



ETC/ICM Deliverable

D2.3 Support development of data dictionaries, QA/QC procedures and guidelines for water related data flows

Support for the further implementation of the Shared Environmental Information System principles and practices in the ENP South region – SEIS South Support Mechanism (ENI SEIS II South)

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Version History

| Version | Date | Author | Status and description | Distribution |
|---------|------------|-------------------------|---|-------------------------------------|
| 1.0 | 22.05.2018 | EEA/ETC (UFZ) | Data dictionary updated from SEIS Phase I, with inclusion of new indicators 3.2, 4.2, 4.3 and 5.2 | EEA, EEA/ETC, Info-RAC and UNEP-MAP |
| 2.0 | 31.05.2018 | EEA/ETC (UFZ) | Includes comments from experts Anita Künitzer and Petra Ronen | EEA, EEA/ETC, Info-RAC and UNEP-MAP |
| 3.0 | 10.07.2018 | EEA/ETC (UFZ, Deltares) | Includes adjustments following Info-RAC Workshop (June 2018, Copenhagen) to ensure consistency with European and UNEP-MAP reporting and additional comments from UNEP-MAP | EEA, EEA/ETC and UNEP-MAP |
| 4.0 | 12.09.2018 | EEA/ETC (UFZ, Deltares) | Includes adjustments following Info-RAC revision and comments from UNEP-MAP on the Bathing Water Quality (5.2) | EEA, EEA/ETC, UNEP-MAP and Info-RAC |
| 5.0 | 26.10.2018 | EEA/ETC (UFZ) | Consider vocabulary consistency with the thematic areas: Waste and Industrial Emissions. | EEA, EEA/ETC, UNEP-MAP and Info-RAC |

About this document

This document introduces the basis for the data dictionaries for the H2020 Water Indicators (IND 3, 4 and 5). The data dictionaries were developed based on the former phase of the ENPI–SEIS project and in close consultation with UNEP-MAP, EEA and Info-RAC. This basis has been prepared considering the data needed for the Water indicators calculation and their specification sheets. The QA/QC procedures were considered, also, to ensure reliable and consistent data flows per country and per year.

Data Description Document

Version 5.0

Date: 26.10.2018

1. Introduction

This document provides a description of the data sets required for calculating the selected Horizon 2020 Water indicators (see Annex 1), thereby referred to as "Data Description Document". It will feed into the Data Dictionary of the Info-MAP system - a central service for storing technical specifications for information requested in reporting, with the purpose of supporting countries in reporting good quality data.

2. Overview of H2020 Water Indicators

| Indicator group | Indicator group short name | Indicators |
|-----------------|----------------------------------|---|
| IND3 | Access to sanitation | 3.1 Share of total, urban and rural population with access to an Improved Sanitation System (ISS) 3.2 Proportion of population using Safely Managed Sanitation Services (SMSS) |
| IND4 | Municipal Wastewater Management | 4.1 Municipal wastewater collected and wastewater treated 4.2 Direct use of treated municipal wastewater 4.3 Release of nutrients from municipal wastewater |
| IND5 | Coastal and Marine Water Quality | 5.1 Nutrient concentrations in transitional, coastal and marine waters 5.2 Bathing water quality |

3. Description of Indicators

IND3. Dataset: Access to sanitation

Dataset definition

| | |
|--------------------------------|---|
| Policy theme | Access to sanitation |
| Short name | Improved Sanitation |
| Indicators | 3.1 and 3.2 |
| Key words | Improved Sanitation System (ISS) and Safely Managed Sanitation Services (SMSS) |
| Spatial coverage | National and catchment/ hydrological basin at the coastal area |
| Dataset relevance | This dataset is relevant for populating H2020 Water Indicators 3.1 and 3.2 (see Annex 1) and for reporting to SDG Indicator 6.2.1 |
| Parameters | Total population, Urban population, Rural population, Total population with access to an ISS, Urban population with access to an ISS, Rural population with access to an ISS. |
| Methodology for obtaining data | Delivered by country |
| Planned update frequency | Every 1 year |

Overview of data tables

| Data table | Name | Definition | Short description |
|------------|--|---|--|
| 3.1. | Share of total, urban and rural population with access to an improved (ISS) sanitation system | Percentage of the population (%) having access to improved sanitation systems. “Share of population with access to improved sanitation” refers to the percentage of the population with access to facilities which hygienically separate human excreta from human, animal and insect contact. | This indicator was developed by the Joint Monitoring Programme for Water Supply and Sanitation of the United Nations Children’s Fund and the World Health Organization (WHO) to help monitor progress towards one of the Millennium Development Goals. |
| 3.2. | Proportion of population using safely managed sanitation services (SMSS). | Percentage of population (%) with access to safely managed sanitation systems, which are defined as an improved sanitation facility that is both: <ul style="list-style-type: none"> a) Not shared with other households, b) and where excreta is safely disposed of in situ or treated off site. | This indicator is based on the new definition of the Sustainable Development Goal (SDG) Indicator 6.2.1, which builds upon the MDG Indicator above. It addresses public health beyond the household level, including containment and treatment of the faecal waste, which is not included in the MDG definition. |

