Activities and projects of the National Statistics Institute of Spain in the field of environmental accounts

**Berrade, Cesar; Celestino, Fernando; Egido, Maria Luisa; Revilla, Pedro[*];
Saralegui, Jorge.**

[*]*INE*
Paseo de la Castellana 183
Phone +34915839308   . Fax +34915839499.   previlla@ine.es

Abstract

During the last decade, the National Statistics Institute of Spain (INE) has been compelled to assimilate the necessity to develop a wide set of innovative projects to produce environmental surveys, indicators and accounts. Remarkable efforts have been made to meet a sharp increase in the demand for information in that field. Several environmental accounts, to be considered in most cases still at an experimental stage of elaboration, have been produced following international methodologies and recommendations. This paper presents the INE approach to the design and implementation of environmental accounts and surveys, the latter being an essential input for the former. Some of the more relevant features of environmental projects are highlighted. Particular attention is given to water and material flow accounts.

Keywords: Environmental accounts, Environmental surveys, SEEA, SEEAW, NAMEA

1.   Introduction

Interest about environmental issues has grown significantly over the last years. Environmental accounting brings together administrative and survey data in coherent frameworks that allow different sources to be co-ordinated in such a way that analysis can be made with confidence. Moreover, the accounting frameworks allow an evaluation of the different sources included in the accounts.

The National Statistical Institute of Spain (INE) did not begin to address environmental accounting before the year 2000. Since then, we have carried out pilot studies on Water, Air, Environmental protection expenditure, Material flow and Forest accounts. Furthermore, we are working on an Environmental good and services pilot study.

The environmental accounts at INE are developed according to international standards. In particular, the System for Integrated Environmental and Economic Accounting (SEEA) is used. SEEA, formulated by the United Nations in 1993 and modified in 2003, constitutes the accounting framework for integrating the environmental and economic information in a global and coherent way. Its objective is to provide a detailed description of environment and economy relationships, for which it is essential the availability of environmental and economic data based in similar accounting standards and concepts. SEEA was conducted within the context of the London Group in a joint effort with other international organisations such as the United Nations, the International Monetary Fund, the OECD and the World Bank.

A key factor for the development of a system of environmental accounts in practice is setting priorities taking scarcity of resources into account. INE carries out the production of environmental accounts in the context of the European Strategy for Environmental Accounting (ESEA). Some specific Spanish priorities are also taken into account. The work carried out on water and forest accounts are examples of the efforts that are made trying to face the need of coherent statistical information about these two issues.

The ESEA was approved in 2003 and prioritise the implementation of different accounts. A Task Force is working in revising the ESEA in 2008. Much effort is being put into harmonising environmental accounts results across Europe. From a Member State point of view it is crucial the comparability with others European countries.

In the short term, the ESEA recommends to focus the efforts in three core areas: Environmental protection expenditure, Economy-wide material flow and Air emissions. In the medium term it is recommended the development of energy and waste accounts and also the accounts for environmental related transactions (environmental taxes and subsidies, transactions related to resource management, and the study of the environmental goods and services sector).

Administrative sources managed by the national, regional or local environmental authorities, are not always able to supply the growing information needs, so much in the field of structural environmental statistics as to feed the environmental accounts, thus making it unavoidable the presence of statistical offices in direct data collection activities. To this end, INE carries out diverse surveys on environmental matters, particularly on waste generation and treatment, on the use and treatment of water and on environmental protection expenditures.

This paper presents the INE activities in the design and implementation of environmental accounts. Section 2 describes some of the most relevant features of the development of the environmental accounting. Particular attention is given in section 3 to the latest developments (i.e. water and material flow accounts). In section 4 the surveys carried out as input for environmental accounting are presented. The paper ends with some final remarks.

2.   Environmental Accounts Development in INE

The first works carried out by INE cover methodological and pilot studies related to economic information about environment, the basis of a future development on Environmental Accounts. These works comprise Satellite water accounts (1997-1999 series), Satellite accounts on atmospheric emissions (1995-1998 series), and Environmental protection expenditure accounts (1995). These first pilot studies were published in the year 2002.

