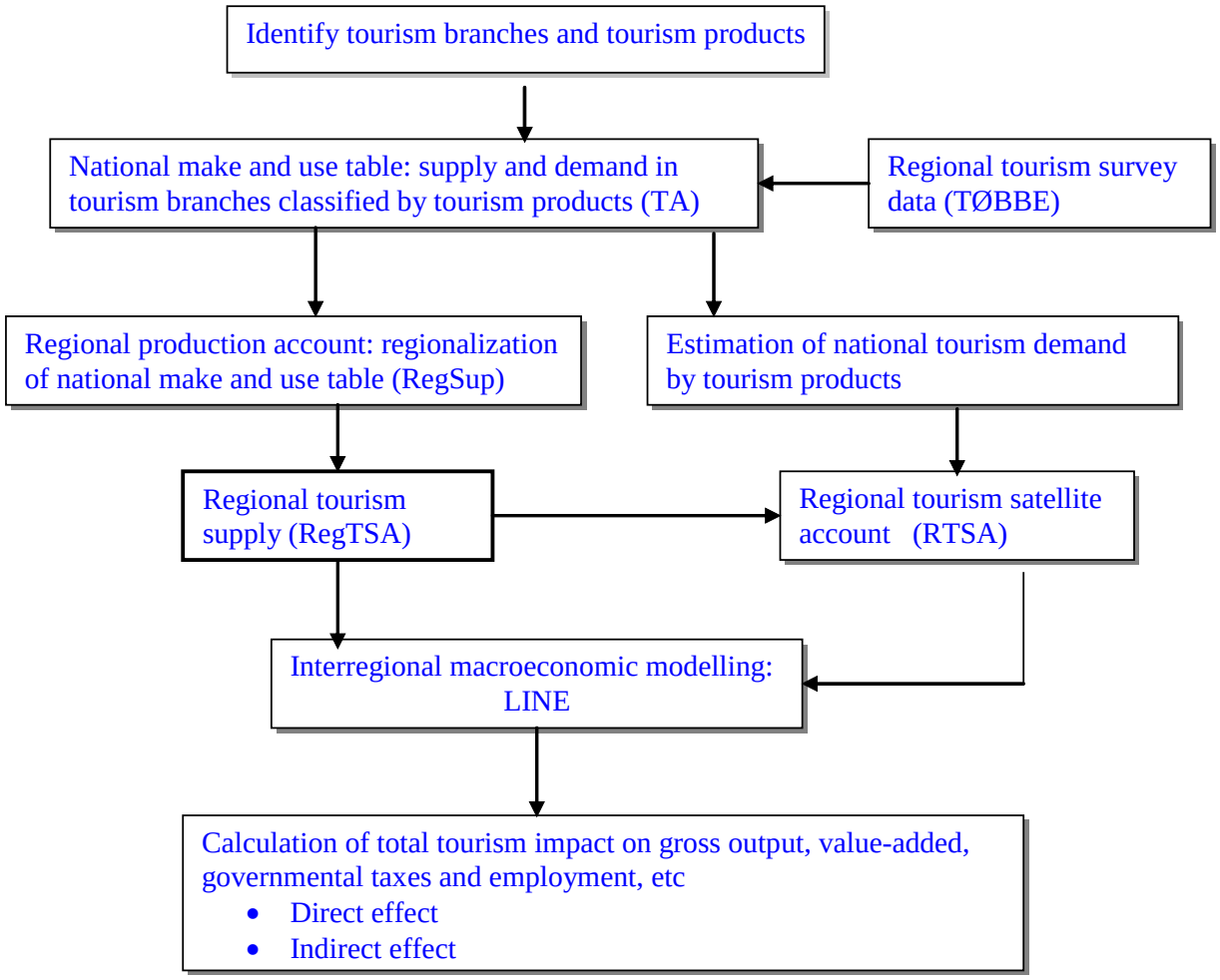


Figure1. Methodological procedure of making RTSA

1. Identifying the tourism-specific products (TSP)

A set of commodities and services within the national make-use tables is identified as tourism-specific products. The national make-use tables have as many as about 2,800 commodities and services, within which it is possible to identify the tourism-specific products according to the TSA documents. Table A.1.1 in appendix 1 shows the tourism-specific products with their codes by the Classification of Products by Activity (CPA) and by the commodity code from the national make-use tables (NRNR).

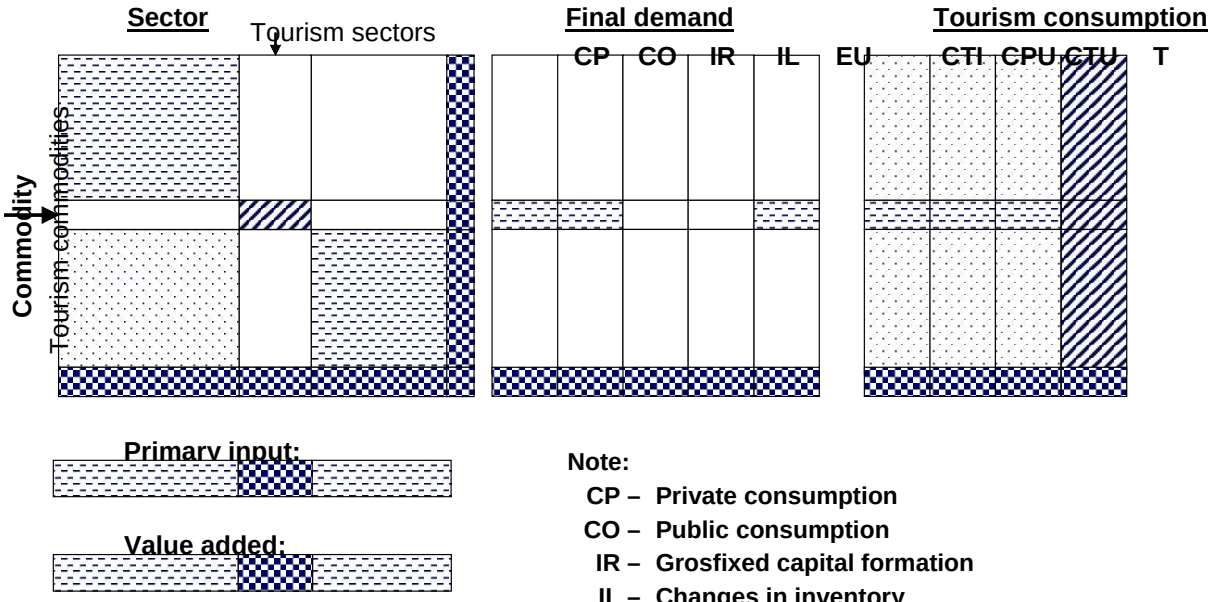
2. Identifying the tourism branches

We obtain regional income and employment data by detailed industrial branches (about 750 branches) from Statistics Denmark. Within these detailed industrial branches we identify about 30 branches as tourism-related industries (ref. table A.1.2 in appendix 1). Some branches do not exist in the 117 standard industrial sectors aggregated by Statistics Denmark, therefore, the detailed industrial income and employment information serves as a key to distribute the standard industries into more detailed TSA industries. The tourism supply shares within each standard industry are obtained. The selection of detailed tourism industries is the same as the classification of TSP products.

3. Making a balance between supply and demand by the TSP products

In the national accounts, make and use tables are balanced at each commodity level. This means that the total supply equals the total demand by each commodity. It should be the same for the tourism-specific products. Figure 5.2 shows the tourism commodity balance in the national supply and use tables and it also shows tourism consumption as a part of private consumption.

Figure 5.2



The top-left square is the national make table. For example, tourism sectors are s[illegible] are corresponding with the tourism commodities and services these sectors provide. The top-middle square is the national use tables which are represented by final demand. The tourism commodities and services are delivered to private consumption (CP), public consumption (CO) and export (EU). The top-right square shows the total tourism consumption (T), represented by these components: domestic tourism (CTI), foreign same-day tourism (CPU) and foreign overnight tourism (CTU). In recent years, we have improved tourism data by adding domestic same-day tourism (CPI), where CPI together with CTI composes domestic private tourism.

The total tourism consumption is a part of private consumption. In regional macroeconomic model we assume that local private consumption is a residual equal to total private consumption minus total tourism consumption. Therefore, tourism commodities will get a balance between the supply and demand.

The low-left squares show the primary input, value added, employment and the total output by sector.

4. Input of the tourism survey data and aggregation to the national tourism consumption

The TØBBE data from Visit Denmark is the survey data at a municipal level. The tourism survey data are important information for making the regional TSA, as the national use tables provide only private consumption as the national total. It has no information about regional private consumption. Besides, it cannot separate local private consumption from tourism consumption. The aggregated tourism demand by consumption groups is compared with both the tourism supply and demand from the national accounts.