Data table 1: Share of national population with access to an improved sanitation system (ISS)

| | Column name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|-----|------------------------|--|--|---|-----------------------------|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Year_H2020 | Year for which data is available | Use the format YYYY | Type of element: common Datatype: date Min. size: 4 Max. size: 4 Min. value: 2003 Max. value: Current year | |
| 3. | Total_Population | Total population | See Table D | | |
| 4. | Urban_Population | Urban population | See Table D | | |
| 5. | Rural_Population | Rural population | See Table D | | |
| 6. | Total_Population_ISS | Total national population with access to Improved Sanitation Systems (ISS) | Total population with access to improved sanitation system refers to the population with access to facilities which hygienically separate human excreta from human, animal and insect contact. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 7. | Urban_Population_ISS | National population living in urban areas with access to Improved Sanitation Systems (ISS) | Urban population with access to improved sanitation system refers to the population with access to facilities which hygienically separate human excreta from human, animal and insect contact. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 8. | Rural_Population_ISS | National population living in rural areas with access to Improved Sanitation Systems (ISS) | Rural population with access to improved sanitation refers to the population with access to facilities which hygienically separate human excreta from human, animal and insect contact. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 9. | Data_Collection_Method | Method of data collection. | Codes elements as defined in codelist vi. | Type of element: common Datatype: string Size: 1 | |
| 10. | Remarks | Remarks, comments or explanatory notes (free text). | | Type of element: common Datatype: string Min. size: 0 | |

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|--|--|--|-----------------|--|
| | | | Max. size: 4096 | |
|--|--|--|-----------------|--|

Data table 2: Share of population in the catchment/hydrological basin at the coastal area with access to an improved sanitation system (ISS)

| | Column Name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|-----------------------------|---|--|---|-----------------------------|
| 1. | Country_Code | Country codes as defined in the codelist | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Hydrological_Basin | Name of catchment/ hydrological basin at the coastal area | Name of catchment/ hydrological basin at the coastal area according to codelist: iii | Type of element: common Datatype: string Size: 3 | |
| 3. | Year_H2020 | Year for which data is available | Use format YYYY | Type of element: common Datatype: date Min. size: 4 Max. size: 4 Min. value: 2003 Max. value: Current year | |
| 4 | Total_Pop_Coast_Hydro_Basin | Total population living in the coastal area and in the hydrological basins (catchment) of coastal areas | See Table D | | |
| 5 | Urban_Pop_Coast_Hydro_Basin | Urban population living in the coastal area and in the hydrological basins (catchment) of coastal areas | See Table D | | |
| 6 | Rural_Pop_Coast_Hydro_Basin | Rural population living in the coastal area and in the hydrological basins (catchment) of coastal areas | See Table D | | |
| 7. | Total_Pop_Coast_ISS | Population in coastal areas and catchment/ hydrological basin at the coastal area with access to Improved Sanitation Systems (ISS). | Total population with access to improved sanitation system refers to the population with access to facilities which hygienically separate human excreta from human, animal and insect contact. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 8. | Urban_Pop_Coast_ISS | Population living in urban coastal areas and hydrological basin at | Urban population with access to improved sanitation system refers to the population with access to | Type of element: non-common Datatype: integer | |

| | | | | | |
|-----|------------------------|--|--|---|--|
| | | coastal areas with access to Improved Sanitation Systems (ISS). | facilities which hygienically separate human excreta from human, animal and insect contact. | Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 9. | Rural_Pop_Coast_ISS | Population living in rural coastal areas and hydrological basin at coastal areas with access to Improved Sanitation Systems (ISS). | Rural population with access to improved sanitation system refers to the population with access to facilities which hygienically separate human excreta from human, animal and insect contact. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 10. | Data_Collection_Method | Method of data collection. | Codes elements as defined in codelist vi. | Type of element: common Datatype: string Max. Size: 1 | |
| 11. | Remarks | Remarks, comments or explanatory notes (free text) | | Type of element: common Datatype: string Min. size: 0 Max. size: 4096 | |

Data table 3: Proportion of national population using safely managed sanitation services (SMSS).