During the years 2003-2004 INE published Satellite water accounts (1997-2001), Satellite accounts on atmospheric emissions (1995-2000), Environmental protection expenditure accounts (1995-2001), Economy-wide material flow accounts and balances (1996-2000), as well as Satellite forest accounts (1995-2000).

The last results available, throughout the years 2005-2008, are the changes in the accounting base (Base 2000) of Satellite Atmospheric emissions accounts (1990 and 1995-2003 series), Material flow accounts (2000-2004 series), Water Accounts (2000-2004), and Environmental taxes (1995-2005). According to INE plans, the future publications will include updating Economy-wide material flow accounts, Environmental protection expenditure accounts, Forest accounts, and Atmospheric emissions accounts. Furthermore, we are working on an Environmental good and services pilot study.

The environmental accounts production can be considered at an experimental phase presently. In terms of quality, improvement from year to year is being attained and a consolidation of a central core of satellite accounts is to be expected in the future.

The main features of the accounts carry out by INE are described afterward. Material flow accounts, and Water flow accounts will be regarded specifically in the following section.

Atmospheric emission accounts present, in a NAMEA model with the EUROSTAT methodology, the contaminant substances generated in the economic system and emitted into the atmosphere, classified by economic sectors. The NAMEA model is aimed measuring the interrelation between the economy and the environment. Furthermore, to integrate economic and environmental data, the model environmental data must be based on the same accounting definitions and regulations as the economic data, i.e. the national accounting system. This enables to study the relationship linking atmospheric emissions and the economic information determining the economic sectors that play a major role in explaining those emissions.

The first estimations of Satellite accounts on atmospheric emissions (1995-2000), included main contaminant substances, greenhouse gases (CO_2, N_2O, CH_4, HFCs, PFCs and SF_6), indirect greenhouse gases (NOx, CO, NMVOC, SO_2), and NH_3, based on CORINAIR emissions data (CORe INventory of AIR emissions), which is responsibility of the Ministry of Environment. It is necessary to relate the CORINAIR data, classified according to the Selected Nomenclature for Air Pollution sources (SNAP), with the NACE industry classification.

The Atmospheric Emissions Accounts, Base 2000 (1990, 1995-2003 series) include certain new features with regard to previous Emissions Accounts with the aim of introducing

developments from the European methodology used for this estimation (the NAMEA Atmospheric Emissions). Besides, we included an estimation of the energy consumption tables in physical terms, year 2002, for the energy linked directly to atmospheric emissions and for total energy. These estimations are based on various information sources (Energy Balances, National Accounts, INE surveys) and enable us to study the link between the atmospheric emissions and the energy consumption of the different activity branches and households. Likewise, a new feature, the Atmospheric Emissions Accounts Base 2000, includes an estimation of the transposition table from the NAMEA atmospheric emissions to the emissions given by the National Inventory within the UNFCC framework- the United Nations Convention Framework on Climate Change-, which enables us to observe the differences between the emissions from residents outside the national territory and those from non-residents within the national territory.

The **Environmental protection expenditure account** is based on the European System for the Collection of Economic Information on the Environment (SERIEE), which consists of a set of tables that link environmental statistics with the national accounts. It also provides a powerful tool for monitoring the adopted measures to prevent, reduce, and eliminate the environment degradation. This account contains three main tables, including the national expenditure; the production of characteristic services for environmental protection, such as wastewater and waste management, ancillary environmental protection activities, the analysis of financing and the environment-related financial burden for environmental protection.

The first estimations (1995-2001) included both environmental protection national expenditure and production, with waste management as an independent part.

At the moment, INE is working on updating the Environmental Protection Expenditure account time series and on improving the data quality. New estimations, base 2000, will include complete SERIEE tables, national expenditure, production, and financial accounts for environmental protection activities, with a breakdown by environmental domains, waste management and wastewater.

