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INSTITUTO NACIONAL DE ESTADISTICA

Methodology of the Satellite Water Accounts in Spain

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1. Introduction

Water (like forests) is an ecosystem as well as a natural resource. As an ecosystem, it is used as the habitat of marine fauna and vegetation, as a transportation structure (inland waterways or maritime navigation), as a means to carry out leisure activities and as the recipient of wastewater and used water dumps. It is used as a natural untreated resource in practically all economic activities (agriculture, industry, and services) and households. It is also an energy resource for the generation of hydroelectric energy and it can be used as a coolant or solvent.

On the other hand, water (like air) is a natural element that is in movement and follows a cyclic course (called "Water Cycle") in which matter and energy are exchanged with the atmosphere, soil and subsoil, which allows subsequent uses of water according to its quality.

Contrary to other natural resources such as forests or minerals, water is a non-produced natural asset since "*it falls from the sky*" and does not have an owner, unless it is in the sense of being conceded the right to its use or the services it provides.

2. Objectives

The objective of the water accounts is to determine and quantify in a structured and detailed way the quantitative and qualitative water flows that are produced between the environment and the economic system and within the latter. They constitute a satellite account in the general framework of the national economic accounts and incorporate the physical environmental flows of water into the conceptual framework of these accounts.

It is important to highlight that in the context of the water accounts, the use of this natural element does not imply its definite physical disappearance, even though its chemical and physical characteristics and qualities may undergo changes.

3. Hydrological System

The United Nations (1992) defines the hydrological cycle as the "succession of stages through which water passes from the atmosphere to the earth and returns to the atmosphere: evaporation from the land or sea or inland waters, condensation to form clouds, precipitation, accumulation in the soil or in bodies of water, re-evaporation".

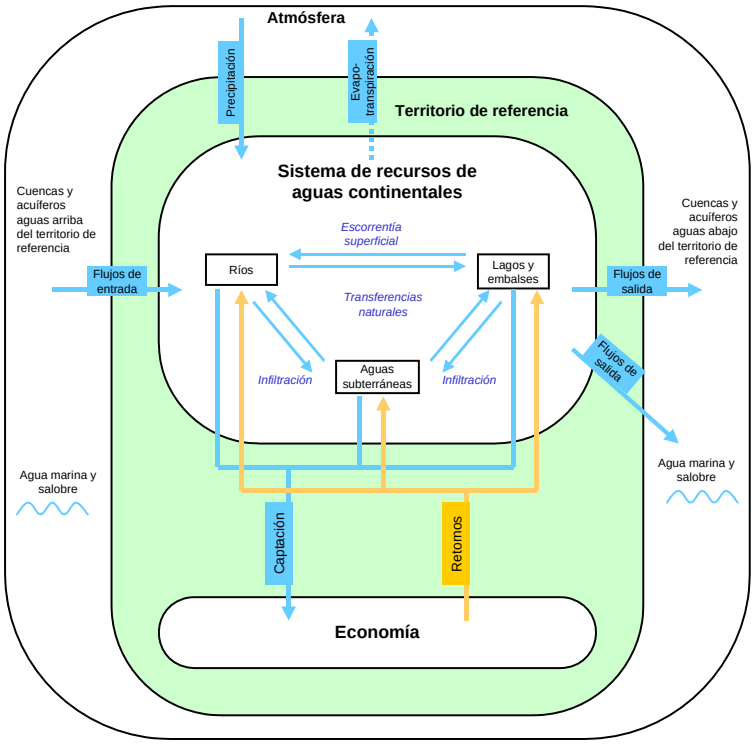
The hydrological system of a territory is composed of atmospheric water, water from the sea and oceans and surface and groundwater. Precipitation constitutes the natural input of water within a reference territory. The main transfer into the atmosphere occurs through evaporation and transpiration, given that precipitation partially evaporates returning to the atmosphere. Moreover, part of the precipitation is discharged over surface waters (lakes, rivers, reservoirs) to finally flow into the sea, or it filters through the soil, moistens it and passes on to form part of aquifers. Groundwater gradually returns to the superficial bodies of water, turning into superficial current flows. Plants and vegetation absorb soil humidity through their roots and release water into the atmosphere through transpiration processes.

Areas of permanent snow and ice as well as lakes and artificial water reserves are considered the natural assets of water. There are also natural flows coming from other territories that go to the reference territory and from the latter to other territories or the sea.

The model of the water accounts exclusively considers the part of the hydrological system composed of bodies of surface and groundwater within the reference territory, denominated the *inland water system*, that is formed by lakes, reservoirs, rivers and aquifers. It also includes brackish water and water resulting from the desalination of sea water.

Figure 1 describes the natural water flows existing in the inland water system.

Figura 1: Resumen de flujos del sistema de aguas continentales



4. Scope of study

Conceptually, water accounts are limited to studying water, which as a natural asset, is managed as a resource in the economic system. However, with the purpose of extending the coverage of the accounts to the volume of water subtracted from nature (the environment) and entering the economic system, they are counted as water abstractions from the environment. The flows coming from the economic system are considered return-flows of waste and used water.

In accordance with this approach and as an explanatory example, direct abstraction of ground or superficial water by an industrial establishment -called *self-supply of water*-, is counted as water flow of the environment towards the economic system. Used water directly dumped by the industrial sector into the environment or the sewerage system, is considered water return-flows from the economic system to the environment. Similarly, wastewater generated by households and collected by the sewerage system, are counted as water return-flows to the environment.

In summary, the objective of the water accounts is to establish and quantify the interface between the economy and the environment. This approach is not considered in the System of Spanish national accounts and therefore offers a more detailed view without losing coherence. The tables that make up the water accounts may have different objectives: some describe the volume of used water and pollution basically in physical magnitudes, relating them with the economic activities generated by that pollution (supply and use). Another objective is to assess the economic effort carried out in favour of the protection of the environment (*environmental protection expenditure*) and finally other tables intend to estimate the ecologic-economic value of water as well as establishing the agents that finance the activities related to the water cycle (Public Administrations, households, etc.)

Figures 2 and 3 describe the water flows between the environment and the economic system and vice versa as well as within the economic system. In these figures, the terms "*industries/industry*" shall be understood as branches of economic activity.