5. Estimation of the total tourism demand at national level by the TSP products

From the above procedures it is shown that two data sources are merged and compared for tourism products. The one source is the national use table, showing the tourism products consumed by private consumption; the other source is the TØBBE data, number of tourists (or visitors) multiplied with their daily consumption, giving tourism consumption for each tourism product. In case of data incompatible with each other, we have to decide which data should be applied in the estimation. The methods for estimating the total tourism demand, and data construction concerning the tourism supply and demand is presented in the next section.

6. Regionalisation of national make-use tables

Regionalisation of the national make-use tables is carried out by the regional production accounts. The Danish regional production accounts including information of regional production value, regional intermediate consumption, gross domestic product at factor costs, and production taxes less subsidies on production, compensation to employees, gross operating surplus and number of employment. With the help of the regional production account, national make-use tables are disaggregated into regional make-use tables.

7. Making a regional tourism satellite account (TSA)

With the help of the detailed regional industrial data and the regional tourism survey data, the national TSA is distributed into the regional TSA. It should ensure that supply and demand at the regional level are balanced at all commodity levels.

8. All the regional data enter into the interregional macroeconomic model, LINE

Concerning the description of the LINE model, the following documents are used as references; see Madsen, et al. (2001a), Madsen, et al. (2001b) and Zhang (2001).

9. The LINE model is applied to calculate the tourism consequences in the regional economies

By setting the tourism revenue in all the regions to zero and running the model, the model will give us the economic consequences of tourism, such as the changes in output, GDP, employment, government revenues, import and export, etc.

5.3 Estimation of Tourism Supply and Demand

This section is the central part of the report. It documents the methods applied in constructing the regional TSA for Denmark. The methodologies are presented in the following sub-sections: section 5.3.1 gives an introduction to the detailed tourism sectors with their corresponding aggregated standard sectors. It also introduces a concept of »supply share«, and further presents the data and the method for calculating the regional supply shares. Section 5.3.2 describes the procedure for estimating the tourism supply at market prices and introduces another concept »tourism ratio on supply«. Section 5.3.3 explains the methods for transforming the tourism survey data into the tourism demand by product category. Tourism demand within the TSA framework should be presented by the product category, but the tourism survey data are organised by the tourist consumption components. Some methods are applied here to transform the consumption components into the product categories. Section 5.3.4 presents a new method in our TSA work, that is, a combination for tourism demand estimation from both the tourism demand and tourism supply sides. The tourism survey data are not sufficient enough to cover all the tourism demand that actually exists within the economy. We need to estimate some tourism demand by infor-

mation from the supply side. A list is given in the section to show the concrete methods used for estimating the tourism demand in each tourism product category. Transformation from the TSA products to the model consumption components is presented in section 5.3.5. The tourism demand is merged into the model system.

5.3.1. Data Construction in Regional Supply

We obtained statistical data with very detailed industrial sectors (there are about 750 sectors in the data bank) at a municipal level on employment and primary income from Statistics Denmark. These data are used as the distribution keys to redefine the tourism activities within the traditional standard sectors. For example, in the traditional standard sectors, hotel is presented as one sector. But from the detailed sectoral information, the hotel sector in Denmark is divided into 5 sub-sectors, such as »hotels «, »conference centre«, »camping«, »holiday centre« and »other facilities for short-period stay«. Table 5.1 shows the detailed sub-sectors in the first and second column that are corresponding to their aggregated sectors shown in the third and fourth column.

Table 5.1 Detailed tourism relevant sectors and their corresponding aggregated standard industrial sectors

Names of detailed tourism sub-sectors	Codes of sub-sectors	Names of aggregated standard sectors	Codes of standard sectors
Hotels	551010	Hotels	550000
Conference centres	551020	Hotels	550000
Holiday centre	552000	Hotels	550000
Camping sites	553000	Hotels	550000
Other accommodation for short-period stay	559000	Hotels	550000
Restaurants	561000	Restaurants	560000
Event catering	562100	Restaurants	560000
Canteen	562900	Restaurants	560000
Café, bar and similar	563000	Restaurants	560000
Railway, passenger transport	491000	Transport via railway	490010
Subway train	493110	Local bus, train, taxi and other scheduled passenger transport	490020
Taxi	493200	Local bus, train, taxi and other scheduled passenger transport	490020
Bus and local traffic service	493910	Local bus, train, taxi and other scheduled passenger transport	490020
Other land passenger transport	493920	Local bus, train, taxi and other scheduled passenger transport	490020
Ferry and other water passenger transport	501000	Water transport	500000
Water transport inland	503040	Water transport	500000
Route air transport	511010	Air transport	510000
Charter and taxi air transport	511020	Air transport	510000
Toll of highway, bridges and tunnels	522130	Support transport activity	520000
Holiday cottage rental	683120	Summer cottage rental	680030
Car rental	771100	Renting of machinery and equipment etc.	770000
Tourist bureau	791100	Travel bureau and travel agency	790000
Travel agency, tour operators	791200	Travel bureau and travel agency	790000
Travel agency, ticket booking	799000	Travel bureau and travel agency	790000
Congress fair and exhibition activities	823000	Other business service	820000
Museum	910200	Recreation, cultural, sporting activities (both market and non-market)	910001 + 910002
Botanical garden and zoo	910400	Recreation, cultural, sporting activities (both market and non-market)	910001 + 910002
Amusement parks	932100	Recreation, cultural, sporting activities (both market and non-market)	930020
Sports facilities	930011	Recreation, cultural, sporting activities (both market and non-market)	930011
Yacht harbour	932910	Support transport activities and travel agency	930020

The procedure of data construction takes place in the following two sections.

5.3.1.1. Supply share

The detailed industry data are put into the model system in the data section. The data are used to calculate a supply share for a tourism industry.

The shares of both employment and primary income in each sector are calculated as:

$$QAEQ = qae / Tqae \quad (1)$$

$$YLRAEQ = ylrae / Tylrae \quad (2)$$

Where a = 1, 2, …, 98, representing each municipality; e = 1, 2, …, 36 for sector. QAEQ and YLRAEQ are *supply shares* estimated by employment and income respectively. qae is employment, and ylrae is primary income data with a regional dimension (a) and detailed sectors (e). Tqae or Tylrae are the aggregated data for the standard sectors, respectively.

The *supply share* represents a portion of each sub-sector in the aggregated standard sector within a region. For example, supply share for sub-sector »hotels « is the share of this sub-sector in the traditional »hotel sector«. The supply shares in these 5 hotel sub-sectors will add up to one within each region. Table 5.2 shows the supply shares calculated by the detailed employment data in the hotel sub-sectors in the selected municipalities. It shows that the supply shares can be quite different from one municipality to another. Some municipalities have higher shares in »hotels «, for example, in Copenhagen and most of large cities. However, in Hillerød and Odense, the conference centre is the dominated form in the hotel sector.

Table 5.2 Regional supply shares in hotel sub-sectors in the selected municipalities in Denmark (%)

Hotel sub-sectors:	Codes	KBH	AAR	AAL	ODE	ESB	HEL	HIL	BO
Hotels	551010	94.7	76.8	79.3	39.5	76.1	62.3	7.8	62.8
Conference centres	551020	1.6	17.2	14.1	56.0	7.9	29.2	85.3	0
Holiday centre	552000	3.6	3.9	4.1	3.3	11.5	0.3	6.1	25.7
Camping sites	553000	0	1.6	2.5	1.1	4.5	7.9	0.8	10.7
Others for short period stay	559000	0.8	0.5	0	0.1	0	0.3	0	0.8
Sum		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note 1) Regional supply shares are calculated by using the detailed information of employment. The shares presented here are QAEQ in formula (1).
2) Region is presented by municipality where KBH-Copenhagen; AAR-Aarhus; AAL-Aalborg; ODE-Odense; ESB-Esbjerg; HEL-Helsingør; HIL-Hillerød; BO-Bornholm.

5.3.1.2. Estimation for tourism production, income and employment

YLRAEQ is used as a key to distribute the values of production, intermediate consumption, primary income and other incomes in the aggregated sectors into detailed tourism sectors. QAEQ is used as a key to distribute the employment data from an aggregated sector into the detailed tourism sectors. Take the hotel sector as an example again. For the hotel sector the distribution is carried out by

$$Tqpae_i = qpae_j * QAEQ_i \quad (3)$$

Where $Tqpae_i$ is the number of employment in each sub-hotel sector (*i*); $qpae_j$ is the number of employment for the aggregated hotel sector (*j*). This means that if the aggregate »Hotel« sector has 1000 employees, with the help of the distribution key ($QAEQ_i$), these 1000 employees are distributed into 5 sub-hotel sectors.