The **Forest accounts** estimations methodology is called "European Integrated Environmental and Economic Accounting for forests (IEEAF)", an integrated account system related to economic forest functions, especially focusing on wood supply, as well as to non-economic (environmental and recreational) ones. Concerning economic forest functions, the accounts describe land and timber assets, in physical and monetary terms, and their changes; forest-related economic activities and products, through supply and use tables, in physical and monetary units. Non-economic forest functions mainly consist of carbon storage, recreational activities, bio-diversity preservation, and soil and water protection.

The first estimations (1995-2000) included, on the basis of the different information sources available for this subject, the main forest timber accounts tables.

Currently we are working on updating this account, base 2000, with the assistance again of the Ministry of Environment, responsible for National Forestry Inventories in Spain.

The 1995-2005 series estimations of **Environmentally related taxes** by industry (energy, transport and pollution taxes) are based on EUROSTAT methodology. Environmental taxes are considered environmental policy instruments, environmentally effective, and economically efficient. The basic information for these estimations comes from annual studies on Excise duties conducted by the Ministry of Economy, providing the information about the different taxes, by product type. The breakdown by branches of activity at the NACE 31 level, and households sector, has been based on consumption estimations of the different products by each branch of economic activity. In this sense, it has been necessary to carry out a study about the different tax exemptions and consider the existing information on the energy consumptions. This study is scheduled to be continued and improved in the future, considering additional problems for Spain that result from the different pollution taxes set up by Regions (*Comunidades Autónomas*), and a special research is needed.

Finally, we can point out the first stages in the study of **Environmental industry** at INE Spain. Works are being developed to study the environmental industry by using supply-side approach, looking for the different sources available, and making contact with different Institutions (the Ministry of Industry, Ministry of Agriculture, Institute of Energy –IDAE-) in order to obtain information about directories, and special items. A pilot study could be presented this year 2008 with information available from different sources, to have a first approximation to the sector in Spain, including data for main sectors in Spain: wastes (recycling, collection and treatment), renewable energy, water (supply and waste treatment), management consultancy services and organic farming.

3. Latest Developments: Material Flows Accounts and Water Accounts

3.1. Material Flow Accounts

Economy-wide material flow accounts present material physical inputs that get into the national economic system, and the outputs to other economies or to the environment. These accounts are compiled in physical units (tonnes), describing extraction, transformation, consumption and final disposal of chemicals, raw materials or products.

These material flow accounts provide indicators to evaluate certain sustainable development aspects, like resources use and efficiency, or environmental impacts of the economy assessing the effectiveness of different policies related to sustainable development.

General indicators for pressures on the environment like Direct Material Input (DMC), Direct Material Consumption (DMC) or Direct Processed Output (DPO), can be related to GDP. The overview of the economic and environmental time trends, using the indicators expressed by "Material efficiency or productivity" (unit of GDP per unit of material indicator) or "Material intensity" (material indicator per GDP), enables to assess environmental use and degradation.

International Organizations are working on the measure of material flows and resource productivity. OECD guide presents the terminology and general conventions for material flow accounts, describing the background and policy context for material flow analysis and related measurement tools. EUROSTAT Methodological guide, 2000 edition, focuses on material flow accounts and balances for a whole economy.

Nowadays, through the SEEA (Handbook of National Accounting-Integrated Environmental and Economic Accounting) revision process, the London Group experts, engaged in the United Nations Statistical work programme, are discussing the different international methodologies in order to achieve harmonization of SEEA physical flow accounts into an organic and SNA-coherent system, this way harmonising the basic data, the estimations and assumptions to be employed for calculating the monetary and the physical accounts.

The INE Material flow accounts estimations are based on the EUROSTAT methodology, which provides both the framework and practical guidance for establishing material flow accounts and material balances for a whole economy.

The first approach of INE to compile the material flow accounts and balances (1996-2000 series) was developed to provide a solid information basis to establish a system of sustainable development indicators. A full sequence of accounts was set up, with individual accounts for main categories of inputs, outputs and stock changes. Moreover, the composite economy-wide material balance with derived resource use indicators and consumption and output indicators was presented.