| | Column name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|-----------------------|---|--|---|------------------------------------|
| 1. | Country_Code | Country codes as defined in the codelist | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Year_H2020 | Year for which data is available | Use format YYYY | Type of element: common Datatype: date Min. size: 4 Max. size: 4 Min. value: 2003 Max. value: Current year | |
| 3. | Total_Population | Total population | See Table D | | |
| 4. | Urban_Population | Urban population | See Table D | | |
| 5. | Rural_Population | Rural population | See Table D | | |
| 6. | Total_Population_SMSS | Total national population with access to Safely Managed Sanitation Systems (SMSS) | “Safely managed sanitation services” is defined as an improved sanitation facility considering: c) that is not shared with other households, d) and where excreta is safely disposed of in situ or treated off site. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 7. | Urban_Population_SMSS | National population living in urban areas with access to Safely Managed Sanitation Systems (SMSS) | “Safely managed sanitation services” is defined as an improved sanitation facility considering: a) that is not shared with other households, b) and where excreta is safely disposed of in situ or treated off site. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 8. | Rural_Population_SMSS | National population living in rural areas with access to safely managed sanitation systems (SMSS) | “Safely managed sanitation services” is defined as an improved sanitation facility considering: a) that is not shared with other households, b) and where excreta is safely disposed of in situ or treated off site. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |

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|-----|------------------------|--|--|--|--|
| 9. | Data_Collection_Method | Method of data collection. | Codes elements as defined in codelist vi. | Type of element: common Datatype: string Max. size: 1 | |
| 10. | Remarks | Remarks, comments or explanatory notes (free text) | | Type of element: common Datatype: string Min. size: 0 Max. size: 4096 | |

Data table 4: Proportion of population in the catchment/ hydrological basin at the coastal area using safely managed sanitation services (SMSS)

| | Column Name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|------------------------------|---|---|---|------------------------------------|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Hydrological_Basin | Name of catchment/ hydrological basin at the coastal area | Name of catchment/ hydrological basin at the coastal area according to codelist: iii | Type of element: common Datatype: string Max. size: 3 | |
| 3. | Year_H2020 | Year for which data is available | Use format YYYY | Type of element: common Datatype: date Min. size: 4 Max. size: 4 Min. value: 2003 Max. value: Current year | |
| 4. | Total_Pop_Coast_Hydro_Basin | Total population living in the coastal area and in the hydrological basins (catchment) of coastal areas | See Table D | | |
| 5. | Urban_Pop. Coast_Hydro_Basin | Urban population living in the coastal area and in the hydrological basins (catchment) of coastal areas | See Table D | | |
| 6. | Rural_Pop_Coast_Hydro_Basin | Rural population living in the coastal area and in the hydrological basins (catchment) of coastal areas | See Table D | | |
| 7. | Total_Pop_Coast_SMSS | Population in coastal areas and catchment/ hydrological basin at the coastal area with access to Safely Managed Sanitation Systems (SMSS) | The total population as of the reference year (Year_H2020) Data are collected at catchment/ hydrological basin at the coastal area or, if data not available, major coastal cities, in order to quantify the extent of land-based pressures that | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |

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|-----|------------------------|--|--|--|--|
| | | | could potentially have a downstream effect on the state/impact of the sea. | | |
| 8. | Urban_Pop_Coast_SMSS | Population living in urban coastal areas and hydrological basin at coastal areas with access Safely Managed Sanitation Systems (SMSS) | The urban population as of the reference year (Year_H2020) Data are collected at catchment/ hydrological basin at the coastal area or, if data not available, major coastal cities, in order to quantify the extent of land-based pressures that could potentially have a downstream effect on the state/impact of the sea. | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 9. | Rural_Pop_Coast_SMSS | Population living in rural coastal areas and hydrological basin at coastal areas with access to Safely Managed Sanitation Systems (SMSS) | The rural population as of the reference year (Year_H2020) Data are collected at catchment/ hydrological basin at the coastal area or, if data not available, major coastal cities, in order to quantify the extent of land-based pressures that could potentially have a downstream effect on the state/impact of the sea. | Type of element: non-common Datatype: integer Unit: 1000 inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 10. | Data_Collection_Method | Method of data collection | Codes elements as defined in codelist vi. | Type of element: common Datatype: string Size: 1 | |
| 11. | Remarks | Remarks, comments or explanatory notes (free text) | | Type of element: common Datatype: string Min. size: 0 Max. size: 4096 | |