The same method is used for the values of production, intermediate consumption, primary income and other incomes, which are distributed by YLRAEQ into their corresponding detailed tourism sectors. The formula for the distribution is documented in the following equations.

$$Txae_i = xae_j * YLRAEQ_i \quad (4)$$
$$Txrae_i = xrae_j * YLRAEQ_i \quad (5)$$
$$Tyfae_i = yfae_j * YLRAEQ_i \quad (6)$$

$$Tyflae_i = yflae_j * YLRAEQ_i \quad (7)$$
$$Tyfkae_i = yfkae_j * YLRAEQ_i \quad (8)$$
$$Tyfnae_i = yfnae_j * YLRAEQ_i \quad (9)$$

Where $Txae_i$ is the production value in each detailed tourism sector (*i*); xae_j is the production value for the aggregated tourism sector (*j*).
$Txrae_i$ is the intermediate input value in each detailed tourism sector (*i*); $xrae_j$ is the intermediate input value for the aggregated tourism sector (*j*).
$Tyfae_i$ is the gross factor income in each detailed tourism sector (*i*); $yfae_j$ is the gross factor income for the aggregated tourism sector (*j*).
$Tyflae_i$ is the value of compensation to employees in each detailed tourism sector (*i*); $yflae_j$ is the value of compensation to employees for the aggregated tourism sector (*j*).
$Tyfkae_i$ is the gross operating surplus in each detailed tourism sector (*i*); $yfkae_j$ is the gross operating surplus for the aggregated tourism sector (*j*).
$Tyfnae_i$ is the net value of commodity tax or subsidiaries in each detailed tourism sector (*i*); $yfnae_j$ is the net value of commodity tax or subsidiaries for the aggregated tourism sector (*j*).

From the above formulae it is shown that the supply shares are used as the distribution keys to construct the production, intermediate input consumption, and primary income and employment data for the potential tourism-relevant sectors.

5.3.2. Estimation of tourism supply at market prices and the tourism ratio on supply

To estimate the total tourism supply, the total domestic supply by tourism product is calculated by adding up the total domestic production with the total import at each product level. The total supply at basis prices is balanced with the total demand at basis prices. This means that at each commodity level, supply equals demand at basis prices. Implicitly, the total demand at market prices can represent the total supply for commodities at market prices, as we have no information for supply at market prices. In other words, if we have information of the VAT and commodity taxes for each commodity and add these together with the wholesale and retailing margins to the total supply at basis prices for commodities, we will get the total supply at market

prices. The total supply for tourism commodities at market prices is the basis for calculating the *tourism ratio on supply*.

The *tourism ratio on supply* represents a share of the tourism demand in the total domestic supply at each product category. For example, for the product of »camping site« and »holiday centres«, we assume that the *tourism ratios on supply* are quite high, or close to one. This means that most of the services in these sectors is related to the tourism demand; their supply is simply to meet the tourism demand. On the other hand, *tourism ratio on supply* in the other hotel forms, catering sectors and transport sectors cannot be one, as these sectors also have to meet the demand from local residents. For example, a family of local residents holds a wedding banquet in a hotel, or local residents have dinner in the restaurants. These kinds of consumption are defined as non-tourism consumption. Besides, tourism supply is also the basis for estimating tourism demand in some product categories that are missing from the tourism survey data. This point will be further discussed in the next sections.

5.3.3. Estimation of tourism demand from the tourism survey

Tourism demand at national and regional level should be estimated by both the tourism survey information and the national make and use matrices. In the use matrices, we can find the information about the use of tourism commodities. Tourism commodities are mainly used by private consumption. The private consumption consists of local private consumption, domestic tourism consumption and foreign tourism consumption. However, the national use matrix has neither information concerning tourism consumption versus local private consumption, nor information of regional tourism and local private consumption. Therefore, the tourism survey data is very important information, which is available to identify some tourism consumption categories, and it has regional tourism consumption information.

In the TØBBE data, the tourism consumption is presented by consumption components, namely, by the groups of commodities. Therefore, we have to transform TØBBE components into the model's consumption components, then to split consumption components into the detailed commodities. As mentioned above, the TØBBE data are regional data and are also available for identifying the different types of tourism, such as domestic private tourism, domestic business tourism, foreign same-day tourism and foreign

overnight tourism. Besides, the TØBBE data can also identify the different tourist nationalities and the different types of accommodation.

The transformation of the TØBBE components into the detailed commodities is carried out in two steps: 1) from the TØBBE consumption components to the model's consumption components; 2) from the model's consumption components to the detailed commodity categories.

5.3.3.1. Transformation from TØBBE components to models components

Table 5.3 Transformation of tourism consumption components into model's consumption components

Codes for tourism components	Explanation for the codes in TØBBE	Codes of components in the model's data level	Explanation for the codes in the model	Codes of components in the model's construction
A	Food	CPD01110-CPD01190	Various food components	CPK01110
B	Beverage	CPD01210-CPD02130	Various drink components	CPK01210
C	Tobacco	CPD02900	Tobacco	CPK02900
D	Restaurants, café	CPD11100	Restaurants	CPK11100
E	Entertainment	CPD09400	Entertainment	CPK09400
F	Petroleum use in cars	CPD07220	Petroleum	CPK07220
G	Local transport	CPD07300	Local transport	CPK07300
H	Clothing and footwear	CPD03113, CPD03200	Clothing and footwear	CPK01141
I	Audio-visual, photo and data equipments	CPD09110-CPD09150	Various audio-visual, photo and data equipments	CPK01150
J	Jewellery, watches, etc	CPD12310	Jewellery and watches	CPK01167
K	Other services	CPD03140 CPD07210 CPD07240 CPD08100 CPD08200 CPD08300 CPD09300 CPD09513 CPD09540 CPD09600 CPD12110 CPD12123 CPD12320 CPD12500 CPD12600 CPD12700	Dry cleaning Repairs of motor vehicles Personal transport service Tele-communication Telephone / data communication Data communication Other items for recreation Books and newspapers Stationery, study material Package holidays Hairdressing Toilet articles Other personal stuff Insurance Finance service Other service, incl. summer cottage renting	CPK01181 CPK07210 CPK07240 CPK01182 CPK08100 CPK09300 CPK01171 CPK01171 CPK09600 CPK01181 CPK01181 CPK01181 CPK01181 CPK01181 CPK12700
L	Hotels and other accommodation	CPD11200	Hotels and other accommodation	CPK11200
M	Expenditure on summer cottage	CPD04100-CPD04540 CPD12700	Actual and imputed rental housing and consumption electricity, water, gas and fuels, and renting out summer cottages	CPK04100 CPK04510 CPK12700

Table 5.3 shows how we transformed the TØBBE tourism consumption components into the model's 72 consumption components. From the table it is seen that some components are simply transformed from one to another, such as »tobacco« to »tobacco«, or »restaurant« to »restaurant«. Some of the

TØBBE consumption components have to be transformed from one category to several categories, for example, »food« is transformed into several food components in the model, and »other service« is transformed into different service categories. This transformation is made by using the shares of the private consumption in each sub-category. The significance for this transformation is that we assume tourists consumed a basketful food and series of services, including private and public service and other communication, insurance and financial services. The last column in table 5.3 shows the codes for the private consumption components in the data construction level. The purpose for the data construction is to avoid too many detailed categories; therefore some detailed categories are aggregated into one.

5.3.3.2. Transformation from the consumption components to commodity categories

Table 5.4 shows the transformation between the model's consumption components and the model's commodity categories. The tourism consumption by non-tourism-specific components is simply transformed into corresponding non-tourism-specific commodities, such as tourism consumption for food, drinks and tobacco is transformed into the aggregated commodity for food, drink and tobacco in the model. Tourism consumption for clothing and footwear is transformed into the aggregated textile and footwear commodity. Tourism consumption in the different categories of private service is aggregated into the private service category. On the other hand, tourism consumption by tourism-specific components has to be expanded in order to show the detailed tourism commodities.

Table 5.4 Transformation of the consumption components into commodities

Code for consumption components	Explanation for the codes	Code for aggregate commodities in model	Explanation for the codes
CPK01110 CPK01120 CPK01130	Food Beverage Tobacco	VAK101000	Aggregate food commodities
CPK01141	Clothing and footwear	VAK130000- VAK260020	Aggregate textile commodities
CPK01150	Audio-visual, photo and data equipment	VAK260010- VAK270030	Electronic commodities
CPK01160	Jewellery, watches, etc.	VAK240020- VAK320020	Toy, jewellery and watches
CPK01171 CPK01181 CPK07210 CPK09300 CPK09600	Books and newspapers Other private services Maintenance and repair Other recreation items Packaged holidays	VAK270020- VAK310000 VAK200020, VAK460000, VAK320020 VAK791200	Other private services
CPK01182	Communication, insurance and finance	VAK580000- VAK630000	Communication, insurance and finance
CPK07220*	Fuels used by transport vehicles	VAK190000	Fuel used in private transport**
CPK07300*	Transport service	VAK491000 VAK493110 VAK493210	Ref. table 5.6
CPK09400*	Recreation and cultural service	VAK910200 VAK910400 VAK931100 VAK932100	Ref. table 5.7
CPK11100	Restaurants, café	VAK561000 VAK562100	Restaurants and night club
CPK11200*	Hotels and other accommodation	VAK551010- VAK559000*	Ref. table 5.8
CPK04100 CPK04510	Expenditure on summer cottage	VAK683120 VAK350010- VAK350030	Holiday cottage rental and consumption on energy
CKP12700	Summer cottage rental bureau	VAK682cot, VAK970000	Summer cottage rental og personal service

Note: * These consumption components will be further split up into different commodities, ref. the relevant tables

** Corresponds to TØBBE component F (petroleum used in cars). It also contains spending in Denmark on transportation between home and destination. Since not all travel between destination and home is by car, it may involve some double-counting due to supply-side estimation of local long distance transportation.