Material inputs (excluding water and air) are domestic extraction (used and unused), imports and indirect flows associated to imports. The main material output categories, which included emissions to air or water, waste, land filled, dissipative use of products and dissipative losses, unused domestic extraction and exports, were calculated.

The data sources for the accounting of material inputs and outputs include several statistics produced by INE, Spanish Ministries, and International Institutions.

The Spanish Ministry of Energy is responsible for Mining Statistics, the statistical source used to estimate most of the direct flows relative to domestic extraction of fossil fuels, minerals, ores and quarrying products.

With regard to biomass, the Ministry of Agriculture provides Agricultural Statistics to estimate the agriculture, forestry, hunting and inland fishing biomass; the data of sea fishing biomass are obtained from the FAO statistics.

Imports and exports data are estimated from the Statistics of Foreign Trade, which offer detailed information about imported and exported products by raw material, product type, in physical units, with data being presented according to Combined Nomenclature classification.

Data sources for the emissions and wastes outputs to the environment are basically INE environmental statistics. Waste surveys on the waste generation in the industrial sector, in the construction sector, in the services sector, in agriculture, aquaculture and fishing, and the survey on the collection and treatment of waste, make available regular statistical data on the generation, recycling, reuse and disposal of waste.

The survey on water supply and treatment, and the survey on the use of water in the industrial sector provide basic statistical information to calculate emissions of materials into water.

Finally, NAMEA air emissions accounts are the most suitable source to obtain the emissions to air and we also count on these estimations.

Moreover, hidden flows (unused domestic extraction) and indirect flows (associated to imports and exports) are estimated from a set of specific coefficients published by the Wuppertal Institute, corresponding to each imported or extracted material. Only imported raw materials and semi-manufactured products have been taken into account. For unused domestic extraction, those coefficients have been completed with data from the Spanish Mining Statistics and they have also been contrasted with waste statistics to prove their reliability. For unused biomass from harvest, three aspects have been considered: sea fishing discarded by-catch, wood harvesting losses, and soil losses from agriculture harvesting.

The material flow accounts Base 2000 estimations (2000-2004 series) include some modifications with regard to the previous series, which have been carried out in order to incorporate changes made to the European methodology used for the estimations. These modifications include changes in the presentation of the mineral breakdown, replacing non-metallic and quarry minerals with industrial and construction minerals, as well as the new breakdown of types of waste, adapted to the modifications of waste statistics classification.

3.2. Water Accounts

Water is needed in all aspects of life: it is essential for basic human needs, for socio-economic development and for the integrity and survival of ecosystems. The purpose of Water Accounts is to link the economic information with hydrological data to describe the interaction between the water cycle and the economy.

First of all, it is necessary to construct a conceptual framework adapted from the more general approaches dealing with the integration of economic and environmental information, which permit a consistent analysis of the contribution of the environment to the economy and the impact of the economy on the environment. INE applies the NAMWA *(National Accounting Matrix including Water Accounts)* conceptual model which was adopted by EUROSTAT, as well as the recommendations of the *System of Environmental-Economic Accounting for Water* commonly referred to as SEEAW, promoted by the United Nations Statistics Division .

From 1997 to 1999, EUROSTAT sponsored a Task Force on Water Satellite Accounting from which a set of 13 tables were identified to be filled as a pilot experience. Several member states assumed the first implementation of the pilot study, including Spain. As consequence of this commitment, the INE implemented the Water Satellite Accounts for Spain 1997-1999, which were published in 2002. Later on, in 2004, 1997-2001 data were disseminated in the context of the EUROSTAT project for the implementation of the " *Water Accounts Standard Tables*." following the NAMWA methodology. As some changes had been made in respect of the former version, the existing tables (1997-1999) were adapted to the new criteria.

More recently, the Water Accounts 2000-2004 , base 2000, were published in 2007 adapted to the methodological modifications and taking advantage from the updating process which took place in this year in the System of National Accounts .