Figura 2: Descripción general de los principales flujos de agua

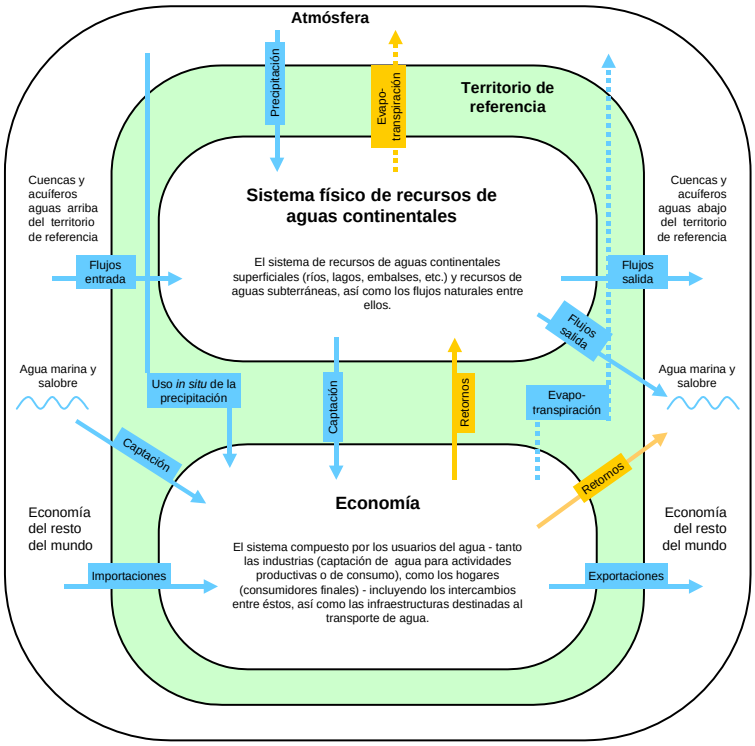
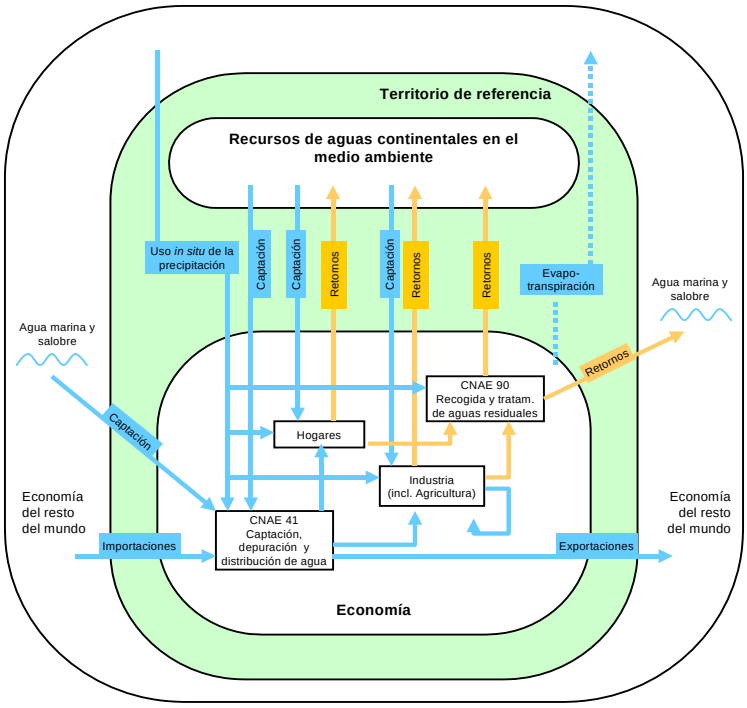


Figura 3: Resumen de flujos dentro de la economía



Las fugas en las redes de distribución, que forman parte de los retornos, no están representados en este esquema para simplificar.

5. Definitions and classifications

5.1 DEFINITIONS

5.1.1. Elements of the Hydrological System

Hydrographic basin

Total area of territory drained by a river and its tributaries, that is, the surface area of the terrain that has one sole outflow point for surface runoff.

Hydraulic public domain

Consists of superficial and ground inland water, continuous and discontinuous channels of natural currents, beds of lakes, ponds and reservoirs as well as subterranean aquifers.

Precipitation

Total annual volume of wet precipitation (rain, snow, hail, dew and others) fallen within the national territory.

Evapotranspiration

Total annual volume of water transferred into the atmosphere from the earth's surface by means of evaporation and vegetable and animal transpiration.

Other inflows

Total volume of water that enters a territory throughout the year through ground- or surface water, from one or more neighbouring territories.

Other outflows

Total volume of ground or superficial water that exit towards one or more neighbouring territories or the sea.

5.1.2. Water resources

Surface water

Surface water is water that flows or is stored in the surface of the territory, and include the natural water courses such as rivers, surface run-off, streams, lakes and others, as well as superficial water courses such as industrial and navigational irrigation channels, drainage systems and artificial reservoirs.

Groundwater

Groundwater is water contained in a subterranean geological formation (aquifer) which can usually be extracted from or through this formation. It includes all

permanent and provisional water deposits, loaded naturally or artificially, in amounts that can be used due to its quality and availability. This section includes water coming from springs.

Other types of water resources

They include the direct abstraction of atmospheric precipitation, sea water, permanent bodies of stagnant water and transitional waters such as swamps, ponds and estuaries of brackish water. As a general rule, these types of water resources have less importance in relation with the superficial inland waters and groundwater.

5.1.3 Dumping

They are carried out directly or indirectly into inland waters as well as into the rest of the hydraulic public domain, regardless of the source or technique used. They are classified into direct and indirect.

- Direct: the direct emission of pollutants into inland water or into any other hydraulic public domain as well as the discharge of pollutants into groundwater by means of injection through soil or subsoil.
- Indirect: carried out into superficial water through collectors, sewerage networks of wastewater and rain water abstraction or any other draining system as well as dumping into groundwater through soil or subsoil filtering.

5.1.4 Flows between the economy and the environment

The definitions regarding the flows between the economic system and the environment are closely linked to the elements of the hydrological system and the aforementioned water resources.

Water abstraction

Extraction of water from any permanent or provisional source for its subsequent use during a given period of time. It includes both the abstraction of mining and drainage water and the abstraction destined to distribution and own final use. According to its origin, it can be surface water or groundwater.

Water supply

Operation destined to the distribution of water through networks which meet the consumption demands of the final users.

Imports

Total volume of pure water imported as a product via pipes or in vessels.

Exports

Total volume of pure water exported as a product via pipes or in vessels.

Return-flows

Volumes of water destined to the environment during a reference period. These volumes usually have pollutant substances that are dumped into hydrological elements from point or non-point sources.

Wastewater

Water that cannot be used immediately due to its quality, quantity or time of appearance. However, wastewater stemming from one user may be a potential supply for another user.

Wastewater sanitation

Procedure applied to wastewater in order to comply with environmental norms regarding dumping, or other quality norms for its subsequent recycling or reuse by other users.

Biochemical oxygen demand (BOD_5)

Water quality indicator which is defined as the amount of dissolved oxygen required to biologically decompose the organic matter present in water. It is a water quality parameter that indicates the degree of pollution by organic matter.

Chemical oxygen demand (COD)

Water quality indicator that measures the amount of oxygen consumed by the chemical decomposure of organic and inorganic matter contained in water.

6. Economic activities and products related to the water cycle

Before the statistical consideration of water accounts, is is necessary to establish which are the economic activities and adjacent products that make up for the entire water cycle. To do so, it is necessary to identify them based on the national classification of activities and products.

It is worth noting that the environment is, so to speak, a cross activity in the economic system since the environmental component is present in most economic activities. There are certain economic activities whose main activity is of a strong environmental nature. They have been grouped in the new section "E" of the 2009 National Classification of Activities, which will be explained further on. This does not mean that these activities may generate in their secondary activities products that are not strictly of an environmental nature (for example, wastewater purification may generate energy as a sub-product of sludge digestion).

- National classification of activities and products applicable to the time reference data prior to 1 January 2008: CNAE-93- Rev.1 and CPA.-2002.

Productive activities and products related with water are those that are included in the following charts:

Economic activities	CNAE-93 (Rev. 1)
Activities of agriculture-related services (use of irrigation systems)	01.41 (part)
Abstraction, purification and distribution of water.	41.00
Public Administration regulation on sanitary, educational, cultural services and other social services (including water supply and sanitation)	75.12 (part)
Wastewater abstraction and sanitation	90.01

Products	CPA- 2002
Services related with agricultural production (use of irrigation systems)	01.41.11 (part)
Natural water and water distribution services	41.00
Natural water	41.00.1
Drinking water	41.00.11
Non-drinking water	41.00.12
Water supply services	41.00.2
Public Administration regulation on sanitary, educational, cultural services and other social services (including water supply and sanitation)	75.12.13 (part)
Wastewater abstraction and sanitation services	90.00.11

The use of irrigation systems, classified in CNAE-93 as group 01.41 (Activities of agriculture-related services*)*, was part of the Agriculture, livestock, hunting and forestry section. It provided irrigation services (01.41.11 of CPA-2002) to the agrarian operations through distribution channels. In a smaller extent, irrigation water could also come from units classified in division 41 through normal water systems, as drinking water (41.00.11) and non-drinking water (41.00.12).

