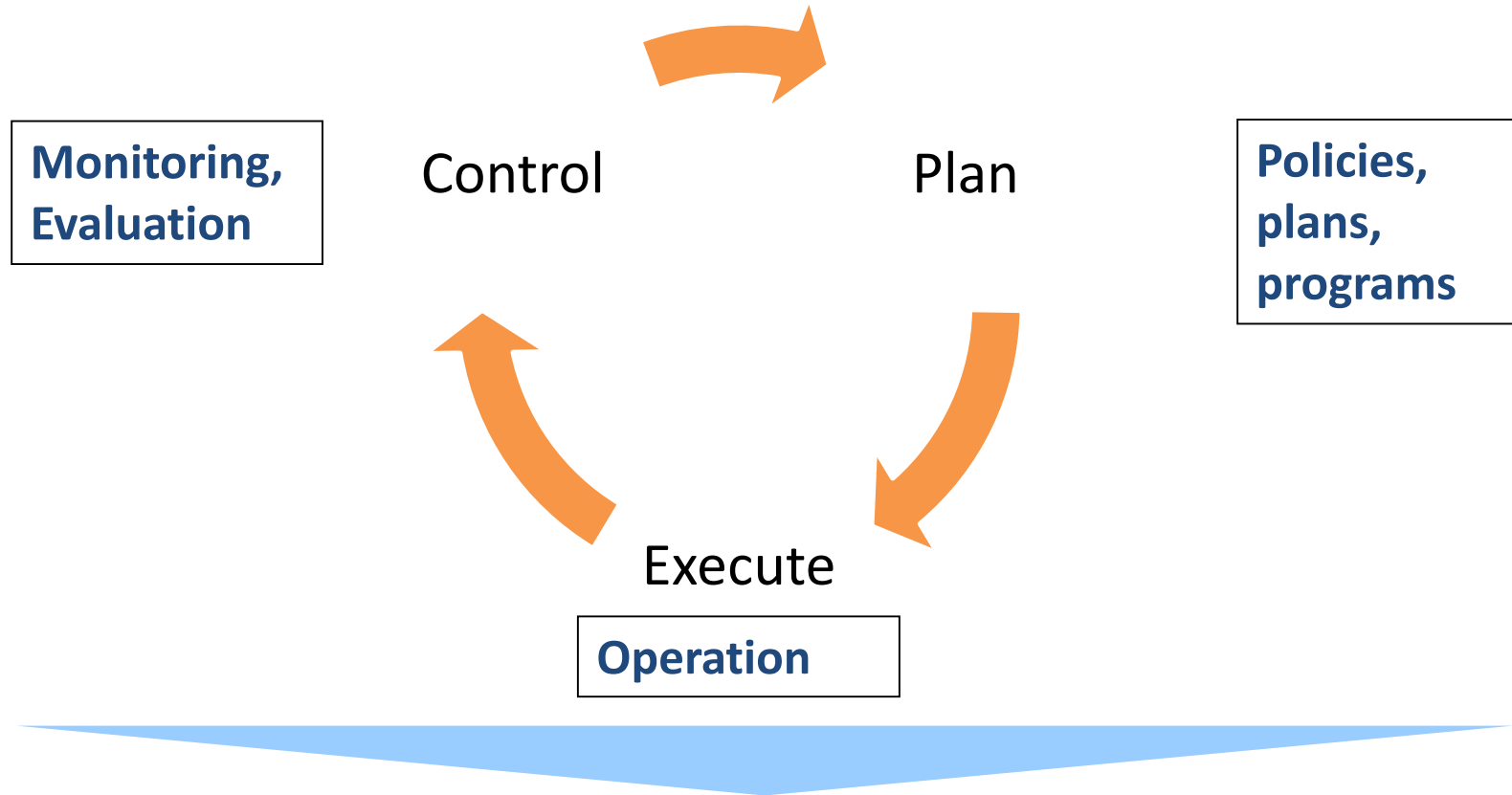


Water Accounts and Statistics Using SEEA-Water and IRWS

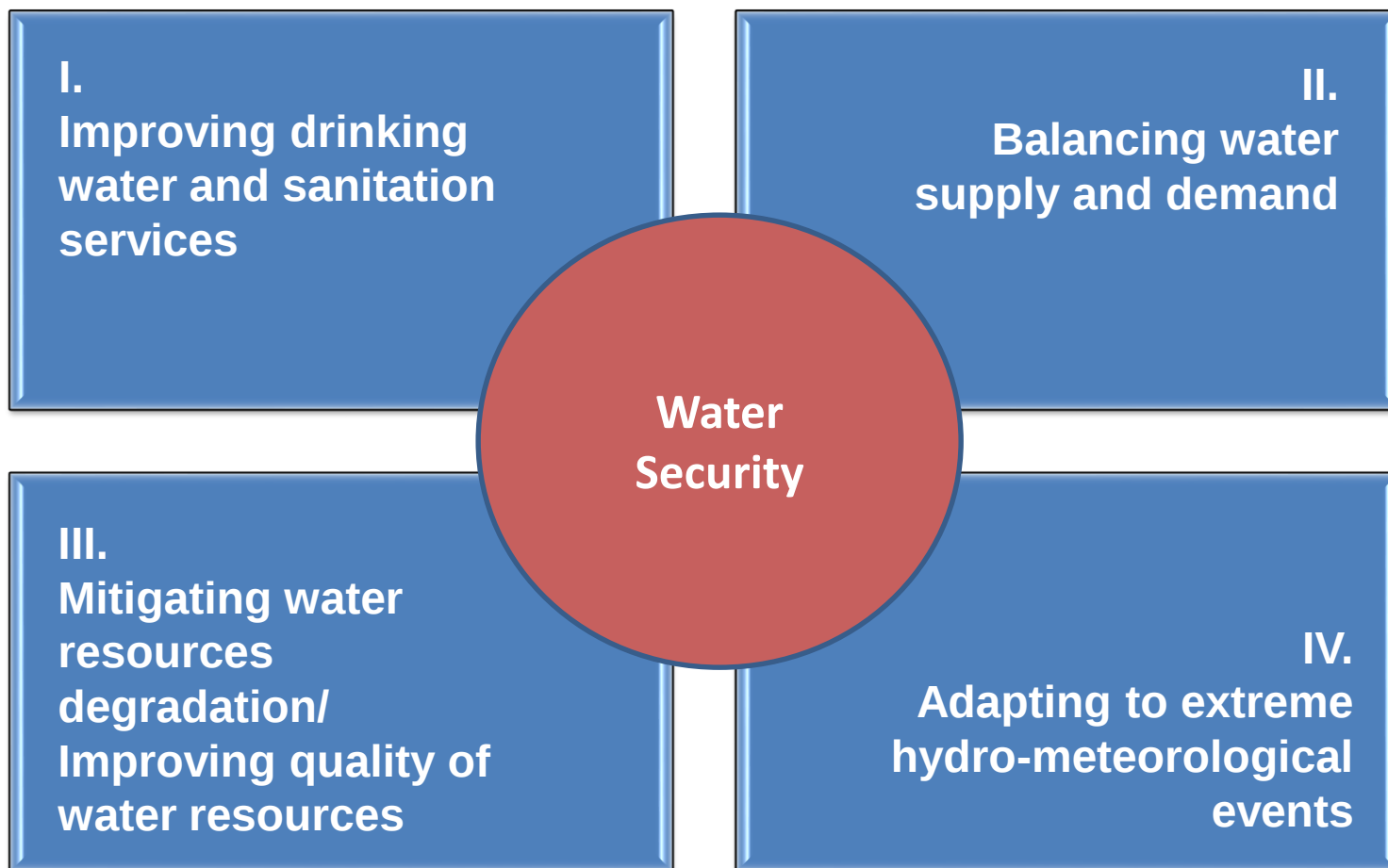


The complexity of the social, economic and environmental systems requires an adaptive management approach, in which policies have to be reviewed in light of the results achieved.



- The process involves several actors.
- It is usually considered good practice that different institutions participate in the different parts of the process to assure independence.
- It is a dynamic process, in which TIME is the independent variable.

In general, water policy objectives can be grouped in the following four quadrants:



SEEA-Water and IRWS provide the concepts and methods for measuring progress towards the attainment of the objectives in each of the four quadrants, as well as higher level indicators linking water security and development.

The four quadrants in plain English:

I.

God gives water,
but doesn't pipe it



II.

Water is enough,
if it is well managed



**Water
Security**

III.

Water cleanses, but cannot
absorb all our wastes



IV.

Too much, too little,
better be prepared



Sustainable development requires good water and sanitation services for all, sharing water to maximize benefits, making sure we don't exceed water's carrying capacity, and getting ready for wet and dry years.