IND4. Dataset: Municipal Wastewater Management

Dataset definition

| | |
|--------------------------------|--|
| Policy theme | Municipal wastewater management |
| Short name | Municipal wastewater collected, treated and used |
| Indicators | 4.1, 4.2 and 4.3 |
| Key words | Wastewater, collection, treatment, management, use |
| Spatial coverage | National and catchment/ hydrological basin at the coastal area |
| Dataset relevance | This dataset is relevant for populating H2020 Water indicators 4.1, 4.2 and 4.3 – see Annex 1. Indicator 4.1 is also relevant for SDG 6.3.1. Indicator 4.2 can be linked to SDG Target 6.3. Indicator 4.3 is relevant to monitor the implementation of the Regional Plan on reduction of BOD ₅ and both 4.1 and 4.3 can be linked to Ecological Objective 5 – Eutrophication. |
| Parameters | Volume of municipal wastewater collected, volume of municipal wastewater treated, volume of wastewater subject to which treatment level (primary, secondary and tertiary), total volume of direct reuse of municipal wastewater, volume of direct reuse of municipal wastewater per type of activity, volume of direct reuse of municipal wastewater per level of treatment. |
| Methodology for obtaining data | Delivered by country |
| Planned update frequency | Every 1 year |

Overview of data tables

| Data table | Name | Definition | Short description |
|------------|---|--|---|
| 4.1. | <p>Municipal wastewater collected and wastewater treated</p> <p><i>Additional information that supplements this Indicator</i></p> <ul style="list-style-type: none"> Percentage of the treated wastewater according to the type of treatment (primary, secondary, tertiary). Total annual design capacity of functional facilities. Total number of functional municipal wastewater treatment facilities. | <p>Volume of collected and treated municipal wastewater per year per country, including type of treatment, at the national and catchment/ hydrological basin at the coastal area.</p> <p>Wastewater treatment is defined as the process of removing contaminants from wastewater according to the established national standards on effluent quality, to allow for its discharge to the environment without adverse impact on public health and the ecosystem.</p> | <p>This indicator provides information on the collection and treatment level of wastewater in the region and can be considered as a “response” indicator. It helps identifying communities where wastewater treatment action is required, while helping to assess where progress has been made.</p> |

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|------|--|---|--|
| 4.2. | Direct use of treated municipal wastewater | <p>Volume of treated and used municipal wastewater per year and per country at the national level, including type of treatment.</p> <p>Volume of direct treated wastewater intended for reuse, with no or little prior dilution with freshwater during most of the year.</p> <p>“Direct use” refers to the introduction of treated wastewater via pipelines and other necessary infrastructure directly from a water treatment plant to a distribution system. An example would be the distribution of treated wastewater to be used directly in agricultural irrigation.</p> | <p>Wastewater use is a widespread practice in the Mediterranean and is an important non-conventional source of water in a context of water scarcity and increased water demands. However, the management and standards of wastewater use vary greatly across countries and in many cases raw or insufficiently treated wastewater can pose health hazards and environmental risks.</p> <p>This indicator encompasses the use of water which is generated from municipal wastewater or any other urban marginal water and treated to a standard that is appropriate for its intended use.</p> |
| 4.3. | Release of nutrients from municipal effluents | <p>Release of key nutrients (BOD, N and P) from municipal wastewater originating from urban agglomerations of more than 2000 inhabitants.¹</p> | <p>This indicator is a “pressure” indicator, providing insight into the quality of discharged municipal effluents and the degree to which nutrients from urban wastewater may contribute to the increased concentration of nutrients in certain areas of the Mediterranean Sea.</p> |

¹ As per requirements of regional plan on the reduction of BOD from urban wastewater in the framework of the implementation of Article 15 of the LBS Protocol

Data table 1: Municipal wastewater collected and wastewater treated at the national level

| | Column Name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|----------------------------|---|--|--|--|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Year_H2020 | Year for which data is available | Use format YYYY | Type of element: common Datatype: date Min. size: 4 Max. size: 4 Min. value: 2003 Max. value: Current year | |
| 3. | Volume_Collected_MWW | Volume of municipal wastewater collected by public sewage networks and from storage tanks per year | Volume in million m ³ (Mm ³) of municipal wastewater collected, which is estimated based on the volume of wastewater entering the WWTPs, per year | Type of element: non-common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | uwwWasteWater Treated <i>The value should be reported for an UWWTP that has a design capacity more than 100 000 p.e. (link to E-PRTR facility).</i> |
| 4. | Volume_Treated_MWW | Volume of municipal wastewater treated in wastewater treatment plants per year | Volume in million m ³ of municipal wastewater treated, which is estimated on wastewater leaving the WWTPs per year | Type of element: non-common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 5. | Fraction_Primary_Treatment | Fraction of municipal wastewater subject to primary treatment per year. "Primary treatment" refers to physical and/or chemical process involving settlement of suspended solids, or other processes in which | Percentage of municipal wastewater discharged after primary treatment expressed as a fraction of volume [%] of treated municipal wastewater per year | Type of element: non-common Datatype: decimal Decimal precision: 2 Unit: % v/v Min. Size:3 Max. size: 5 Min. value: 0 Max. value: 100 | uwwPrimaryTreatment |