Tourism consumption at component F from the TØBBE data is defined as the tourist consumption at both petroleum consumption and long-distance transport services between home and destination by tourists using their cars. Tourism consumption at component F is transformed into the model consumption component (CPK07220) (See table 5.3).

In the list of the commodity categories, there are several commodities that belong to a single consumption component, for example, »subway train« (VAK493110), »buses« (VAK493910) and »taxi« (VAK493200) are the commodity categories that belong to the same »transport service« (CPK07300) component. It is the same for other consumption components, such as »recreation and cultural service« (CPK09400), and »hotels and other accommodation« (CPK11200). These consumption components should be further split up into their corresponding tourism-specific commodities by different methods.

The tourism consumption on »local transport« is distributed according to the shares shown in table 5.6. As in the TØBBE interviewing, it contains a question of »how much a tourist spends on the local transportation«. But the information does not provide us with what kinds of local transportation are used by the tourists. The shares for distributing the local transport into three kinds of local transport modes were, in principle, provided by Visit Denmark by investigating the relationships between the tourism consumption in the TØBBE data and the private consumption in the national accounts. They should also take into account the TSA experience from other countries. Considering different tourists have different patterns of using the local transport, two columns are given in table 5.6. One column shows the shares given for distributing the Danish tourism consumption; another is the shares for distributing the foreign tourist consumption. It is seen that the domestic tourists tend to used more »buses« and »subway train« than the foreign tourists, while the foreign tourists tend to use more »taxi« than the domestic tourists.

Table 5.6 Distribution of Danish and foreign tourism consumption on local transport into different transport products

Codes for products	Name of products	Share of distribution for Danish tourist consumption (%)	Share of distribution for foreign tourist consumption (%)
VAK493110	Subway train	10	6.73
VAK493210	Buses and other route transport	55	26.82
VAK493200	Taxi	35	66.45
Total		100	100.00

The tourism consumption on entertainment is distributed according to the information from the private household consumption survey in Statistics Denmark. The statistical information shows how much the Danish households consumed on different recreation and cultural activities during the period 1997-2001. The average share of each tourism product for this period is estimated as shown in table 5.7. These shares are used to distribute the consumption component »entertainment« into five recreation products as shown in the table.

Table 5.7 Distribution of tourism consumption on recreation into different recreation products

Codes for products	Name of tourism products	Share for distribution (%)
VAK932100	Amusement parks	80
VAK910200	Museum	4
VAK910400	Botanical garden and zoo	4
VAK931100	Sports facilities	12
Total		100

The tourism consumption at hotel and other accommodation in the TØBBE data is simply presented by two categories (L and M). The tourist expenditure at M category can be transformed into the tourism product called »holiday cottage rental«, as it exists in the national account. However, the expenditure at L category should be further split up into 5 different hotel products, such as »hotel«, »holiday apartment«, »camping« and »other accommodation for short-period stay«. »Yacht harbour« (932910) is for the tourists who stay at their yachts.

Fortunately, the TØBBE data have information on types of accommodation; it can be used to transform the TØBBE data from the tourism consumption at different types of accommodation to the tourism products. Table 5.8 shows the relationship between the types of accommodation from the TØBBE and the tourism products in the model. It is seen that the transformation is not precise, as there is no precise linkage between these two categories. We transform the tourism consumption at the four types of hotels into the four forms of hotel products, as shown in the table as a united consumption at hotels.

As shown from the table, the other types of accommodation are simply transformed into their corresponding product categories, such as »camping«

to »camping«, »youth hostel« to »youth hostel« and »holiday centre« to »holiday centre«. The category in »rented summer cottages« is transformed into the product category »holiday cottage rental«. The other two forms of »summer cottages«, namely »own« and »borrowed summer cottages« are transformed into »dwelling«. All the transformation is carried out with the exception of »festival«, »farm« and »cruise ships«. There are no product categories called »festival«, »farm« and »cruise ships« in the national make and use tables. Therefore, we have to find some product categories that are the most similar to these three categories. We decide to put tourism consumption at »festival« and »farm« into the »camping« category, as they are more similar to each other and the national use matrix also shows relatively large private consumption in camping. Tourism consumption at »cruise ships« is transformed into »other accommodation for short-period stay« (552390), as recommended by the TSA documents. There are two other types of accommodation in the TØBBE data base, i.e. »visiting family and friends« and »same-day visit«. As these types of tourists have no spending on accommodation, we do not need to make distribution.

Table 5.8 Transformation of TØBBE's accommodation into tourism commodities

Code for TØBBE's types of accommodation	Explanation for types of accommodation in TØBBE	Code for aggregate commodities in the model	Explanation for commodities in the model
HotelF	Hotel – holiday	551010 + 551020	Hotel with/without restaurant, conference centre
HotelB	Hotel – business	Same as above	Same as above
Camp	Camping	553000	Camping
Vandre	Youth hostel	552000	Holiday centre
Sumhus	Rented summer cottage	683120	Holiday cottage rental
Sumege	Owned summer cottage	683120	Dwelling
Sumlon	Borrowed summer cottage	683120	Dwelling
Ferie	Holiday centre	552000	Holiday centre
Fest	Festival	553000	Camping
Lyst	Yacht harbour	932910	Yacht harbour
Bonde	Farm	553000	Camping
Kryds	Cruise ships	559000	Accommodation for short-period stay

5.3.4. A new method – combination of estimations from both of tourism demand and tourism supply sides

As mentioned above, the tourism consumption in TØBBE is the product of the number of tourist nights multiplied by the average daily consumption.

The average daily consumption is estimated by the tourist interviewing samples. The tourism consumption for hotel spending at each type of accommodation can be different from the data in the national private consumption. The tourism consumption is part of the private consumption in the model and it cannot exceed the private consumption in the national accounts. Therefore, the tourism consumption data at hotel and other accommodation will be adjusted by the national private consumption in these categories in order to have the consistency. Besides, the tourism demand in some important tourism product categories, such as long-distance transport, such as »ferry« and »air transport«, and »travel agency«, »tourist bureau« and »car rental« is missing from the tourist survey data. Several tourism consumption data have to be supplemented by the tourism supply side data.

In order to give an accurate estimation of the tourism demand that covers all the tourism products, we have to use a method that combines both the demand estimation from the survey data and the supply estimation from the national make matrix. The national make matrix shows production output by industrial sectors and service sectors for each product. For those tourism products that have no information from the tourism survey data, we can estimate them from then supply data.

The TSA documents provide us with the methodology for constructing the tourism demand data. With regards to the methodology, the documents suggest to have three ways to collect information on internal tourism consumption: a) direct information from suppliers (information on their classes of customers); b) from visitors (sample surveys of expenditure by products); c) from opinions of experts familiar with the relationships (ref. RMF, page 63).

The principles for applying the mixed methodology to estimate the tourism demand are: a) when the tourism survey data are available, we shall use the tourism survey data as the tourism demand; b) when the tourism survey data are not consistent with the national use table, especially when the tourism demand data from the survey exceed the national private consumption data, we shall adjust the tourism survey data by the national use data; c) when the tourism demand data are not available in some important tourism product categories, we shall use the tourism supply information to estimate the tourism demand.

Table 5.9 shows the method of the combination of both tourism demand and tourism supply estimations. The first column gives the names of the Danish TSA specific and non-specific products. The second column shows the product codes within the Danish national accounts. The third column shows that the tourism demand is estimated by the TØBBE data. The fourth column shows that the tourism demand is estimated by the information from the rational use table. The last column shows that the tourism demand is estimated by the information from the national supply table. After the estimation of the tourism demand, the tourism consumption in these product categories will be sent to Statistics Denmark and the relevant companies for their evaluation. From the table it is easy to find how the tourism demand is estimated.