Water abstraction, purification and distribution (division 41 of CNAE-93) included economic activities that collected water, desalinated sea water to obtain drinkable water and distributed water for its consumption. According to the National Classification of Products by Activity CPA-2002, this activity produced three types of products, drinking water (41.00.11), non-drinking water (41.00.12) and water supply services (41.00.20) which included the reading and maintenance of water meters.

CNAE economic activity 90.01, wastewater sanitation and sewerage activities, included a complete set of operations related to water sanitation, whose main product was wastewater sanitation services (90.00.11 CPA-2002).

- National classification of activities and products applicable to the time reference data prior to 1 January 2008: CNAE-2009 and CPA.-2008.

In general terms, it shall be noted that the statistical-economic classification of activities and their products related to the water cycle present certain special

features regarding those applied to manufacturing industries. In fact, the manufacturing and distribution process of drinking water is an economic activity that despite the fact that it has a strong industrial component, cannot be completely understood as the traditional industrial manufacture of a product. For this reason, there could be a certain overlap between the product "*manufactured*" by the economic activity, being the service associated with said product. For example, the 36.00 economic activity produces drinking water but this product is associated with the product "*water distribution service*" which is essential for its distribution.

The economic activity related to sanitation (sewerage/ wastewater abstraction and purification) presents special features. The 37.00 branch of activity does not *use* wastewater, but provides the necessary services for its abstraction and purification.

Economic activities	**CNAE-2009**
Abstraction, purification and distribution of water.	36.00
Wastewater abstraction and sanitation	37.00
Public Administration regulation on sanitary, educational, cultural services and other social services (including water supply and sanitation)	84.12 (part)

Products	**CPA- 2008**
Natural water; Water sanitation and distribution services	36.00
Natural water	36.00.1
Drinking water	36.00.11
Non-drinking water	36.00.12
Sanitation and distribution services of water through mains	36.00.2
Trade services of water through mains	36.00.3
Wastewater abstraction and sanitation services	37.00
Sewerage services	37.00.1
Wastewater removal and sanitation services	37.00.11
Sanitation services of cesspools and septic tanks	37.00.12
Wastewater purification and sanitation services	37.00.2
Public Administration services on the regulation of housing and town planning (including water supply and sanitation schemes)	84.12.13 (part)

It may be said that the changes occurred between the two national classifications of economic activities (CNAE-93 and CNAE-2003) and among their respective classifications of products (CPA-2002 and CPA-2008) have been significant in terms of the activities and products that make up the water cycle. As previously mentioned, a new section E has been created in CNAE-2009 (36 - *Water supply, sanitation activities*; 37- *waste management and decontamination*; 38- *Abstraction, sanitation and disposal of waste*; 39- *Decontamination services and other waste management services*) which groups a series of activities with a strong environmental component.

Furthermore, the economic activity "*Use of irrigation systems*" which was included in CNAE-1993 as division 01 (Agriculture, livestock and related activities) that

belonged to section A (Agriculture, Livestock, Hunting and Forestry), has been included in division 36.00 (section E). Therefore, there are two very different types of water with very different uses within this division (water distributed through city networks and irrigation water). Due to this, when branch 36.00 becomes present, it shall be indicated which of the aforementioned types / uses of water are being referred to. Similarly, in order to avoid misunderstandings, when referring to products manufactured by division 36.00 (36.00.1 and 36.00.2), it is convenient to distinguish between drinking water (supplied to users by city networks) and non-drinking water (for irrigation or reclaimed water coming from wastewater purification).

7. NAMEA model applied to water accounts

The NAMEA model (*National Accounting Matrix including Environmental Accounts)* is a contribution made by The Netherlands Statistics Office which can be applied in general to environmental accounts (air, forests, water, etc.) This model is brought forth when the environmental accounts by economic activity (branches of production plus households) are combined with the supply and use tables of the Spanish national accounts.

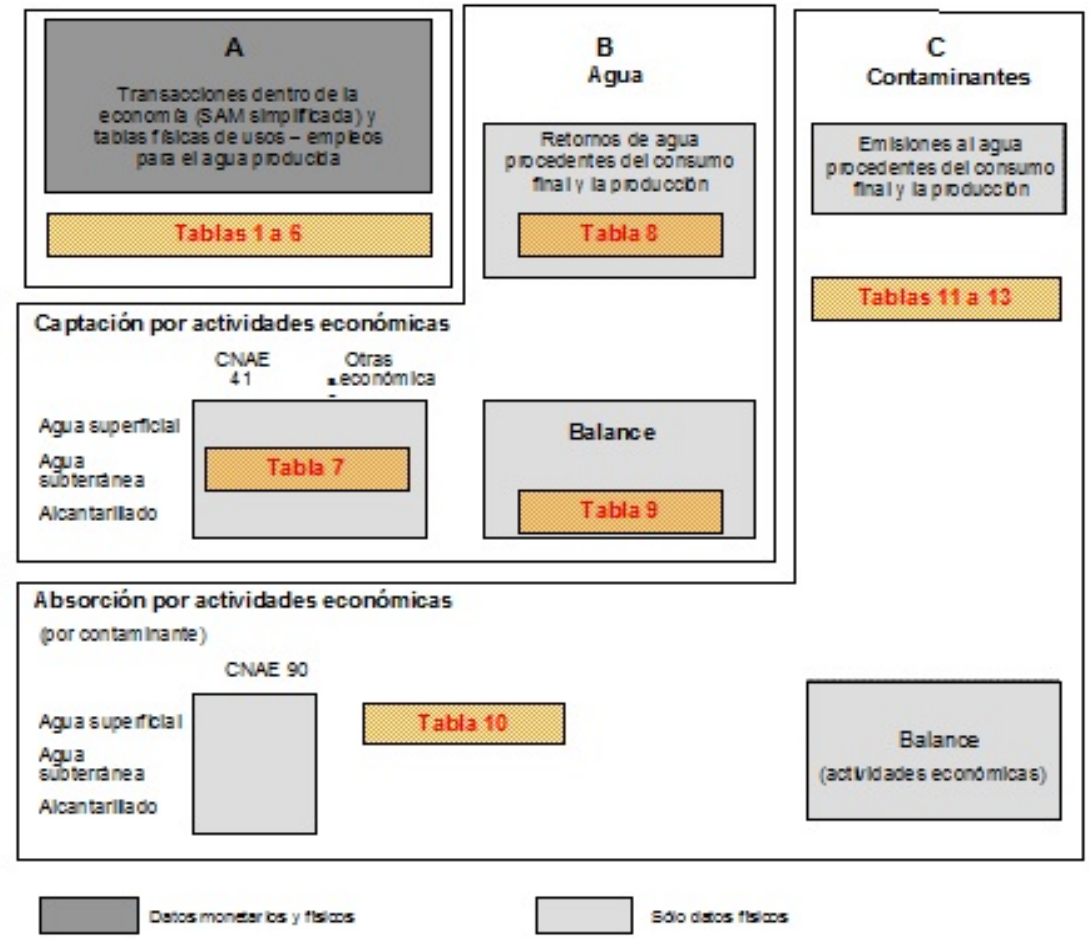
Its application to the study of water is denominated as NAMWA (*National Accounting Matrix Water Accounts).* This accounting framework consists in a simplified national account matrix (part A), complemented with rows and columns that in physical terms describe water flows (part B) and the contaminating flows linked to the economic activity and the final consumption (part C).

All tables have the same structure; the rows include the economic activities grouped by sections of the National Classification of Economic Activities. The services sector is grouped into a generic activity called "R". In the tables regarding water flows produced in the scope of the economic system, the columns include the products that make up the water cycle (drinking water, non-drinking water) and the environmental operations (for example, abstraction services and wastewater purification).