The published tables were as the referred in the methodology with numbers 1,2,5,6 (supply and use of water, and wastewater services, in physical and monetary terms), table 3 (economic accounts for water distribution and wastewater collection industries), and tables 7,8 and 9 (abstractions, returns and fresh water balance). Concerning table 4, only the sub-table of expenditures for wastewater treatment was compiled. The sub-table referred to expenditures for self supply of water and tables 10 to 13 (pollutant loads) were not completed due to lack of information.

Basically, data sources for physical data are the surveys carried out by INE, namely the Survey on Water Supply and Treatment and the Survey on Water Usage in Agriculture. Other indicators used for the estimations are derived from the modules on water included in the Waste Generation Surveys as well as from the Farm Structure Survey. An important external source is the annual Area Survey on Agricultural Production (Ministry of Environment, Agriculture and Sea).

When it comes to economic data, apart the aforementioned surveys, the Survey on Environmental Protection Expenditure as well as the tables available in the Input-Output framework within National Economic Accounts, contribute to the estimation of a substantial part of the economic flows. Obviously, a wide range of administrative sources are used, in particular the annual reports on the budgetary implementation of the *Confederaciones Hidrográficas* (river basin governing bodies) as well as the information produced by diverse Government departments: General Directorate for the Central Government Budget, Directorate for Hydraulic Works and Water Quality and the Directorate for Rural Policy, responsible of the National Irrigation Plan. Another sources of information, especially concerning investment expenditures, are the so called Water Entities, market entities controlled by the Directorate General for Central Government Assets.

Important methodological improvements have been introduced in the Water Accounts 2000-2004, as the estimation of the volume of water used in irrigation including self-supply, and of the amounts of water used in the industrial sectors, as well as the introduction of improved methods of calculation of water returns and losses. However, some components of the accounts are still under research of methods and/or data sources for estimation, like

water self supply costs and the information related to water quality. Estimation is pending too on the virtual water embedded in food and industrial products and on the balance of water assets (ground water, lakes, rivers and streams, snow and ice, etc.).

Some specific methodological problems arise in Spain when gathering information related to the integral cycle of the water. First, there exists a multiplicity of public and private agents who intervene in each stage of the cycle, frequently with separation between ownership and management of the water flows implied. It increases the difficulty for statistical aggregation due to the different methodological criteria in use by the diverse administrative agents.

Another relevant aspect of the problem – unlike what occurs with the electricity bill – is the lack of harmonization, even at the regional level, in the coverage and concepts which determine the items included in the amounts paid by consumers of water services. It hinders, among others, the correct estimation of what should be considered ecological taxes on water .

Finally, in relation to the breakdown of the Water Accounts, it should be mentioned that the Water Framework Directive issued by the European Commission in 2000 establishes as criterion of management the river basin whereas most part of water statistics are produced at NUT II level (autonomous communities). Models for estimation at the river basin level are under development for implementation in the near future in order to improve the potential of water accounts as a tool for hydrological planning and policies.

4.   Environmental surveys

Administrative sources managed by the national, regional or local authorities, producing environmental physical and monetary data, constitute a fundamental statistical input to feed environmental accounts. Nevertheless, they are obviously not sufficient to provide the full set of required flows either because the are not conceptually adapted to the accounting theoretical framework, or because of problems of coverage, periodicity, or others limitations affecting quality dimensions. Consequently statistical offices must implement direct data collection activities, whose objectives contemplate the production of statistics as an input for environmental accounting. To this end, INE carries out diverse surveys on environmental topics, all of them performed on a yearly basis and disseminated trough the web and specific publications. In consonance with their internal organisation, these surveys can be classified into three thematic blocks, although some of them provide information for more than one area of environmental accounts: Water Surveys, Waste Surveys, and Environmental Protection Expenditure Surveys.

Water Surveys. The Survey on Water Supply and Treatment is primarily intended to measure both the water supply to urban areas and the treatment of sewage collected through urban networks. The first reference year for this survey was 1998.