Quadrant I: Water and Sanitation

I. Improving drinking water and sanitation services

Examples of information requirements:

- **Number of people with access to improved water and sanitation (MDG, from JMP)**
- **Water supplied and wastewater collected**
- **Wastewater treated**
- **Unaccounted for water or non-revenue water**
- **Waterborne pollution contained in wastewater, retained by wastewater treatment facilities and discharged to the inland water resources**
- **All costs associated to the provision of the services**
- **Water supply and sanitation infrastructure (assets) and investments**
- **Water utility revenues**
- **Water tariffs**

Key indicators for this quadrant can be derived from the standardized information collected according to SEEA-Water and IRWS concepts and definitions. The indicators can therefore be consistent and comparable over time and space.

Quadrant II: Water Supply and Demand

II. Balancing water supply and demand

Examples of information requirements:

- Renewable inland water resources flows from precipitation and neighboring territories
- Stocks of inland water resources
- Water abstracted/consumed/returned by economic activities (including households). The sources of water include: surface water, groundwater and soil water (accounted as green water)
- Water losses by economic activity
- Value added by economic activity
- Hydraulic infrastructure (assets) and investments
- Retention and storage of water
- Environmental water flows

Key indicators for this quadrant can be derived from the standardized information collected according to SEEA-Water and IRWS concepts and definitions. The indicators can therefore be consistent and comparable over time and space.

Quadrant III: Water Quality and Water Health

**III.
Mitigating water
resources
degradation/
Improving quality of
water resources**

Examples of information requirements:

- Waterborne pollutants emitted by economic activity
- Emissions retained in wastewater treatment facilities and emissions returned to inland water resources
- Water quality assessments in watercourses
- Regulatory services provided by ecosystems in terms of assimilation of waterborne pollution (water purification and disease control)
- Health of the water ecosystem

Key indicators for this quadrant can be derived from the standardized information collected according to SEEA-Water and IRWS concepts and definitions. The indicators can therefore be consistent and comparable across time and space

Quadrant IV: Extreme Hydro-Meteorological Events

IV. Adapting to extreme hydro- meteorological events

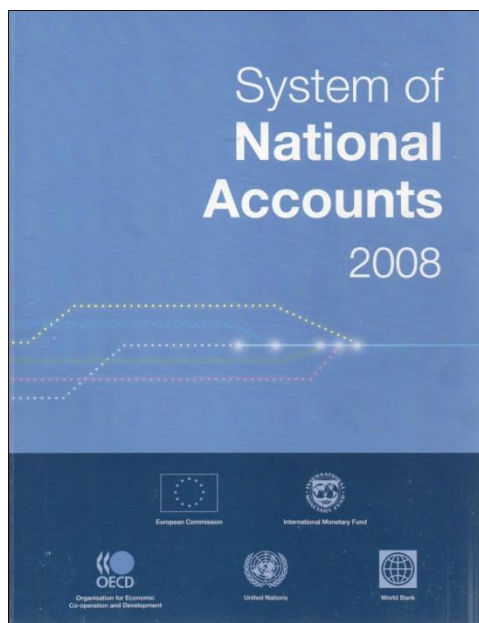
Examples of information requirements:

- Water stocks and variations through time (surface and groundwater). It includes precipitation records, evapo-transpiration, inflows and outflows modifying stocks of water
- Fixed capital formation for the storage and control of water
- Disturbance prevention
- Regulatory services provided by the ecosystems in terms of water flows

Key indicators for this quadrant can be derived from the standardized information collected according to SEEA-Water and IRWS concepts and definitions. The indicators can therefore be consistent and comparable across time and space

It is necessary to have models for the interpretation of the data collected, so that the feedback cycle can be closed. Models are useful simplifications for interpreting reality.

Edward Deming said “All models are wrong. Some models are useful”



- There is a lot of experience developed for the design and evaluation of public policies using the System of National Accounts (SNA).
- The SNA is based on a language of “stocks” and “flows”, that describe the dynamics of a society in economic terms.

The environmental–economic accounts are based on a model coherent to that of SNA. The process to approve the system of environmental economic accounts is as strict as the one followed for the approval of SNA.

Recently, the United Nations Statistical Commission (UNSC) adopted the System of Environmental Economic Accounts for Water (SEEA-Water) and the International Recommendations for Water Statistics (IRWS).