In the tables regarding water flows between the environment and the economic system and vice versa (return-flows), the columns include the environmental operations that make up water abstraction (for distribution, self-supply, cooling etc.). In the tables regarding water return-flows into the environment, these operations are the appropriate ones to describe those water flows (leaks in the distribution networks and sewerage systems, return-flows of irrigation water, dumping of productive activities, etc.

The normal tables that make up the NAMWA accounting table are presented in figure 4.

Figure 4: Standard NAMWA framework tables used by EUROSTAT



The simplified national accounts matrix is mainly formed by resource and use tables (tables 1 and 2) that register the supply and uses of produced and distributed water in monetary terms (euros). Moreover, there is establishment of the economic accounts corresponding to the units that distribute and supply water and purify wastewater (table 3), as well as the accounts on environmental protection expenditure taken on by the units that carry out operations regarding self-supply of water or self-purification of wastewater (table 4).

In the environmental scope it is essential to have the information in physical terms, therefore it is necessary for the resources and use tables to be presented in physical units (thousands of m^3). Tables 5 and 6 describe these flows, which correspond to the monetary flows of tables 1 and 2. Tables 7, 8 and 9 provide information on the water flows of the environment into the economic system, the return-flows of used water into that means (return-flows) and the balance of water between uses and return-flows. Finally, the qualitative accounts, (tables 10, 11, 12 and 13), provide information regarding pollutants discharged into the environment.

TABLE 1. WATER SUPPLY AND WASTEWATER SANITATION

It presents, in monetary terms, the resources related to the supply of water and sanitation of wastewater: production valued at basic prices, taxes and subsidies on the products of the economic activities pertaining to irrigation, water abstraction, purification and distribution services, water-related administrative services and wastewater abstraction and sanitation. When imports exist, they may be accounted for. This table is the monetary-term equivalent of table 5, which is expressed in physical terms.

Only the water supply that implies a monetary transaction between two economic units is registered in this table. The production related with the self-supply of water and the auxiliary sanitation activities (purification) of wastewater may be reflected according to the NAMEA methodology in table 4.

TABLE 2. WATER USE AND WASTEWATER SANITATION

It registers, in monetary terms, the intermediate consumptions by economic activity according to CNAE and the final consumption (households and Public Administrations), valued at purchase price, of irrigation services, distributed water, water-related administrative services and wastewater purification services. This table is the monetary-term equivalent of table 6, which is expressed in physical terms. Exports and stock variation may also be accounted for, when they are significant, yielding the total uses as the final result. Uses and resources must be balanced.

The aforementioned exceptions for table 1 in terms of the auxiliary services of self-supply of water and wastewater purification also apply to this table.

TABLE 3. ECONOMIC ACCOUNTS

They are constituted by the production and operating accounts, for each of the branches of economic activity related to water, incorporating supplementary information on the fixed capital formation and employment. Self-supply of water and auxiliary services related with wastewater purification are not included since despite the fact that auxiliary services increase production (as intermediate consumption increases) they do not alter the added value of the branch of economic activity in which they collaborate. The approach used in these tables is homogeneous branch, which is already incorporated in the INE survey on water supply and sanitation.

TABLE 4. EXPENDITURE ON ENVIRONMENTAL PROTECTION

This table consists of two sub-tables, one referring to the expenditure and the auxiliary activities regarding wastewater abstraction and sanitation, and the other referring to the expenditure incurred in the self-supply of water. The auxiliary activities are valued at the cost of the factors that comprise their production.

Current and capital expenditure carried out by the economic units on auxiliary wastewater sanitation activities are considered. Current expenditure includes intermediate consumption, wage-earner remuneration and net taxes minus subsidies for production related with these activities; capital expenditure, the gross formation of fixed capital. Households may also incur in environmental expenditure when assuming the costs of septic tanks or the dumping of wastewater in rural areas.

Regarding self-supply of water, it may be carried out by the branches of economic activity (own abstraction) for its use as intermediate consumption in the production process or cooling. Households may also collect water for their own use, this preferably being groundwater, as these quantities are not significant when compared with the aforementioned amounts.

TABLE 5. WATER SUPPLY AND WASTEWATER SANITATION

This table is equivalent, in physical terms (thousands m^3) to table 1 and it also specifies the amount of water coming from desalination and reuse of the total distributed water. As previously indicated, the magnitudes of the branch "*wastewater sanitation and sewerage activities*" are not physical amounts of wastewater produced by this branch but the wastewater used by the branch for its purification, which originates the product "*wastewater purification and sanitation services*".

Not considered are transactions that are purely monetary, and the services related with water have been transferred into physical flows. For the purpose of maintaining coherence with the economic flows, only those which are the object of economic transactions are considered, with the sole exception of the self-supply of water in agriculture, which appears in this table to prove the distinction between farms that are associated with irrigation communities and those that are not.

TABLE 6. WATER USE AND WASTEWATER SANITATION

This table is a replica of table 2, in physical terms (thousands of m^3). As in the previous case, only physical flows of water implying economic transactions are considered, with the exception mentioned in the previous section. The magnitudes that correspond to the product "*wastewater purification and sanitation services*" which is used by the different branches, do not correspond to the wastewater *used* by them but *produced* by them. This requires the use of the product "*wastewater purification and sanitation services*".

The resources and uses of physical water flows shall be the same, as are the economic flows.

TABLE 7. WATER ABSTRACTION BY TYPE OF SOURCE AND USE

It describes water flows from the environment into the economic system, total water abstraction, in physical units (thousands of m^3), and it includes the water

abstraction that is not to be used, such as mining and drainage water, given that it is mobilised by an economic agent, even though it is not used in the production process. Water abstracted by the environment from agricultural operations, the industrial sector and households shall be included in this table.

TABLE 8. WATER RETURN-FLOWS BY TYPE

It presents in physical terms (thousands m^3), the water flows from the economic system to the environment, that is, the water return-flows, including wastewater coming from sewerage systems, wastewater directly discharged by the producing units, the households and cooling water.

The section regarding wastewater purification services includes rain water since it was excluded from table 6 in this same section, due to the fact that this table only considers the wastewater produced by users (industries or households).

The flows recorded in tables 5 and 6 correspond to the final stage of the water supply process (outgoing water), and the initial stage of the wastewater abstraction and sanitation system. In contrast, tables 7 and 8 describe the beginning of the water supply process (abstraction of water from the environment for the purpose of purifying and distributing it: ingoing water), and the end of the process corresponding to the wastewater abstraction and sanitation system (final discharge into the environment).

TABLE 9. BALANCE OF INLAND WATER FLOWS BETWEEN THE ECONOMY AND THE ENVIRONMENT

It describes, in physical terms (thousands of m^3), all the inland water flows, from its abstraction to its return into the environment, and allows us to compute the water consumption in the economic system. The account model distinguishes, within consumption, the quantity corresponding to the evaporation in the distribution networks, and the water content in the products; however, for the moment, in has not been possible to include this data, due to the lack of corresponding information.

Due to its conceptual relevance, and for the better comprehension of the water accounts herein, we should indicate that the phrase "water consumption" that appears in this table refers to the amount of water that, *after use*, does not return to the environment (inland or sea waters). This concept is different from "water use" (included in table 6), which refers to the water received by the industries or households to be used for regular reasons. From the aforementioned it may be inferred that the physical consumption of water is imputed to the branch that received said volume of water. A negative physical consumption indicates that the said branch returns a greater amount of water to the environment than the amount that it takes from the environment.

Therefore, the phrase "*water consumption*" used in water accounts is the expression, so to speak, of a hydrological balance and may lead to confusion since in traditional national accounts "*consumption*" and "*use*" are synonyms.