The frame of this survey comes from the INE Central Business Register (CBR) complemented with a data base of operating units under contract with local entities. All units supplying water services to local entities over 20000 inhabitants are selected, plus a sample within strata of smaller municipalities. Each reporting unit is to respond questions regarding physical quantities of directly collected water as well as purchase and sale of water from/to other units. In both cases, the origin of the water is identified, i.e., soil, underground, desalinated or other type. In addition, questions related to water distribution to different types of users, to the collection and treatment of sewage, as well as the monetary income for the diverse services provided are also included in the survey . Separate ratio estimators using exogenous data on resident population are applied within regions.

The main purpose of the Survey on Water Use in Agriculture is to quantify the volume of water used in agricultural holdings for irrigation purposes. Both monetary and physical data are collected. The units in the survey are the so called "irrigators entities", supplying water to agricultural holdings. The first reference year was 1999.

An ad hoc frame for this survey is administered by the subject matter staff within INE through integration of external sources and the CBR. All irrigators entities supplying water above a threshold (which can be variable among regions, but usually around 500 hectares) are included with certainty in the survey, while sampling is performed otherwise. Ratio estimators use exogenous total irrigated area per crop or irrigation technique at the regional level, as auxiliary variable.

The surveyed irrigators entities provide data on physical units of water availability , abstraction and water supplied to holdings according to both the crop type and the irrigation technique. In addition , questionnaires include data on employment and on their balance sheet, such as current income and expenditures as well as investments. The latter includes purchases of new land, improvements in the distribution networks and equipment purchases for irrigation-under-pressure.

Other environmental surveys whose principal objective falls within different areas of environmental interest, as the surveys on waste generation by the diverse sectors of the economy, include a module of questions related to water use and treatment, which are essential to estimate particular physical and monetary flows for the supply and use (hybrid) tables of Water Accounts.

Waste Surveys. INE statistical operations concerning waste have been adapted to meet the requirements of the Regulation (EC) No. 2150/2002 of the European Parliament and of the Council of 25 November 2002 on Waste Statistics (WStatR hereafter), as last amended by Commission Regulation 783/2005/EC. It is important to be aware that the set of matrices and tables compiling the integrated results of waste surveys following the WstatR rules, can actually be considered as a set of supply and use physical tables similar to the those proposed by SEEA recommendations for satellite accounts on waste. In compliance with the WstatR, surveys are carried out from both the generation side as well as the treatment side. All waste surveys are performed on a yearly basis with data being referred to a whole calendar year. The reference year for data is the calendar year previous to that in which data

collection takes place, and results are widely disseminated through the web and specific publications. Most waste data series start in 1998.

Waste Generation Surveys. The Surveys on the Generation of Waste in the Industrial Sector are primarily intended to measure the waste generated within sections C, D and E of the NACE-93 Rev.1 codes. Thus, the activities covered under these surveys are mining, manufacturing as well as the production and supply of electricity and gas. The observation unit is the local unit as defined in the central Bussiness register (CBR hereafter).

The population under study for the Survey on the Generation of Waste in the Construction Sector is the set of enterprises whose main activity corresponds to NACE section F. Thus, the observation unit in this case is the enterprise as it is also for the Survey on the Generation of Waste in the Service Sector, which collects data of a sample of enterprises whose main activity corresponds to NACE sections G to O. From reference year 2007 on, the respective questionnaires of the last two surveys have been merged as a single one.

The Survey on Generation of Waste in Agriculture, the Survey on Generation of Waste in Fishing and the Survey on the Generation of Waste in Aquaculture, are at present still carried out as pilot surveys. They cover NACE section A, and codes 0501 and 0502 respectively.

Sample design is very similar for all waste generation surveys. A stratified random sample optimally allocated among strata is drawn from the Central Business Register (CBR). Strata are defined by crossing NACE codes (at two or three digit level) with local unit sizes as measured by the number of employees. The lower size threshold for stratification may vary from survey to survey (10 for industrial and services waste generation surveys, 5 in agriculture, etc) .