Table 5.9 Combination of both tourism demand and tourism supply estimations

Name of products	VAK codes	TØBBE data	National use table	National supply table
TSA specific products:				
Hotels	551010	X	*	
Conference centre	551020	X	*	
Youth hostels	552000	X	*	
Camping sites	553000	X	*	
Other short-stay accommodation	559000	X	*	
Restaurants	561000	X		
Event catering	562100	X		
Canteen	562900	NA		
Café, bar and similar	563000	X		
Railway, passenger transport	491000	X		
Subway train	493110	X		
Bus and other route transport	493210	X		
Taxi	493200	X		
Other land passenger transport	493920	X		
Ferry and other water passenger transport	501000			X
Water transport, inland	503040			X
Route air transport	511010			X
Charter and taxi air transport	511020			X
Toll for highways, bridges and tunnels	522130			X
Holiday cottage rental	683120	X	*	
Car rental	771100			X
Tourist bureau	791100			X
Travel agency, tour operators	791200			X
Travel agency, ticket booking	799000			X
Congress fair and exhibition activities*	748410	NA*		
Museum	910200	X		
Botanical garden and zoo	910400	X		
Sports facilities	931100	X		
Amusement parks	932100	X		
Yacht harbour	932910	X	*	
Non-specific products:	(aggregated codes)			
Agriculture and fishing	011009			
Oil, natural gas and petroleum	190000	X		
Food, drinks and tobacco	101000	X		
Textile and clothing industry	130000-260020	X		
Electronic industry	260010-270030	X		
Toy, gold and silver products	240020-320020	X		
Manufacturing	130000-330000	X		
Energy supply	350010-360000			
Housing	680020-680030			
Construction	410000-430000			
Post, bank and insurance	640000	X		
Private services	200020	X		
Public services	840010-880000	X		
Other recreation and culture	320020	X		

Note: The mark X indicates the choice of the methods for the estimation. The mark * indicates that the tourism demand of the product has been adjusted by the national use table, i.e. by the national private consumption data.

The tourism demand for various accommodation products is necessary to be adjusted by the national private consumption data, as in principle the private tourism consumption cannot exceed the total private consumption. The ad-

justment is made only at the national total consumption. This means that the patterns of the tourism consumption by different groups of tourism, such as by domestic and foreign tourism or by different regions, are exactly the same as the tourism survey data. The method used here is the scaling method, i.e. every cell of the data is scaled down in order to be adjusted to match the total private consumption.

Table 5.9 shows that some TSA products are estimated by the information from the national use table, i.e. the national private consumption. By definition, the private consumption at »water transport inland« (VAK503040) is tourism consumption, because this consumption is typically related to the residential consumption on boating and other recreational activities at inland waters. It is the same for the private consumption at »tourist bureau« (VAK791100) and »travel agency« (VAK799000). For the product category »toll for highways, bridges and tunnels« (VAK522130), a part of private consumption is tourism consumption, another part is the consumption by commuters; therefore, a distribution share (53.5%) is given to the tourism consumption according to the survey data.

From table 5.9 it can be seen that 9 categories of tourism specific products are estimated by the supply approach. For example, two categories »travel agency, tour operators« and »car rental« are not estimated by the demand data, as there is no information from the survey data. They are estimated by the supply information at the moment, by giving tourism ratios on supply. For »travel agency, tour operators« (VAK791200) it is assumed that 10% of the supply is consumed in Denmark by Danish tourists. For foreign tourists 5% is spent in Denmark. When interviewing data become available for these two categories, we shall make changes on the estimation by the survey data.

5.3.4.1. Estimation of local long distance transport from national supply

TØBBE does not provide sufficient reliable information to estimate tourist consumption on long distance transport during the stay in Denmark. This is therefore estimated using national supply side data. Tourism consumption is calculated for five products (or service) within the long-distance transport. The five long distance transport are defined as tourism-related products, including ‘Ferry and other water passenger transport’ (501000), ‘Water transport, inland’

(503040), 'Route air transport and Charter and taxi air transport' (511010 and 511020), and 'Toll for highways, bridges and tunnels' (522130)[1].

Besides, the long-distance transport products have different distribution keys for different tourists according to the types of accommodation. For example, for water passenger – ferry transport, foreign and Danish hotel guests account for 32% and 16% respectively; foreign and Danish camping tourists account for 6% and 20% respectively; summer house tourists account for 34% and 20% respectively; and holiday apartment guests accounts for 18% and 12% respectively. Youth hotel and same-day tourists account small shares. Both foreign tourists plus the Danish tourists have accounted for totally 50% of the ferry-transport product in the private consumption.

The distribution for air-transport is different: foreign and Danish hotel guests account for 49% and 77% respectively; foreign business hotel tourist accounts for 40%; foreign and Danish youth hotel tourists account for 6% and 19% respectively; and holiday apartment tourist accounts for 3% and 4% respectively. Both foreign tourists plus the Danish tourists have accounted for totally 100% of the air-transport product in the private consumption. The distribution for travel service is different from the above. It is found from the survey data that hotel tourists use most of travel bureau and other travel service, therefore, foreign and Danish tourist at hotel account for 75% and 77% respectively; camping guests account 4% and 13% respectively; holiday apartment guests account for 15% and 6% respectively; summer cottage guests account for 4% and 2% respectively, and finally both foreign and Danish youth hotel tourists account for 2%.

5.3.5. Transformation from the TSA products to the model's consumption components

The tourism demand by the TSA product categories shall be transformed into the consumption components again. This is because the modelling is conducted in the component dimension for the private consumption. In the model, the local private consumption is obtained by subtracting the different parts of the

[1] Methods for calculating local long distance consumption is documented in "Note on RTSA estimation for long distance transport", CRT 2014.

tourism consumption in the corresponding components from the total private consumption.

The transformation from the TSA products to the model's consumption components follows the relations between the commodities and components in the data of the national private consumption. For most of non-specific tourism products, they are kept the same as shown in the table 5.4. Some special TSA products are transformed into the consumption components listed in Table 5.10. In principle, they should be the same as in the table 5.4. Table 5.10 shows that all the products related to the »hotels and other accommodation« (from VAK551110 to VAK552390) are transformed into the component »hotels and other accommodation« (CPK11200) and the products concerning »restaurants and catering« are transformed into the component »restaurants and catering« (CPK11100). Many transport services, covering from the railway passenger, local transport, other land passenger, ferry and water transport and route air transport, to the tourist bureau and travel agency, are all transformed into one consumption component (i.e. CPK07300).

The »travel agency, tour operator« is different from the other travel agency, because in the national private consumption, this product category is linked to the »package holiday« (CPK09600). The »toll of highways, bridges and tunnels« and the »car rental« are transformed into personal transport services together with the transport vehicles maintenance and repairs (CPK7210/ CPK7240). All the recreation services are transformed into the component »recreation and cultural service« (CPK9400).

Table 5.10 Relationships between some special TSA products and tourism consumption components

Code for tourism products (VAK)	Explanation for tourism products	Code for tourism components (CPK)	Explanation for tourism components
551010	Hotels	11200	Hotel and other accommodation
551020	Conference centre	11200	Hotel and other accommodation
552000	Youth hostels	11200	Hotel and other accommodation
553000	Camping sites	11200	Hotel and other accommodation
559000	Other short-stay accommodation	11200	Hotel and other accommodation
561000	Restaurants	11100	Catering service
562100	Event catering	11100	Catering service
563000	Café, bar and similar	11100	Catering service
491000	Railway, passenger transport	07300	Transport service
493110	Subway train	07300	Transport service

493120	Bus and other route transport	07300	Transport service
493200	Taxi	07300	Transport service
493900	Other land passenger transport	07300	Transport service
501000	Ferry and other water passenger transport	07300	Transport service
503040	Water transport, inland	07300	Transport service
511010	Route air transport	07300	Transport service
511020	Charter and taxi air transport	07300	Transport service
522130	Toll for highways, bridges	07240	Transport service and maintenance
683120	Holiday cottage rental	04100,04200,12700	Housing and summer cottage rental
771100	Car rental	07240	Transport service and maintenance
791100	Travel bureau	07300	Transport/recreation service
791200	Travel agency, ticket booking	07300	Transport service
799000	Travel agency, tour operators	07300	Package holiday
910200	Museum	09400	Recreation and cultural service
910400	Botanical garden and zoo	09400	Recreation and cultural service
931100	Sports facilities	09400	Recreation and cultural service
932100	Amusement parks	09400	Recreation and cultural service
932910	Yacht harbour	09300	Other recreational activities

6 RTSA Results

The TSA tables are attached in Appendix 2. They are the aggregated national TSA tables. The regional TSA tables are available in the model system that will be used by Visit Denmark for the regional tourism analysis.

Due to the confidentiality for the detailed TSA statistics, we shall not present the regional TSA tables that contain the information of the detailed sectors and products. The TSA data are constructed on the basis of estimations of tourism consumption at the detailed products and services, however, the model presenting system is made at a more aggregated industry and product level in accordance to the statistical confidentiality.

The tourism industries are aggregated into eight industries, listed as below:

1. Hotels – including hotels and other accommodation sectors.
2. Second homes – including summer cottage rental and the real estate agencies.
3. Restaurant – including restaurants and other catering businesses.
4. Local transport – including subway, buses and taxies
5. Long distance transport – including railway, water and air transport.
6. Travel agency and transport service – including travel agencies, tourist bureaus and other transport services.
7. Transport and equipment rental – including car and computer rental businesses.
8. Recreation and cultural activities – including recreational, cultural and sport sectors.

All the other industries shown in TSA table 5 are also aggregated into a few sectors as non-tourism industries. There is one tourism connected industry in TSA Table 5, showing those industries that are related to the tourism industries, such as the transport supporting industries.