Initially, the tables regarding the quality of water (no. 10, 11, 12 and 13) are not included in the water accounts herein. It is studied in the second compilation stage of the water accounts. Nevertheless, its theoretical contents are explained next.

TABLE 10. QUALITY OF THE WATER ABSTRACTED FOR SELF-SUPPLY.

Tables 10, 11, 12 and 13 correspond to chart C of the NAMEA model. Table 10 records the quantity of pollutants in the water abstracted for self-supply by the different economic activities. The measurement unit is kilograms per day. The parameters recorded are BOD_5, COD, solids in suspension, heavy metals, phosphorus and nitrogen.

The comparison of the values obtained in this table with those of the following tables allows us to calculate the net pollutant load of wastewater, that is, the pollutants dumped into the medium that are the direct result of human activity, given that those present in the water upon collection would be disregarded.

TABLE 11. POLLUTANTS DISCHARGED INTO THE SEWERAGE NETWORK

It presents the quantity of pollutants found in wastewater discharged into the sewerage network. The measurement unit is kilograms per day of discharge.

TABLE 12. POLLUTANTS DISCHARGED DIRECTLY INTO THE ENVIRONMENT

It registers the pollutants stemming from the direct discharge into the environment of cooling water and wastewater, both sanitized and unsanitized, after use, by the economic activity sector.

TABLE 13. POLLUTANTS DISCHARGED DIRECTLY INTO NON-INLAND WATER.

This table records the pollutants discharged into non-inland media (into the sea) that stem from cooling water and from wastewater sanitation, after use, by the economic activity sector. The resulting values from subtracting table 13 from 12 correspond to the discharge of pollutants into the inland water system.

8. Compilation process of the satellite water accounts

One of the main difficulties while compiling the water accounts is based on the great variety of units that participate in the stages of the water cycle and the complexity of the cycle itself. This forces to handle statistical sources with different origins and methodologies, which has a negative influence on the homogeneity of the information. The annex of this document includes a synthesis of the legal regulation in Spain in reference to the distribution of competences to this regard and in the application of the Water Framework Directive.

8.1 PRODUCTIVE UNITS

One of the first steps to establish the study of an accounts system, consists in the definition of the productive units that make up the accounting sub-system described as well as their most relevant characteristics.

Before describing the said units, it is important to highlight that according to the Law on the Local Ordinances, the ownership of the water cycle services (abstraction, filtering, distribution, collection and purification of wastewater) is municipal. Moreover, the services provided are characterised by the participation of numerous public and private agents. We must also point out the importance of other agents who intervene in the financing or the direct construction of infrastructures for water service provision. It is important to highlight the role of the Ministry of Agriculture, Food and the Environment (MAGRAMA) and the Autonomous Communities through their different offices. Provincial councils may also cooperate in the conducting of hydraulic infrastructures, generally abstraction

of ingoing water. The institutional framework therefore has a complex structure with an active presence of the four public administration levels.

- Irrigation Communities.

Article 73 of the Water Law establishes that users of water and other goods from the hydraulic public domain from the same intake or concession must create a community of users. When the water is mainly used for irrigation, they will be called *irrigation communities;*in other cases, the Communities will receive the name that characterises the destination of the collective use.

Irrigation Communities are considered Public Law Corporations attached to the Basin Organisation (*Hydrographic Confederation*). Therefore they are not entities attached to the Public Administration even though they are guarded by them and are legal entities. There is no public financing, but on the contrary the expenses of these communities as well as the fees for water use are attached to those associated with said communities generally called *communal owners*.

Nevertheless, it may be appropriate to indicate that Public Administrations may invest in irrigation and water distribution systems of the operations associated with said communities. The latter make the said investments, with or without the aid of the State, with direct or co-financed actions by the said Administrations that are usually included in the action plans or programs for the improvement or modernisation of the irrigation water distribution systems, such as those considered in the National Irrigation Plan passed by Royal Decree 339/2002, of 5 April.

Its main income are fees paid by its associates (communal owners). It may also have other income linked to the management of the resource as the sale of water to non-agricultural users as well as other atypical income such as the result of the sale of assets, financial transactions, assessment regarding irrigation matters, etc.

Regarding expenditure, irrigation communities use their resources in three headings, staff expenditure, maintenance expenditure and repair and investment on installations. Having reached this point, it is important to highlight the payment these communities make by delegation to the hydrographic demarcation in terms of the regulation tax and water utilisation tariff. This debt collection delegation is considered in article 115.3 of the Rewritten Text of the Water Law. The said costs for participation in the benefits or improvements produced by the construction are divided equally among the communal owners.

The Irrigation Communities are not subject to the Company Tax for the returns obtained from those activities that are inherent to them (those related to water distribution), although they must file for those returns obtained from atypical activities. They are not subject to the Economic Activities Tax either, because their activity is considered to be agricultural. Lastly, as per the Value Added Tax (VAT), they are considered to be final consumers as regards their own activities.

In order to optimise costs, it is possible to build general irrigation communities whose main aim is to collect ingoing water a distribute it to the base irrigation

communities that distribute it (outgoing water) to the agricultural operations associated with them for the irrigation of their crops.

- State bodies, entities and companies that provide abstraction, dam and transportation services of ingoing water.

In general, these services are the competency of the State Administration through the Basin Organizations and State Water Societies.

Moreover, in intercommunity basins, the corresponding Autonomous Communities take on said competence having created public entities so as to exercise their competences regarding water (Agencia Catalana del Agua-Catalonian Water Agency, Ente Autónomo de Aguas de Galicia-Autonomous Entity of Water of Galicia, Agencia Vasca del Agua-Basque Water Agency, Agencia Balear del Agua y de la Calidad Ambiental-Balearic Water and Environmental Quality Agency, etc..). The Canary Islands are special due to the competences of the inter-island councils in terms of water management. In the inter-island councils there are services that depend on the Autonomous Administration (Dirección General de Aguas-General Directorate of water, Fundación Canaria Centro Canario del Agua-Canary Islands Foundation of Water) as well as entities that depend on said local administrations (Inter-island water Councils)

As regards the rest of the Autonomous Communities (Intercommunity basins) the competent bodies concerning water can also undertake, with a subsidiary nature, ingoing construction for urban water supply. The way to undertake the management of these competencies is not homogeneous for each of the Autonomous Communities involved. In some cases, there has been the creation of own entities or agencies regulated by the public law and in other cases they are exercised directly through the corresponding General Directorates assigned to the office responsible for water or public bodies (Instituto Aragonés del Agua, Empresa del Agua de Cantabria, Agencia Andaluza del Agua, etc.).

On the other hand, there are two special cases of organizations that abstract and distribute incoming water. They are the Mancomunidad de los Canales de Taibilla (Júcar and Segura basins) and the Canal de Isabel II in the case of water supplied to Madrid.

Due to its relevance from the institutional and economic points of view, next there will be a description of the activities regarding the Hydrographic Demarcations and the State Water Societies.

Hydrographic confederations are autonomous State organizations of a commercial nature assigned to MAGRAMA. Their income and expenditure budget is published in the General State Budgets and carry out their economic and financial activity within two aspects: on the one hand, as autonomous organizations they have their own budget and on the other hand in terms of the administrative structure of MAGRAMA, they manage an investment programme ordered by the General Water Directorate of said Ministry.

Regarding income, it is worth mentioning that income is considered in chapters 2 and 3 of their income budgets.

- Chapter 3 (fees, public prices and other income *).*
  - Fees for direction and inspection of works.
  - Other fees.
    1. Dumping Control Tax.

       The water-related legislation indicates that dumpings into the hydraulic public domain will be taxed with a fee destined to the study, control, protection and improvement of the recipient which will be called Dumping Control Tax. A high percentage of the responsibles for dumpings are town councils, therefore a great part of the income comes from them. The rest of dumpings come from industrial sources.