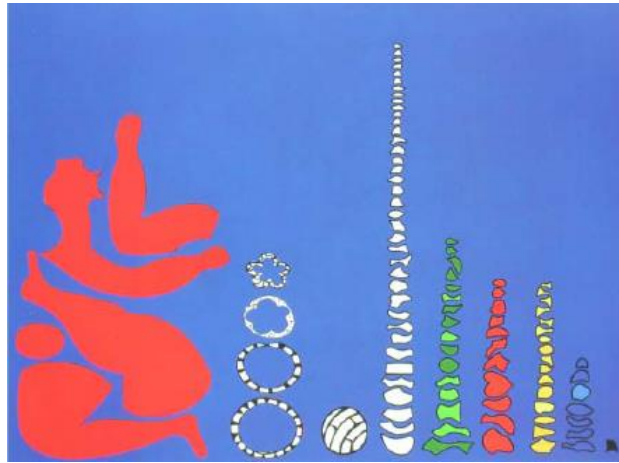


The UNSC is a functional commission of the UN Economic and Social Council (ECOSOC). It is the highest decision making body for international statistical activities, especially the setting of statistical standards, the development of concepts and methods and their implementation at the national and international level.

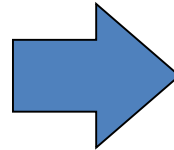
It brings together the chief statisticians from the member states.

SEEA-Water and IRWS are key ingredients for the development of information systems for the design and evaluation of water policies.

The System of Environment-Economic Accounting for Water (SEEA-Water) is a conceptual framework for the integration of information related to water and the economy, coherent with the System of National Accounts.



Statistics



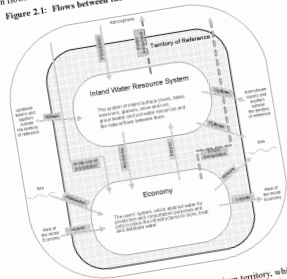
Integrated information

SEEA-Water is based on a systemic approach, which concentrates on measuring all the “stocks” and “flows” relevant to water policy making.

SEEA-Water covers all the physical and economic stocks and flows associated with water. It also covers emissions of pollutants and water quality, as can be seen in its table of contents:

The SEEA framework

2.6. The framework of the SEEA-W is presented in the simplified diagrammatic form in Figure 2.1 which shows the economy, the system of water resources and their interactions. The economy and the inland water resource system of a territory – referred to as 'territory of reference' – are represented in the figure as two separate boxes. The inland water resource system of a territory is composed of all the water resources in the territory (surface water, groundwater and soil water) and the natural flows between them. The economy of a territory consists of resident water users who abstract water for production and consumption purposes and put in place the infrastructure to store, treat, distribute and discharge water. The inland water system and the economy are further elaborated in Figure 2.2 in order to describe the main flows within each system and the interactions between the two systems.



2.7. The inland water resource system and the economy of a given territory, which can be a country, an administrative region or river basin, can exchange water with those of other territories through imports/exports of water (exchanges of water between economies) and through inflows from upstream territories and outflows to downstream territories (exchanges of water between inland water systems). Figure 2.1 also shows exchanges with the sea and the atmosphere which are considered outside the inland water resource system. These flows are also captured in the SEEA-W accounting framework.

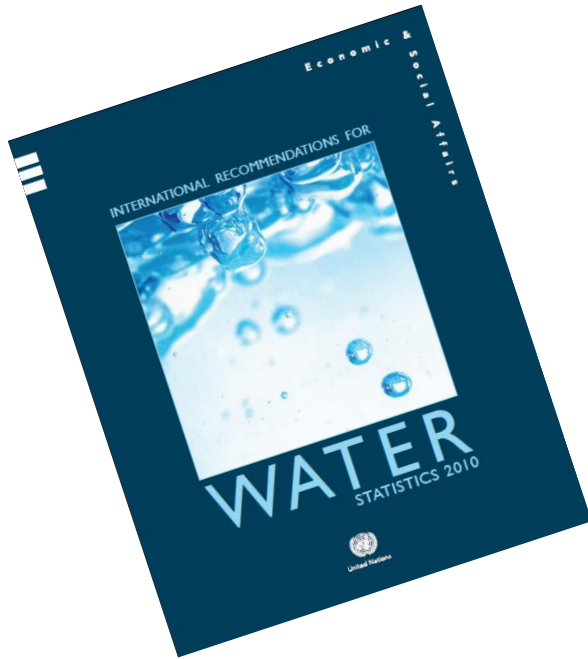
¹The concept of residence follows that of the 1993 SNA according to which "an institutional unit is resident in a country when it has a centre of economic interest in the economic territory of that country" (1993 SNA para 4.15). This concept can be applied also to geographical localization rather than the national one.