TSA products are aggregated as follows:

The tourism specific products:

1. Hotels – including hotels, conference centre and other accommodations.
2. Restaurants and other caterings – including restaurants and other catering, night clubs and event catering.
3. Local transport – including railway, subway, buses and taxies.
4. Long-distance transport – including water passenger transport and air transport.
5. Car rental and payment for using tunnels and bridges.
6. Travel agency and transport service – including the travel agencies, tourist bureaus and tourist guides.
7. Cultural and recreational service – including the amusement parks, museums, botanical garden and zoo, sport activities.
8. Yacht harbours:

The non-specific tourism products:

9. Agricultural products – including agriculture, forest and other primary products.
10. Petroleum – including the oil, gas and petroleum products.*
11. Food, drinks and tobacco – including all kinds of food, drink and tobacco products.*
12. Manufacturing – All other industrial products.*
13. Housing and energy – expenses on house, electricity, gas and other energy supply.*
14. Construction.
15. Goods transportation and transport service.
16. Post, publisher and TV/Radio.
17. Finance and insurance.
18. Business and private service.*
19. Public service – including educational and social institutional services.

20. Other services – including all kinds of services.
21. Retail and wholesale.*

Within the non-specific tourism products, the products with * marks are tourism connected products. These products are also consumed by the tourists; therefore, these six non-specific tourism products will be shown in Table 1-4. All of the 12 non-specific tourism products will be shown in Table 5 and Table 6, where the national production accounts are given in Table 5.

TSA table 1 (Table A3.1) shows the inbound tourism consumption in Denmark in 2015. The table shows the tourism consumption by products (row) and categories of visitors (column). The product list is shown both tourism specific products and non-specific tourism products. The categories of visitors are foreign same-day visitors and foreign overnight tourists.

The total inbound tourism consumption in Denmark in 2015 is 38,514 million DKK (5,135 million EURO). The tourism consumption from the foreign same-day visitors accounts for 16.1% of the total inbound consumption, while the foreign overnight tourism consumption accounts for 83.9% of the total inbound tourism consumption.

The tourism consumption from the foreign same-day visitors concentrates mainly on the non-specific tourism products, while the foreign overnight tourists consumed mostly on tourism specific products, in which 39% of consumption is at hotels, other accommodation, restaurants and summer cottages. They consumed about 50% of the non-specific tourism products.

TSA table 2 (Table A3.2) shows the domestic tourism consumption in 2015, by products and types of tourism. The domestic tourism consumption covers both Danish private tourism consumption and Danish business tourism consumption. The domestic private consumption is also classified by two types: the domestic same-day visitors and the domestic overnight tourists. The domestic business tourism consumption is also broken down by same-day visitors and overnight tourist. The data for both leisure and business same-day visitors is obtained from Transport survey from DTU. The tourism consumption from Danish private overnight tourists in 2015 is 24,746 million DKK (3,299 million EURO). The domestic same-day visitors consumed 14,389 million DKK (1,919 million EURO). Domestic same-day and overnight business tourism spent approximately 23,321 million DKK (3,109 million EURO). In total the domestic tourist consumption was

63,889 million DKK (8,519 million EURO) in 2015. It is the same pattern that the overnight tourists consumed mostly on tourism specific products, while the same-day visitors spent money on non-specific products.

We should mention here that the tourism consumption at hotel and other accommodation has been scaled down in accordance with the data from the total private consumption at hotel and other accommodation in the national accounts. Therefore the tourism consumption at hotels and other accommodation seems to be lower, than other consumption groups.

TSA Table 3 should show the outbound tourism consumption by products and categories of visitors. This table is not available for the Danish TSA at moment.

TSA table 4 (Table A3.3) is the total tourism consumption by products and types of tourism. The first column of the table is just the copy of the total inbound tourism consumption from Table 1, and the second column is the copy of the total domestic tourism consumption from Table 2. The third column combines the inbound and domestic tourism consumption, showing the total tourism consumption within the final consumption expenditure in Denmark. By definition, the consumption by the visitors during their business travels is also tourism consumption, but this expenditure is not residential expenditure. The domestic business tourism consumption is a part of intermediate consumption. According to the RMF document, the domestic business tourism consumption should be included in TSA Table 4, therefore this information is put at column 4. The last column shows the total tourism consumption in Denmark. It shows that the tourism specific products accounted for 52.3% and non-specific tourism products accounted for 47.7% of total tourism consumption.

TSA table 4 provides data on tourism consumption which can be directly entered into TSA table 6 where tourism product supply and consumption can be compared.

TSA table 5 (Table A3.4) is the production accounts of tourism industries and other industries in 2015. It shows the relationships between the tourism industries and the products (both tourism specific and non-specific products). The columns are tourism industries, from hotels and other accommodation sectors to recreation and cultural activities; and other non-tourism industries. Table 5 provides the production value in basis prices. Table 5 is presented by two tables due to too many columns. In the last col-

umn, it shows the total supply of each product. The last row shows the total supply by each industry, for example, the hotel sector produces in total 15,991 million DKK, while 13,899 million DKK are hotel service, rest is restaurant and other service. Restaurant produces 47,332 million DKK, while 47,332 million DKK is restaurant service. The total production value in basis price in 2015 is 3,557 billion DKK.

RTSA Table 6 (Table A3.5) shows domestic supply both at basis prices and market prices. Market prices are the products of basis prices in each product added up products mark-up (retailing and wholesaling margins) and value-added taxes and other taxes. Total tourism consumption is the same from Table 4. The last column is the tourism ratios on supply. As mentioned previously, the tourism ratio on supply is the main task for making TSA. It measures the tourism share in domestic supply in each product. It is seen that tourism ratios on supply are quite different at different products. It is shown that the hotels, summer cottage rental, marinas have higher ratios than the other products. Tourism consumption accounts for 75% of total supply of hotels and it accounts for 87.4% of summer cottage rental. Long-distance transport (due to the high air-transport ratio) and restaurant are also relatively higher. Travel agency should have also higher, however, as the package tours in most used by outbound tourists, they are not covered in the RTSA data. Tourism demand accounts totally only 2% of domestic supply, measured by the market prices.

TSA Table 7 (Table A3.6) presents the employment in the tourism and non - tourism industries. According to the RMF document, the indicator for the size of employment should be the number of jobs and the number of employed persons having at least one job in these tourism industries. The employment presented in this table is the full-time equivalent jobs. The Denmark Statistics national accounts calculate the employment by the term of “average number of employed persons”. That is to say a person who worked during the whole accounting period, it counts as one employment; a person who worked during the half of the accounting period, it counts as a half employment. By this way the problem of seasonality will be solved. But this employment accounting method will not depend on how many working hours the persons have been employed. For example, a part-time employed person, if he (or she) worked for the whole accounting period, it counts as one employment. However, it has the rule of primary employment: a person

who has been committed himself to more than one employment relation; he (or she) is registered as just one employment within his primarily employed industry.

TSA table 7 shows the employment by 20 industries during 2014-2016. The first 5 rows are the tourism-related industries, there are approximately 175,000 jobs are connected to tourism, accounting for 6.2% of total employment in Denmark. It should notice that some job, such as car rentals, museum and amusement parks are buried in the sectors in business and cultural services. It demonstrates that tourism is not the single industry phenomenon as many other activities are involved in tourism and tourists spend quite widely.

Appendix 1

Table A1.1 Identifying tourism specific products from the national accounts

CPA	Code in NRNR	Tourism products in English	Turistsvares navn på dansk
55.10.10	551010	Hotels	Hoteller
55.10.20	551020	Conference centre	Konferencecentre og kursusejendomme
55.20.00	552000	Holiday apartment	Ferieboliger, og lign.
55.30.00	553000	Camping sites	Campingpladser
55.90.00	552390	Other short stay accommodation	Andre faciliteter til korttidsophold
56.10.00	561000	Restaurants	Restaurationsvirksomhed
56.21.00	562100	Events catering	Event catering
56.29.00	562900	Canteen	Kantiner
56.30.00	563000	Café, bar and similar	Kafeterier, værtshuse, diskoteker, m.v.
49.10.00	491000	Railway, passenger transport	Jernbaner, passagertransport
49.31.00	493000	Subway train	S-tog
49.32.00	493200	Taxi	Taxa
49.39.10	493910	Bus- and other route transport	Rutebus
49.39.20	493920	Other land passenger transport	Turistbus og anden landpassagertransport
50.10.00	501000	Ferry and other water passenger transport	Rederivirksomhed, passagerfart
50.30.40	503040	Water transport, inland	Transport ad indre vandveje
51.10.10	511010	Route air transport	Ruteflyvning
51.10.20	511020	Charter and taxi air transport	Charter/taxiflyvning
52.21.30	522130	Toll for highways, bridges and tunnels	Betalingsvej, - bro og tunnel
68.31.20	683120	Holiday cottage rental	Ferieboligudlejning
77.11.00	771100	Car rental	Personbiludlejning
79.11.00	791100	Tourist bureau	Turistbureauer
79.12.00	791200	Travel agency, tour operator	Rejsebureauer, tur arrangerende
79.90.00	799000	Travel agency, ticket booking	Rejsebureauer, billetudstedende
82.30.00	823000	Congress, exhibition and meetings	Kongres-, messe- og udstillingsaktiviteter
91.02.00	910200	Museum	Museer
91.04.00	910400	Zoo and botanical garden	Zoologiske og botaniske haver
93.21.00	932100	Amusement parks and zoo	Forlystelsesparker
93.29.10	932910	Yacht harbour	Lystbådehavne
93.29.90	932990	Sport facilities	Idrætsanlæg, markedsmæssigt

Note: the codes is identified from NRNR register from national accounts.