    2. Occupation or utilisation tax.

       This fee taxes the occupation and use of public domain including the navigation fee since it is a way of using it. It also comprises the fee paid by the companies that generate hydroelectric energy and those that use the materials of said domain (gravel pits, etc.).
  - Other income.

    There are fees that cannot be directly imputed on the use of water since they come from technical actions (reports, projects, etc.) or income from surcharges or fines.
- Chapter 5 (State income).

This income is described as the result of commercial operations, and its main components are the regulation tax and the water utilisation tariff.

1. Regulation tax*.*

   The improvements produced by the regulation of the water flows for irrigation, supply for cities, industrial use or use of installations of any type that use the flows that are benefited or improved by said hydraulic regulation works.

   This tax shall be paid by those who *benefit* directly or indirectly from the aforementioned regulation works. They can be town councils who in turn attach it to consumers (households and industries) or irrigation communities. This tax can also be paid directly by the industries (water collection or industrial production tax).

2. Water utilisation tariff.

   This levy taxes the incumbents of other specific (not regulation) hydraulic works completely or partially financed by the State including the correction of public domain derived from its use and by the concept of availability or use of water. This fee is paid by the irrigation communities in irrigation areas, by town councils and companies for the use of water for industrial or hydroelectric purposes.

The State Water Societies are mercantile societies controlled by the State through the Directorate General for State Assets, and arise as a direct management instrument of competencies corresponding to the General State Administration in matters of hydraulic works within the scope of intercommunity basins. These societies were created with the support of article 6.1a of the Codified Text on the National Budgetary Law passed on by Royal Legislative Decree 1091/1988, of 23 September. They carry out works related to the collection of ingoing water and in the last years, works regarding construction and use of sea water desalination plants in the Mediterranean coast in the framework of the *Water Plan*.

- Administration organizations, entities and companies that provide purification and distribution services of outgoing water as well as sewerage and purification of wastewater.

According to Regulatory Law 7/1985 on Bases of Local Ordinances, services regarding distribution of urban water (outgoing) and sanitation (sewerage and purification of wastewater) are municipal competences which means that the municipality shall invest on their planning. These services may be provided directly by the local authorities or through concessions to private companies or other means of management considered in the legal code (public societies, municipal companies, mixed companies, etc.). Regarding water, the competent Autonomous Administration organisms may also collaborate with the Local Administration in the construction and improvement of outgoing water supply, but under no circumstances are responsible for the management of said supply.

It is in terms of wastewater purification that the Autonomous Administration is participating more actively since the mid 1990's. It finances investments in collector networks and industrial water treatment plant (EDARs) that operate directly or by means of agreement with town councils or licensed companies. In some of them, there has been the creation of public non-financial corporations whose main aim is the sanitation of wastewater and coordination in this matter between the Autonomous and Local Administration such as the Entidad Regional de Saneamiento y Depuración de Aguas Residuales de la Región de Murcia-ESAMUR (Regional Entity of Wastewater Sanitation and Purification of the Región de Murcia), la Entidad Pública de Saneamiento de Aguas Residuales de la Comunidad Valenciana-EPSAR (Public Entity of Wastewater Sanitation of the Comunidad Valenciana) , el Instituto Aragonés del Agua (Water Institute of Aragón) , Agencia Balear del Agua (Balearic Water Agency) etc..., although some of these entities may also execute general infrastructure works for the supply of ingoing water.

As regards the financing of urban water services, we must begin with the fact that there is a single water bill. This water tariff (supply and sewerage) includes a sum of concepts of a tax nature. Given the institutional complexity of the drinking water service, billing delegation phenomena arise, with the City Council being a mere collector of economic amounts from other agents.

The following are the most usual tariff concepts that appear on the water bill paid by users.

- Rate or tariff for water supply.

  Users pay a drinking water rate or tariff established by the corresponding municipal ordinance that may include other concepts such as the connection fee, meter reading, etc. If the service manager were not the local entity, this payment would be considered the price for rendered services.

  This bill may have monetary amounts attached in terms of payment to other agents (billing delegation) such as the regulation tax and the water utilisation tariff charged by the hydrographic demarcations, fees for ingoing water supply works carried out by State Water Societies or channeling tax (for the same concept) received by the corresponding public bodies.

- Rate or tariff for wastewater sanitation (sewerage/purification).

  The cost for wastewater abstraction (and rain water) is defrayed by means of the sewerage tax or price for said provided service. The managers may be the city councils or licensed companies for the provision of urban wastewater purification services. There is not a single model for the structure of the figure that collects taxes for the service provided, and it is usual that the tax collection figure for the provision of abstractions, sanitation and purification of wastewater is unified through out the aforementioned sewerage tax, sometimes called purification fee.

- Sanitation tax.

  To face the requirements of the National Sanitation and Purification Plan, most part of the Autonomous Communities (and sometimes also de State Administration in collaboration with the Provincial Councils) have carried out numerous investments in the construction of installations for wastewater purification. These Autonomous Communities have established a sanitation tax (sometimes called purification tax) that is attached to the water bill and whose purpose is to finance these installations as well as the costs for their functioning and operation.

- Dumping Control Tax.

  The section regarding hydrographic demarcations mentions this type of fee that is received by them and that taxes dumpings into hydrographic public domain and that is intended for the study, control, protection and improvement of the recipient of each hydrographic basin. This tax is independent from the taxes or fees established by Autonomous Communities and local corporations to finance sanitation works and tax those who dump into public domain, whether it is as holders of a dumping authorization or as those responsible for unauthorized dumpings. The type of taxed water may be urban, industrial, dumpings from fish farms, drained water from mining activities or cooling water.

- Sea Dumping Tax.

  This tax is only developed for inalnd waters, and although the Spanish Coastal Law includes a sea water dumping tax that is the same as the Water Law, this tax has not been implemented in the same way.

- General State Administration, Autonomous Communities and administrative water services.

Firstly, it may be appropriate to define the nature of these administrative water services. Initially they are the services promoted and financed by the State or Autonomous Administration whose purpose is to establish and apply regulations, legal norms and general action plans to improve water management in all of its economic and environmental aspects. These regulatory and legal actions result in benefit of all citizens. These services shall be viewed as opposed to the water distribution services that have been previously studied and whose purpose is to ensure water supply and sanitation by means of the corresponding hydraulic works. They have specific beneficiaries that can be identified and would be in charge of the total or partial financing of these works (City Councils, irrigation communities, companies or individuals). As previously explained, distribution services are provided by the three administrations (State, Autonomous, Local) or by public or private companies. In the case of the State Administration, the administrative water services are provided by MAGRAMA.

Generally speaking, the aforementioned autonomous organizations provide the two types of water services (distribution and administrative) according to the explained scheme. The different types of water distrubution services produced by said organizations have been described previously.

The following shall be included in the administrative services:

- Compilation of the autonomous plans for urban water supply and wastewater purification.
- Compilation of plans and investing on the prevention of floods and defence of riverbanks.
- Promoting the efficient use of water, including the study and promotion of new technologies for its rational use.
- Relevant studies for the control and improvement of the quality of water.
- Carrying out hydrology studies.
- Issuing technical reports on matters of their responsibility.

Due to all of the above, the administrative units shall be taken into account in the description of the economic flows of water services, even though they are omitted in the physical approach of the water accounts since their production does not involve that type of water exchange.

8.2 STATISTICAL SOURCES AND ESTIMATION METHODS

8.2.1 Distribution systems of irrigation water

Irrigation water is produced by irrigation communities and it is entirely consumed by the production units classified in the agriculture, livestock and forestry branches as intermediate consumption.