Sampled units are required to provide data on generated waste, in kilograms, according to the Waste Statistical Nomenclature EWC-Stat Version 3, as described in Annex II of the WStatR. This four-digit level classification is mainly substance-oriented and it includes a distinction between dangerous vs. non-dangerous waste as well. Respondents are to provide information on forty-eight waste categories with additional figures on dry matter equivalent being also required for four of the former categories. A table of equivalence between EWC codes and the European list of waste (LoW) codes is provided to the respondents. This conversion table corresponds to Annex II of the Commission Regulation (EC) No. 574/2004.

Waste Treatment Surveys. The Survey on the Collection and Treatment of Urban Waste is primarily intended to measure the production of those units whose main activity is related to the collection and treatment of solid waste coming from the cleaning of public ways or both urban and residential areas. Thus, solid waste both from households and small companies is included. The population under study consists of those units which provide this type if municipal services (urban waste managers) irrespective of its main activity. The frame has been built from the CBR (which provides information on secondary activities also) complemented by and ad hoc local entities data base integrating information from administrative sources on urban waste managers which provide the target services under

contract of the local authorities. All local entities above 20000 inhabitants are selected plus a sample within the rest of strata. In terms of resident population, coverage of the services of collection and treatment of urban waste is close to 80% for every NUT II region (autonomous communities). Both monetary (for non-administrative units) and physical data are included in the questionnaire. The survey produces ratio estimates, by using population data as auxiliary variable, on the collection of urban waste according to their category and final destination.

The main objective of the Survey on the Recycling and Treatment of Waste is to compile physical data on waste treated by those units having administrative licence for non urban waste management. The frame has been built by integrating with the CBR a set of administrative lists of Licensed Waste Managers, as provided by environmental authorities for each one of the autonomous communities.

The licensed waste managers (both urban and non urban) are to respond waste management related questions in tons, according to the EWC categories. The distinction dangerous vs. non-dangerous waste is to be made. In both surveys, information is requested on the treatment of waste according to the type of treatment (recovery and disposal), energy and other products obtained, as well as on the treatment facilities type and capacity. From reference year 2007 on, the questionnaires of the two former surveys on urban and non-urban waste management have been merged as a single one.

Environmental Protection Expenditure Survey. INE Survey on Environmental Protection Expenditure estimates the expenses industrial establishments make to avoid or reduce the pollution resulting from their activity. The survey meets the requirements of the SBS EU Regulation 58/97 (No derogations were requested).

The population observed is the set of local economic activity units, with ten or more employees, whose main activity lies within sections C, D and E of NACE 93. Divisions 37 and 41 are excluded from the scope, since an specific survey is carried out for them. Sampling design (the sample is drawn from the INE Central Business Register) is similar to the survey on waste generation in the industrial sectors described above**.**

The main variable for the survey, investment expenditure, is broken down by environmental sphere for both types of existing equipment, "end-of-pipe" equipment and integrated equipment. In addition, respondents provide information about current revenues and expenditures related to environmental protection.

INE is working now on adapting the survey to the new NACE version, and to the Regulation (EC) 295/2008 of the European Parliament and of the Council of 11 March 2008 concerning structural business statistics, where all activities of new NACE section E (water supply, sewerage, waste management and remediation activities) are included in the scope for the first time.
As a complement, the survey on the Generation of Waste in the Service Sector incorporates a module about environmental protection expenditure, that permits to widen the study of environmental protection expenditure to additional sectors of the economy.

The estimates produced by the referred surveys, are fundamental to estimate the Environmental Protection Expenditure account applying SERIEE methodology (European System for the Collection of Economic Information on the Environment), as it includes tables about national expenditure, production, and financing accounts for environmental protection activities, with breakdown by environmental domains.

5. Final remarks

One of the major challenges when measuring sustainable development is to explain the way by which the economic, social and environmental aspects are connected. Accounting frameworks applying a harmonised approach to the economic and environmental issues seem to be one of the finest available tools to describe the links between these dimensions.

Sharing the experiences carried out by different institutions (for example, the academic world), is crucial in a field as huge as environmental accounting. In the case of Spain, the integration of experiences and good practices within the accounts developed by the regional statistical offices and the INE is a key factor for future improvements in this area.

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