Table A1.2 Tourism industries with DB07 Codes

DB07	Tourism industry (branches) in English	Turismeerhverv på dansk
551010	Hotels	Hoteller
551020	Conference centre	Konferencecentre og kursusejendomme
552000	Holiday centre and hostels	Ferieboliger og andre opholdsteder
553000	Camping sites	Campingpladser
559000	Other short stay accommodation	Andre faciliteter til korttidsophold
561010	Restaurants	Restaurationsvirksomhed
561020	Pizza and grill bar	Pizzeriaer, grillbare og isbare
562100	Event catering	Event catering
562900	Canteen	Kantiner
563000	Café and night club	Cafeteria og værthuse
491000	Railway, passenger	Passager, regional- og fjerntog
493110	Bus and other route transport	Bus and andre nærtrafik
493120	Subway train	S-tog
493200	Taxi	Taxa
493920	Other land passenger transport	Anden landpassagertransport
501000	Ferry and other water passenger transport	Rederivirksomhed, færge- og passagerfart
503000	Water transport, inland	Transport ad indre vandveje
511010	Route air transport	Ruteflyvning
511020	Charter and taxi air transport	Charter/taxiflyvning
522130	Toll for highways, bridges and tunnels	Betalingsvej, - bro og tunnel
683120	Summer cottage	Feriebolig udlejning
771100	Car rental	Personbiludlejning
791100	Tourist bureau	Rejsebureauer
791200	Travel agency, tour operator	Rejsebureauer, tur arrangerende
799000	Travel agency, ticket booking	Rejsebureauer, billetudstedende
683120	Holiday cottage rental	Ferieboligudlejning
748440	Congress fair and exhibition activities	Kongres-, messe- og udstillingsaktiviteter
910200	Museum	Museer
910300	Historical building and attraction	Historiske bygning og attraktioner
910400	Botanical garden and zoo	Botaniske og zoologiske haver
931100	Sport facilities	Idræts – og svømmehaller
932100	Amusement parks	Forlystelsesparker
932910	Yacht harbour	Lystbådehavne
932990	Other amusement activities	Andre forlystelsesaktiviteter

Note: DB07 is the Danish Branch code from 2007.

Appendix 2

TSA Tables

Table A3.1 TSA Table 1 – Inbound tourism consumption, by products and categories of visitors (In million DKK, current price) in 2015

Products	Same-day visitors	Tourists	Total
Hotel	-	5,242	5,242
Summer cottage rental	-	1,179	1,179
Restaurant	1,017	6,041	7,058
Local transport	137	643	779
Long-distance transport	50	1,293	1,343
Car rental and motorway fee	111	577	688
Travel bureau and other service	-	743	743
Tourist specific cultural service	45	280	325
Other cultural service	116	719	836
Marinas	-	113	113
Food, drinks and tobacco	2,571	3,903	6,475
Other manufacturing goods	960	3,897	4,857
Petroleum, energy and similar	132	1,856	1,988
Business service	641	3,952	4,592
Public service	165	718	883
Others	112	806	918
Retailing and wholesaling	139	357	496
Total	6,196	32,318	38,514

Source: CRT's SAM and LINE tourism model.

Table A3.2 TSA Table 2 – Domestic private tourism consumption, by products and types of tourism (In million DKK, current price) in 2015

Products	Domestic same-day	Domestic leisure tourists	Domestic before-travel	Domestic business tourists	Total
Hotel	-	3,027	-	4,489	7,516
Summer cottage rental	-	698	-	-	698
Restaurant	3,335	3,438	-	966	7,739
Local transport	-	298	7	202	507
Long-distance transport	45	505	10	15,056	15,615
Car rental and motorway fee	194	334	97	1,213	1,838
Travel bureau and other service	-	698	1	1,280	1,978
Tourist specific cultural service	804	388	8	116	1,316
Other cultural service	2,067	997	20	-	3,084
Marinas	-	169	-	-	169
Food, drinks and tobacco	1,045	4,891	603	-	6,539
Other manufacturing goods	400	2,282	277	-	2,959
Petrolium, energy and similar	4,292	3,625	17	-	7,934
Business service	1,751	2,357	269	-	4,377
Public service	276	375	38	-	689
Others	107	498	35	-	640
Retailing and wholesaling	72	167	53	-	292
Total	14,389	24,746	1,433	23,321	63,889

Source: CRT's SAM and LINE tourism model.

Table A3.3 TSA Table 4 – Internal tourism consumption, by products and types of tourism (In million DKK, current price) in 2015

Products	Inbound tourist consumption	Domestic tourism consumption	Total
Hotel	5,242	7,516	12,758
Summer cottage rental	1,179	698	1,877
Restaurant	7,058	7,739	14,797
Local transport	779	507	1,286
Long-distance transport	1,343	15,615	16,959
Car rental and motorway fee	688	1,838	2,526
Travel bureau and other service	743	1,978	2,721
Tourist specific cultural service	325	1,316	1,641
Other cultural service	836	3,084	3,920
Marinas	113	169	281
Food, drinks and tobacco	6,475	6,539	13,013
Other manufacturing goods	4,857	2,959	7,816
Petrolium, energy and similar	1,988	7,934	9,922
Business service	4,592	4,377	8,969
Public service	883	689	1,572
Others	918	640	1,558
Retailing and wholesaling	496	292	788
Total	38,514	63,889	102,403

Source: own calculation is taken on the basis of the data sources from Denmark Statistics and the Danish Tourist Board.

Table A3.4 TSA Table 5 (1) – Production accounts of tourism industries and other industries (In million DKK, current price) in 2015

Aggregated sectors	Hotels	Restaurants	Local transport	Long-distance transport	Tourist bureau	Agriculture	Oil, gas and natural resource	Food and drinks	Manufacture	Energy, water and heating	Construction
Hotel	13,889	-	-	-	-	-	-	-	-	-	-
Summer cottage rental	-	-	-	-	-	-	-	-	-	-	-
Restaurant	1,288	47,247	-	-	-	-	-	-	-	-	-
Local transport	-	-	34,455	-	-	-	-	-	-	-	-
Long-distance transport	-	-	-	29,835	-	-	-	-	-	-	-
Car rental and motorway fee	-	-	-	-	-	-	-	-	-	-	-
Travel bureau and other service	-	-	-	-	16,598	-	-	-	-	-	-
Tourist specific cultural service	-	-	-	-	-	-	-	-	-	-	-
Other cultural service	-	-	-	-	-	-	-	-	-	-	-
Marinas	-	-	-	-	-	-	-	-	-	-	-
Food, drinks and tobacco	-	-	-	-	-	77,213	15	133,731	9,584	-	-
Other manufacturing goods	746	10	1	67	18	99	287	829	501,552	106	59
Petrolium, energy and similar	-	-	-	-	-	-	55,740	658	627	84,610	-
Business service	48	19	57	191	116	-	22	232	4,186	303	86
Public service	-	-	-	5	-	17	-	-	116	-	603
Others	-	-	594	182,242	-	-	-	-	7,483	-	218,850
Retailing and wholesaling	20	55	14	60	16	33	21	200	1,070	64	461
Unknown	-	-	-	-	-	-	-	-	-	-	-
Total	15,991	47,332	35,120	212,401	16,747	77,361	56,085	135,650	524,617	85,083	220,059

Table TSA Table 5 (2) – Production accounts of tourism industries and other industries
(In million DKK, current price) in 2015

Aggregated sectors	Goods transport and transport service	Post, media, TV and Radio	Finance and insurance	Real estate and renting	Business service	Public service	Cultural service	Other service	Railtail and wholesale	Unknown sector	Total
Hotel										0	13,889
Summer cottage rental				1,695						0	1,695
Restaurant										0	48,536
Local transport	43,554									0	78,009
Long-distance transport							.			0	29,835
Car rental and motorway fee	4,476		955		6,634					0	12,065
Travel bureau and other service										0	16,598
Tourist specific cultural service							10,625			0	10,625
Other cultural service							31,312		-	0	31,312
Marinas							342			0	342
Food, drinks and tobacco										0	220,543
Other manufacturing goods	15	3,082	1,160	6	7,709	15	140	194	4,023	0	520,116
Petrolium, energy and similar							634			0	142,268
Business service	308	170,303	170,575	260,614	267,805	2,646	228	113	1,690	0	879,540
Public service	53			868	333	566,021	891	219		0	569,126
Others	46,331	10,977			7			47,709		0	514,195
Retailing and wholesaling	195	560		144	886	104	30	47	414,082	0	418,064
Unknown										51019,36	51,019
Total	94,933	184,922	172,689	263,327	283,375	568,786	44,203	48,281	419,795	51,019	3,557,778