The main statistical source used is the *Survey on the use of water in the agrarian sector* of the INE, which provides the necessary information to estimate all the variables, both monetary as well as non monetary. Given irrigation communities attach the regulation tax and the utilisation of water tariff by delegation of their hydrographic confederations to their communal owners, said monetary magnitudes have been assigned to their production, therefore removing the production of irrigation communities.

Furthermore, it is considered that the communities do not receive subsidies for those products, since the product themselves are subsidies (aids) for investment on the improvement of their hydraulic infrastructure.

Regarding physical flows, it has been thought appropriate to insert a new column in table 5 with the product "*self-supply of irrigation water*" in order to distinguish between this water and the water distributed by Irrigation Communities. This water is extracted autonomously by the agricultural operations that are assigned to these irrigation communities as well as those that are not. To this effect, the information provided by the Agrarian Census and the MAGRAMA survey on irrigated surfaces, irrigation techniques and source of water has been taken into account, distinguishing between operations that are associated and not associated with irrigation communities.

Statistical sources:

- Survey on the use of water in the agrarian sector. (INE).
- Survey on the Structure of Agricultural Operations. (INE).
- 1999 and 2009 Agrarian Censuses. (INE).
- Crop Surface Area and Yields Survey (ESYRCE). (MAGRAMA).
- Reports from the Hydrographical Confederations. (MAGRAMA).

8.2.2 Collection, purification and distribution of water

In this case, the production units that are included are the ingoing water distribution companies, Hydrographical Confederations, State Water Societies that produce water-related services and the Water supply municipal services that manage water distribution via their own supply networks. The production of these units (drinking and non-drinking water as well as water distribution services) is used as intermediate consumption by the production units classified in other

branches of activity (agriculture, industry and services) and final consumption by households. Water imports and exports are considered irrelevant.

The survey on water supply and distribution provides information on the amount of money paid by users (households and economic sectors) for the water they use coming from the urban supply network, whose production shall be estimated via their income.

Regarding the production of hydrographical confederations, it shall be considered that its production at basic prices is the sum of chapters 3, 4 and 5 of its income budget. Chapter 4 (current transfers of the State) shall be included in its market production at basic prices due to the fact that the payments of the Public Administrations to cover a global deficit of the public societies (because they bill their products at prices that are lower than their average production costs) are part of the other subsidies on products.

Taking into account that the amounts paid by the city councils to the hydrographical confederations in terms of regulation tax and where applicable utilisation of water tariff are attached to the water bill and have already been considered in the outgoing production of the water supply branch (36 in CNAE-2009), they are removed from the production of the aforementioned demarcations in order to avoid duplication.

Market production of State Water Societies has been estimated based on its sale (turnover). These magnitudes still have little significance since these mercantile companies have still not started to recover their investments at a large scale.

An agreement has been adopted in which branch 36 cannot produce non-drinking water, therefore in table No. 1 and the following this product shall be understood as reused water. Regarding branch B (fishing), only the aquaculture companies that abstract and use inland waters have been included. Therefore the companies that abstract sea water have been excluded.

In table No. 5, the "*drinking water*" product used by the industry is the one supplied by urban supply networks. The water coming from own channeling systems (self-supply) of the industries that is used in productive processes, is shown in table No. 7.

Finally, regarding return-flows of water into the environment (table no. 8), it is not possible to break them down according to the origin of the water (inland/non-inland) due to the fact that desalinated water is mixed with inland waters *(freshwater*) during the urban water distribution process.

Statistical sources:

- Survey on water supply and sanitation. (INE).
- Industrial Companies Survey. (INE).
- Survey on waste generation in the industrial sector (module one water use). (INE).
- Spanish National Accounts -Supply and use tables. (INE).

- Reports from the Hydrographical Confederations (MAGRAMA).
- Reports from Water Societies. (MAGRAMA).
- Statistics on the expenditure of Public Administrations. (Ministry of Economy - General State Comptroller)

8.2.3 Water-related administrative services

The Public Administration units that provide water-related services have several denominations within the Ministry of Agriculture, Food and the Environment. The administrative services produced by the Autonomous Communities in terms of self-supply of water as well as abstraction and purification of wastewater shall also be included. This production is totally consumed as final consumption by the Public Administrations (public consumption). The General State Budgets and the statistics of the General State Comptroller (IGAE) are the main statistical sources of this scope as well as the Budget Implementation autonomous organizations of MAGRAMA.

8.2.4 Sanitation Activities (sewerage and purification of wastewater)

These services are provided by the economic units included in branch 37 of CNAE-2009 and used as intermediate consumptions by the rest of productive activities (agriculture, industry and services) and as final consumption by households. There are no exports or imports of this type services.

The main source of information is the Survey on water supply and sanitation, although the information in the modules regarding abstraction and sanitation of wastewater integrated in the annual environmental surveys of the INE regarding wastewater generation in the different economic sectors is also used.

As previously mentioned, due to the fact that it is impossible to break down the sanitation tax in the water bill and distinguish it from the sewerage and purification fees, table no. 3 does not include this tax in the section regarding ecology-related taxes on production.

Taking into account the complex nature of the water tax charged by the Catalonian Water Agency, which represents more than 90% of its income, it is considered that the amount of money that represents this tax is part of its sales (turnover), no included in the section related to tax on production.

Even when the *Expenditure on Environmental Protection Survey* of the INE provides estimates on the autonomic dumping tax paid by companies, the aforementioned circumstance regarding the appearance of the water bill does no allow knowing which is the amount paid by domestic consumers as said ecological tax. Due to this , table no. 3 only includes taxes received from hydrographic confederations in terms of dumping control tax as ecological taxes on production.

8.3 PROBLEMS REGARDING THE ESTIMATION OF THE PHYSICAL AND ECONOMIC MAGNITUDES

The following is a summary of some problems of a methodological and statistical order that arise when estimating the physical and monetary flows that make up the water cycle, and therefore the water accounts.

In general, it is worth mentioning that multiplicity of public and private agents that take part in the stages of the water cycle and the splitting between holder and management of administrative competences of these activities, represent great difficulty for the statistical study of the water cycle in terms of the different methodological criteria with which some statistical sources compile the information from said agents.

As an example, the survey that the INE carries out on the companies included in branches 36 and 37 of CNAE-2009 researches these companies under the scope of *homogeneous branch.*A certain number of companies are included in this survey, that on the contrary to the statistics compiled by IGAE are encompassed in the Public Administrations. This forces to carry out the pertinent estimations based on

the comparison between the framework of respondent units that use the respective statistical operations of the INE and IGAE.

Another important aspect that shall be pointed out is the need for the water bill to have a single format in all Spain (metering of water billing) as occurs with the electrical energy bill. The lack of a single presentation of the concepts that make up the water bill (fees regarding water supply, wastewater sanitation and sanitation and dumping tax) does not allow characterising these taxes appropriately as environmental taxes on production in account no. 3 on production and use.

Finally, it may be mentioned that there is no systematized administrative source in which the income of the hydrographic confederations are compiled by type of tax. Therefore the annual reports of these confederations shall be consulted. The information regarding the agent that defrays these taxes (irrigation communities, agricultural holdings, city councils and companies from the industrial sector) does not generally appear in these reports. For this reason different estimates shall be carried out, based on the information provided by INE surveys regarding the payment of these taxes compared with the statistics on authorizations of dumpings by economic sectors.

9. Compilation of the Water Accounts in Spain (2000-2010)

The first attempts to compile accounts on water, date from the mid-1990's in the scope of the studies on natural resource accounts carried out in France, but that did not continue perhaps due to the weak conceptual relationship of this accounting approach with the national accounts.