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- Chapter 1: Introduction to SEEA-Water
- Chapter 2: The SEEA-Water framework
- Chapter 3: Physical Water Supply and Use Tables
- Chapter 4: Water Emissions Accounts
- Chapter 5: Hybrid and Economic Accounts for Activities and Products Related to Water.
- Chapter 6: Water Asset Accounts
- Chapter 7: Water Quality Accounts
- Chapter 8: Valuation of Water Resources
- Chapter 9: Examples of Applications of Water Accounts

Chapters 1 through 6 have been adopted as interim standards (until SEEA-2003 is reviewed and SEEA-Water made consistent).

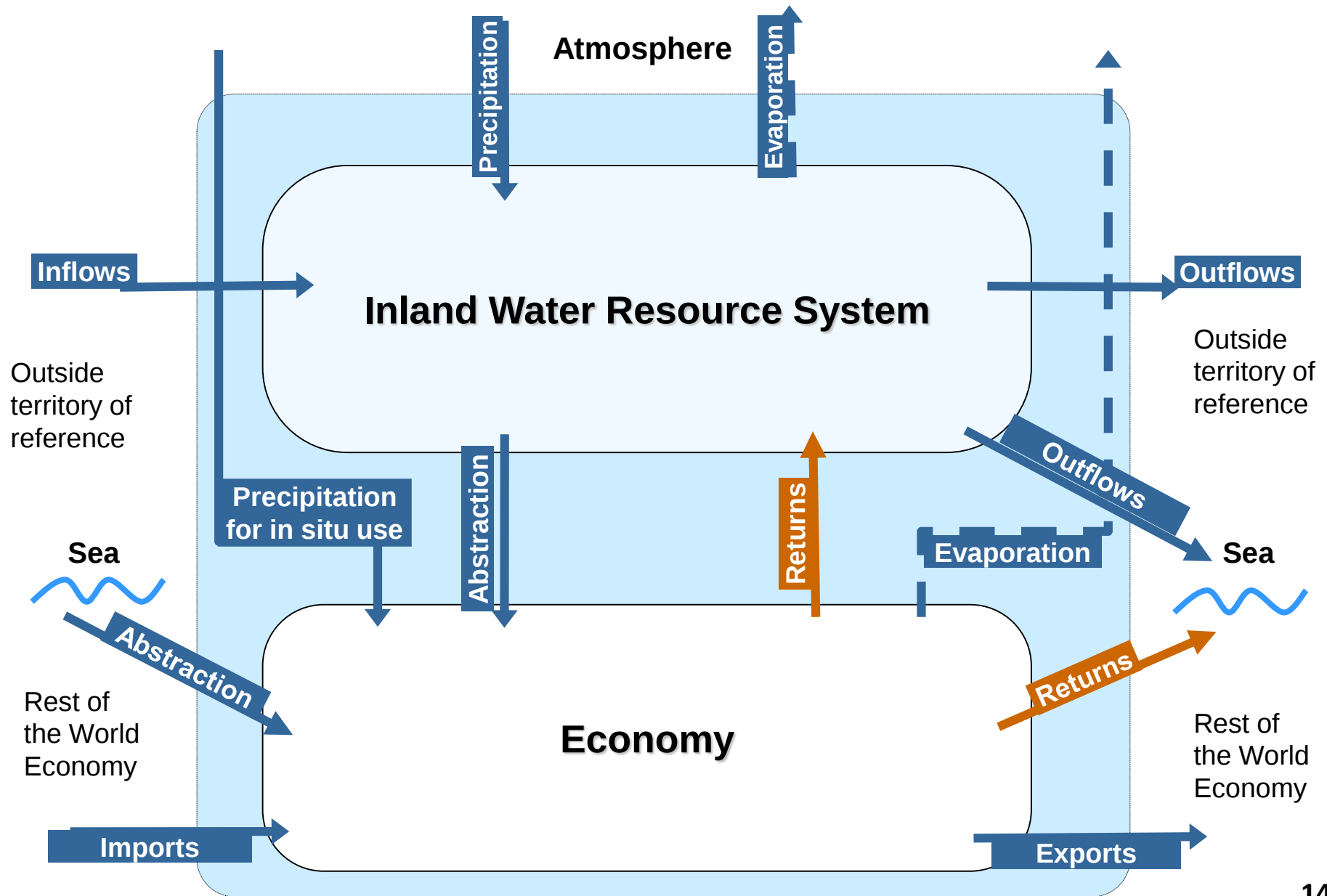
The International Recommendations for Water Statistics (IRWS) were designed to assist countries in the collection, compilation and dissemination of internationally comparable water statistics, with the following characteristics:



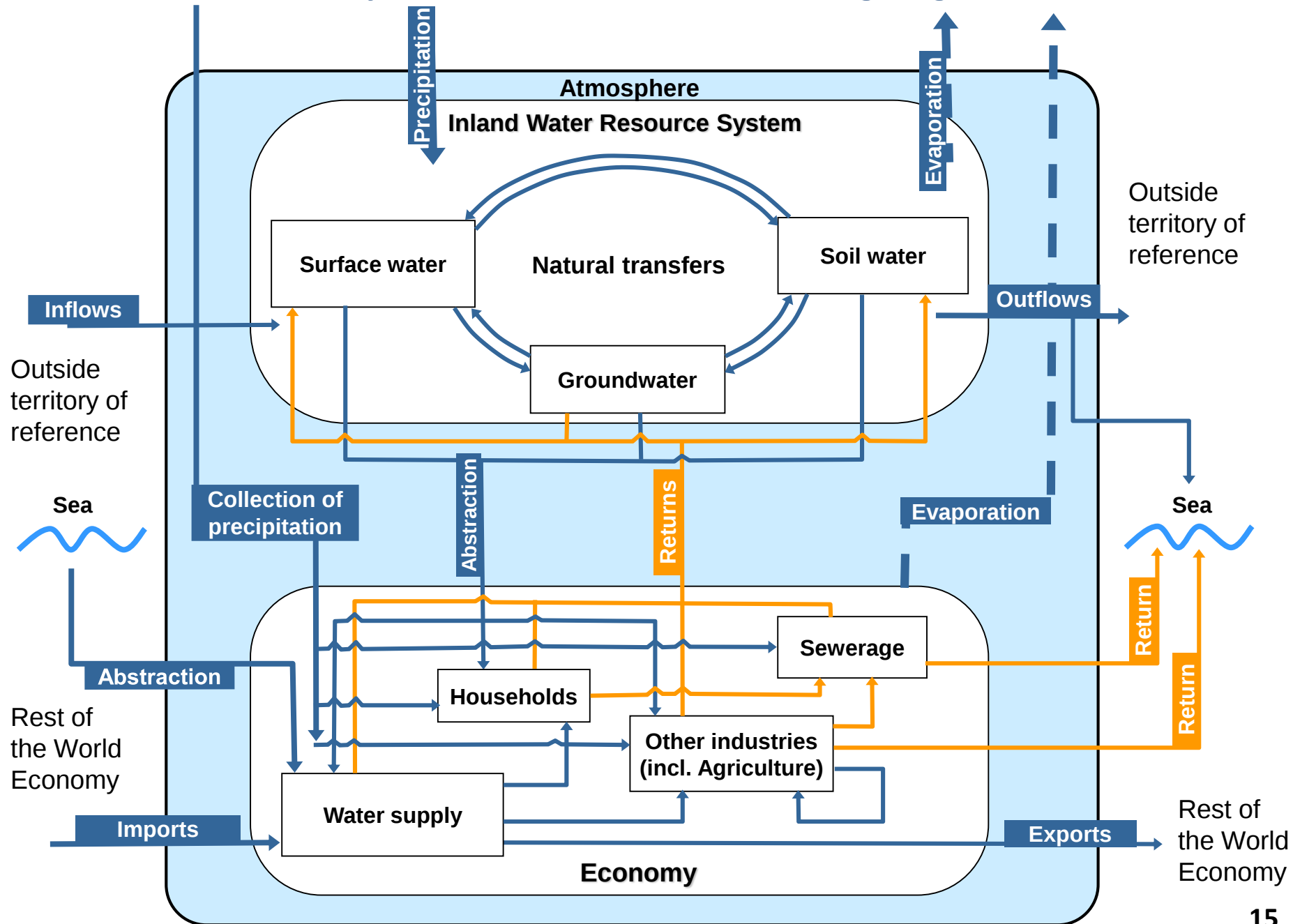
- They are fully aligned with SEEA-Water.
- Include social-demographic data needed for monitoring of MDG target 7C.
- Consistent with other information sources, like the questionnaires on environmental statistics from UNSD/UNEP, OECD/Eurostat, FAO Aquastat, JMP, among others.

IRWS has two parts. Part I consists of the international recommendations, part II is about guidelines for implementation, not yet normative.

SEEA-Water is based on a stock-flow model comprising two main subsystems: the inland water resource system and the economy.



The details of each subsystem are shown in the following diagram



Thank you!

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