Table A3.5 TSA Table 6 – Domestic supply and internal tourism consumption, by products (In million DKK, current price) in 2015

Products	Domestic supply basis price	Import	Products markup and taxes	Domestic supply market price	Tourism consumption	Tourism ratio on supply (%)
Hotel	13,889	-	3,122	17,011	12,758	75.0
Summer cottage rental	1,695	53	399	2,148	1,877	87.4
Restaurant	48,536	-	9,004	57,540	14,797	25.7
Local transport	78,009	14,835	-7,155	85,689	1,286	1.5
Long-distance transport	29,835	13,565	93	43,494	16,959	39.0
Car rental and motorway fee	12,065	186	613	12,864	2,526	19.6
Travel bureau and other service	16,598	-	23	16,622	2,721	16.4
Tourist specific cultural service	10,625	94	1,267	11,986	1,641	13.7
Other cultural service	31,312	2,383	3,579	37,274	3,920	10.5
Marinas	342	-	58	400	281	70.3
Food, drinks and tobacco	220,543	97,197	114,567	432,307	13,013	3.0
Other manufacturing goods	520,116	449,227	314,912	1,284,256	7,816	0.6
Petrolium, energy and similar	142,268	64,935	74,353	281,556	9,922	3.5
Business service	879,540	73,874	47,527	1,000,941	8,969	0.9
Public service	569,126	1,405	1,904	572,434	1,572	0.3
Others	514,194	36,002	34,121	584,318	1,558	0.3
Retailing and wholesaling	418,064	11,271	3,260	432,595	788	0.2
Dansker rejseforbrug i udland	0	63221,37	0	63221,37	0	
Uoplyst varer	51,019,36	131,562,10	1,936,66	184,518,20	0,00	
Total	3,557,778	959,810	603,585	5,121,174	102,403	2.0

Table A3.6 TSA Table 7 (a) – Employment in the tourism industries and other industries

(Number of full-time equivalent jobs, 1000)

Aggregated sectors	2014	2015	2016
Hotels	19	20	21
Restaurants	98	104	110
Local transport	31	31	31
Long-distance transport	24	26	26
Tourist bureau	6	6	6
Agriculture	69	68	68
Oil, gas and natural resource	5	5	5
Food and drinks	49	48	49
Manufacture	230	235	240
Energy, water and heating	22	22	22
Construction	167	173	180
Goods transport and transport service	57	57	59
Post, publishing, TV and Radio	128	130	132
Finance and insurance	78	78	79
Real estate and renting	45	45	46
Business service	278	288	300
Public service	884	886	887
Cultural service	57	58	60
Other service	95	94	94
Railtail and wholesale	452	456	464
Total	2,794	2,829	2,877

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Sammenfatning

Dette er dokumentation for regionale turismesatellitregnskaber (RTSA) i Danmark. RTSA-projektet er en del af samarbejdsprojektet mellem Center for Regional- og Turismeforskning (CRT) og VisitDenmark (VDK). I 1996 begyndte VDK at indsamle data gennem turistinterview. Målet med turismeprojektet var at indsamle turismeundersøgelsesdata ved hjælp af denne undersøgelsesmetode og lave regionale turismeøkonomiske analyser med en interregional makroøkonomisk model. Det er blevet besluttet af begge parter at videreudvikle turismeregnskabsmetoden for at udarbejde turismestatistikker i overensstemmelse med den internationale standard. En turismesatellitkonto (TSA) er en international standardmetode til at lave turismestatistikker. TSA er blevet anbefalet til alle medlemslandene af OECD's statistiske kommission, Euro-stat, FN's Nationale Turismeorganisation (UNWTO) og De Forenede Nationers (FN) Statistiske Afdeling.

Formålet med at lave det regionale TSA er at forberede regionale TSA-tabeller og måle turismens bidrag til de regionale økonomier. Sammensætningen af TSA-tabellerne skal være i overensstemmelse med nationalregnskabet; det skal være sammenligneligt med TSA-tabellerne fra andre lande og kan sammenlignes med de øvrige industrier inden for økonomien. Opgaven for TSA er at levere troværdige, konsistente, pålidelige og sammenlignelige turismestatistikker og være et analytisk værktøj til regionale regionale studier.

Denne dokumentation er den reviderede version af RTSA-dokumentet af Zhang, 2005. Den indeholder seks afsnit. Sektion 1 er en introduktion. Målene og retningslinjerne for TSA er angivet i afsnit 2. Afsnit 3 omhand-

ler definitionerne af turismelaterede betingelser. De detaljerede definitioner af turisme, turismeefterspørgsel, turismeprodukt og turisme er givet i TSA's officielle dokumenter. I dette afsnit gives der et kort resumé af definitionerne for at klarlægge betydningen af turismen, turismeforespørgslen og turistindustrien, som vi anvender i den danske TSA. Det er vigtigt at definere disse betingelser, da de ikke findes i de traditionelle økonomiske betingelser og i nationalregnskabet. En liste over turismeprodukter og turismeindustrier, der er defineret i den danske TSA-kontekst, findes i Bilag 1. Afsnit 4 beskriver datakravet for den regionale model og de TSA-tabeller, der kræves af Eurostat, OECD, UNWTO og FN-statistikafdelingen. De metoder, der er vedtaget for udvikling af det danske regionale TSA, er præsenterede i afsnit 5. En mere generel procedure til fremstilling af det regionale TSA er beskrevet i afsnit 5.2. De detaljerede estimeringsmetoder er præsenteret i afsnit 5.3. Afsnit 6 præsenterer resultaterne af TSA-tabellerne i 2015. De syv TSA-tabeller vises i dette afsnit. Nogle supplerende oplysninger og anbefalinger gives i sidste afsnit.

Hoveddelen af denne rapport er den metodiske dokumentation for udvikling af den danske RTSA. Den dokumenterer datakilderne og metoderne til udarbejdelse af TSA-statistikker. TSA-statistikken består af to hoveddele: udbud af turisme og efterspørgslen af turisme. Turismens udbud viser turismeprodukter produceret af turismerelaterede industrier. Det er nødvendigt at måle turismens udbud både på basispriserne og på markedspriserne. Nogle metoder er nødvendige for at vurdere turismeforsyningen til markedspriserne.

Turistforespørgselsopgørelsen er mere kompliceret end turismens udbud. De vigtigste datakilder til vurdering af turismeefterspørgslen er data fra turismeundersøgelsen. De danske turismeundersøgelsesdata er ikke direkte kompatible med TSA-tabelkravene. De er heller ikke i overensstemmelse med dataene i nationalregnskabet. Derfor er der brug for nogle metoder for at skønne turismeefterspørgslen mere præcist. For det første skal forbrugskomponenterne i turistundersøgelsesdataene omdannes til forbrugskomponenterne på nationalregnskabets komponenter, hvor der er den samme liste over komponenter i den regionale model. For det andet skal komponenterne omdannes til produkter, der er i overensstemmelse med

den internationale standard for TSA-produkterne. For det tredje er der vedtaget en ny metode i den danske TSA-udvikling. Det vil sige, at vi kombinerer turismeundersøgelsesdataene og turismeudbudssidens data til at vurdere TSA-produktets efterspørgsel efter turisme. Dette skyldes manglen på nogle produktkategorier i turistundersøgelsesdataene, hvor der er brug for et skøn for at udfylde hullerne i TSA-tabellerne. Derfor er skønnet for turismeforespørgsel baseret på de tre kilder: information om turismeundersøgelser, de nationale brugstabeller og de nationale udbudstabeller.

For at afslutte det danske regionale TSA-projekt finder vi, at fordelene ved dette arbejde er, at:
1) Det er lavet i overensstemmelse med de officielle dokumenter og anbefalinger.
2) Det samler TSA-regnskabsdelen med modelleringsdelen, og begge er bygget ud fra nationalregnskabet. Dansk TSA er i overensstemmelse med det danske nationalregnskab.
3) Det har tidsserier, og det har mulighed for at forudse TSA-tabeller til indeværende år.
4) Det er regionaliseret TSA, derfor er det lettere at blive ansøgt om den regionale økonomiske analyse af turismen.

Flere aspekter i TSA-arbejdet skal forbedres i det kommende arbejde. Bortset fra hvad der er nævnt i ovenstående anbefalinger, er der stadig plads til forbedring af TSA. For eksempel synes privatforbruget på hoteller og i nogle former for transport (f.eks. Lufttransport) i nationalregnskabet at være lavere end data fra turistundersøgelsen. Nogle oplysninger er stadig utilgængelige fra turismeundersøgelsen, såsom turismeforbruget i biludlejning og i brug af turistbureauer; de indenlandske turisters (eller besøgendes) brug af privat bil til turismeformål. Det fremtidige arbejde kræver stadig samarbejde mellem Danmarks Statistik, VisitDenmark og CRT.