At the end of the 90's, EUROSTAT faced the task of compiling water accounts in the framework of the environmental accounts. To this end, a work group formed with the support of EUROSTAT, developed during 1997-1998 a harmonised methodological framework of concepts and definitions. When it started, two lines of work were being considered. The first one supported focusing efforts on the description of the water flows in the scope of the economic system, that is, its different uses and qualities, emissions and purification of wastewater. The second line of work supported a more general approximation that allowed the overall description of the water resource in terms of economy as well as environment in order to take into accounts the shortage or abundance of the resource, but also the indirect effects of the economic activities. Considering the statistical sources and the availability of the data from the countries, the work group chose the first line of work.

In accordance with these conclusions, the work group adopted the simplified NAMWA framework so that the European Union countries could carry out pilot studies on the water accounts. During the years 1999 and 2000, they compiled the pilot accounts. In 2003, these preliminary works led to the compilation of standard tables which at first were considered to be the tables intended to collect information on the water accounts of the EU countries. In this context, in the year

2003 the National Statistics Institute (INE) published the pilot water accounts in Spain of the period (1997-2001).

In the environmental studies framework, EUROSTAT created a work group in 2002 for the study of a *European Strategy for Environmental Accounting*In the report presented by this group to the Statistics Committee for its approval, the two categories of accounts of physical water flows (abstraction / use of water and polluting emissions into the hydraulic means) were assigned at different priority levels. The first one of these accounts is considered priority, and it is recommended to implement a new data collection at EU level. The emissions accounts should be developed in a second stage, being the pilot object of study that the member states take up voluntarily. These projects were not formalised perhaps due to the appearance of new fields of environmental worries (emissions into the environment, climate change, waste) that drew away resources for the compilation of the water accounts. Nevertheless, in the year 2007 the aforementioned work group was reactivated with a view to the ESEA revision and the necessary coordination of this project with the works regarding environmental accounts that were carried out by the United Nations (UN).

Among other EU countries, Spain has continued compiling water accounts based on the simplified NAMWA conceptual framework proposed by EUROSTAT. Hence in 2010, the INE published the water accounts referring to the period (2000-2006), with new 2000 base year, which integrated new information generated by the environmental accounts of the INE about water. Finally, in the year 2014 the INE disseminated the water accounts for the period (2007-2010).

It is worth mentioning that the compilation of the tables included in the water accounts have some methodological problems with special characteristics. The following are the two most relevant.

The first one is about statistical sources. In the water accounts, the main statistical sources to estimate the physical and monetary flows (divisions 36 and 37 of CNAE-2009) are the environmental accounts on water of the INE, which as has already been mentioned, used a *homogeneous branch.* This approach is different from the one applied to other economic surveys of the INE, such as the Industrial Survey, which studies the main activity of the local economic activity unit. This can lead to non-comparable estimates, due to the great complexity of the economic activities of the water cycle in which activities 36 and 37 coexist with other types of very relevant secondary activities (construction, energy production, waste recycling, etc...)

The second one refers to the effects of applying CNAE-2009 to the time reference data from year 2008, in the classification of the activities regarding irrigation water distribution. The inclusion of this type of activity in branch 36, along with "*tap water"* poses difficulties in terms of the correct estimation of its monetary flows in terms of the compilation of the water accounts as well as national accounts.

Given that EUROSTAT's priority is to compile water accounts only in physical terms, this approach has been adopted in the tables published for the period (2007-2010). This led to postponing the compilation of tables in monetary flows

once solved the methodological problems caused by the collection of economic information and its integration in the water accounts.

10. Future statistical perspectives of Water Accounts in Spain

In 2003, the Statistical Division of the United Nations compiled the *System of integrated Environmental Economic Accounting* (*SEEA*). In 2005 the Committee of Experts on environmental and economic accounts of the UN compiled the provisional handbook for the System of Environmental-Economic Accounts for Water (*SEEA-Water*). Subsequent revisions and modifications of this manual finished in 2012 with the approval of the United Nations Statistical Commission of the SEEAW handbook as an international statistical standard for the compilation of water accounts. Following these recommendations, a certain number of countries have started the compilation of water accounts in the SEEAW framework.

In order to adapt the SEEAW to the requirements for statistical information from the European Union Member States and establish the tools and formats for the collection of information, EUROSTAT created an ad-hoc work group in 2001. The objective is that in 2015, an agreement on these two matters will have been reached in order to start the pilot works of information collection. In the initial stage of these works only physical data will be collected postponing the collection of monetary data for a second stage.

The INE has taken part in the aforementioned work group which finished its mandate in 2014, providing its experience in the environmental water dominion and evidencing the peculiarities and special characteristics in Spain of the distribution of irrigation water and distribution of water via the urban water supply networks. The INE will develop the water accounts (SEEAW) in Spain following the work framework promoted by Eurostat regarding environmental accounts and the legal regulations emanated from the European Union.

ANNEX

Synthesis of the legal regulation applicable to the economic activities of the water cycle

1. LEGAL FRAMEWORK

Article 1459.1.22 of the Spanish Constitution of 1978, reserves the State the exclusive competence in terms of legislation, ordinance and concession of hydraulic resources and their use when the water flows through more than one Autonomous Community (*intercommunity basins)*. In accordance with the stipulations of article 148.1.10, the Autonomous Communities may take on execution competences over projects, construction and use of the water channels and irrigable land of their interest. In the *intercommunity basins* (Baleares, País Vasco, Coast of Galicia, Canarias, Internal basins of Cataluña, Mediterranean and Atlantic basins of Andalucía) the autonomous competences allow legislating over the use of public water. The State legislates this matter in an additional way.

The Water Law (1985) is a basic, State regulatory text on the issue at hand. Since its entry into force, all water is considered public and providing its use is not included in article 52 (rain water of their land or subterranean up to abstraction of 7,000 m3 a year) and requires administrative concession. Subsequently, the Rewritten Text of the Water Law (2001) and the Coast law (1988) established, among other measures, the requirement of prior authorisation for those activities susceptible of causing the contamination of the hydraulic or the maritime-land public domain.

Despite the obligation to control and purify urban dumps, the strongest impulse in this activity is observed in the enactment of Community Directive 91/27 (Water Framework Directive), relating to urban wastewater sanitation. This legal norm requires all Member States to operate purifying facilities in accordance with three temporary scenarios (1998, 2000, 2005), which obliges them to make considerable technical and financial efforts. In order to comply with these regulatory requirements, in 1995 the then called *Ministry of the Environment* approved the National Plan of Wastewater Sanitation and Purification for the period 1995-2005, which continued in the period 2006-2015.

2. THE WATER FRAMEWORK DIRECTIVE

As previously mentioned, by decision of the European Parliament and Council of 23 October 2000, Directive 2000/60/EC, called Water Framework Directive (WFD) which establishes a community action framework in the field of water policy. The transposition of the WFD to the Spanish legal system was carried out through Law 62/ 2003 on fiscal, administrative and social order measures, accompanying the 2004 General State Budgets.

Its ninth chapter requires each Member State to carry out an economic analysis on the use of water in each hydrographic basin. Annex II of the directive gives details on the information that must be included in said report and that can be synthesized in the following points:

- The necessary calculations to be taken into account in compliance with article nine, Recovery principle of water-related service costs.
- The prevision of the volume, prices and costs associated with these services.
- The previsions of the corresponding investments.

The mentioned article establishes the beginning of the recovery of water-related costs (including environmental costs and costs related to capital resources), according to an economic analysis carried out following annex III as well as the "*whoever pollutes pays*". Specifically, the Member States of the European Union shall guarantee in 2010 at the most, that the water price policy guarantees the appropriate incentives so that the users may use water resources efficiently.

To put together the economic analysis that supports these policies, article 5 of the WFD establishes that the Member States shall compile a statistical study on the diverse uses of water broken down by at least households, agriculture, industry and services. In the year 2015, each Member State shall present a report summarizing the coverage of the objectives established by said legal regulation.