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|----|------------------------------|---|--|--|-----------------------|
| | | the BOD5 of the incoming waste water is reduced by at least 20% before discharge and the total suspended solids of the incoming waste water are reduced by at least 50%. | | | |
| 6. | Fraction_Secondary_Treatment | <p>Fraction of municipal wastewater subject to secondary treatment per year.</p> <p>“Secondary (biological) treatment” uses biological process to decompose most of the organic matter, resulting in the reduction of 70-90% of BOD5, and remove about 20 - 30% of the nutrients. Primary treatment alone does not remove ammonium, whereas the removal rate of ammonium by secondary (biological) treatment is around 75%.</p> | Percentage of municipal wastewater discharged after secondary treatment expressed as a fraction of volume [%] of treated municipal wastewater per year | <p>Type of element: non-common Datatype: decimal Decimal precision: 2 Unit: % v/v Min. Size:3 Max. size: 5 Min. value: 0 Max. value: 100</p> | uwwSecondaryTreatment |
| 7. | Fraction_Tertiary_Treatment | <p>Fraction of municipal wastewater subject to tertiary treatment per year.</p> <p>“Tertiary (advanced or more stringent) treatment” further removes nutrients (nitrogen and/or phosphorus) and/or any other pollutant affecting the quality or a specific use of water:</p> | <p>Percentage of municipal wastewater discharged after tertiary treatment expressed as a fraction of volume [%] of treated municipal wastewater per year</p> <p>The sum of % of MWW receiving primary, secondary and tertiary must equal 100%.</p> | <p>Type of element: non-common Datatype: decimal Decimal precision: 2 Unit: % v/v Min. Size:3 Max. size: 5 Min. value: 0 Max. value: 100</p> | |

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|-----|------------------------|---|---|---|---------------------|
| | | microbiological pollution, colour, etc. | | | |
| 8. | Design_Capacity1 | Total annual design capacity of functional facilities (Million m ³ /year) | Volume in million m ³ per year | Type of element: non-common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 9. | Design_Capacity2 | Total annual design capacity of functional facilities in p.e. (if volume not available) | Population Equivalent (p.e.) | Type of element: non-common Unit: p. e. Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | rcaPlantsCapacity54 |
| 10. | Number_MWWTPs | Total number of functional Municipal Wastewater Treatment Plants | Number | Type of element: common Datatype: integer Min. size: 1 Max. size: 6 Min. value: 0 Max. value: 100 000 | rcaPlants54 |
| 11. | Data_Collection_Method | Method of data collection | Codes elements as defined in codelist vi. | Type of element: common Datatype: string Size: 1 | |
| 12. | Remarks | Remarks, comments or explanatory notes (free text). | | Type of element: common Datatype: string Min. size: 0 Max. size: 4096 | |

Data table 2: Municipal wastewater collected and wastewater treated per catchment/ hydrological basin at the coastal area

| | Column Name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|----------------------------------|---|--|---|------------------------------------|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Hydrological_Basin | Name of catchment/ hydrological basin at the coastal area | Name of catchment/ hydrological basin at the coastal area according to codelist: iii | Type of element: common Datatype: string Size: 3 | |
| 3. | Year_H2020 | Year for which data is available | Use format YYYY | Type of element: common Datatype: date Min. size: 4 Max. size: 4 Min. value: 2003 Max. value: Current year | |
| 4. | Volume_MWW_Collected_Hydro_Coast | Volume of municipal wastewater collected by public sewage networks and from storage tanks in the coastal hydrological basin | Volume in million m ³ of municipal wastewater collected per year | Type of element: non-common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 5. | Volume_MWW_Collected_Coast | Volume of municipal wastewater collected by public sewage networks and from storage tanks in coastal cities or coastal area | Volume in million m ³ of municipal wastewater collected per year | Type of element: non-common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 6. | Volume_Treated_MWW_Hydro_Coast | Volume of of wastewater treated in wastewater treatment plants treated in the coastal hydrological basin | Volume in million m ³ of municipal wastewater treated per year | Type of element: non-common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 7. | Volume_Treated_MWW_Coast | Volume of of wastewater treated in wastewater treatment plants treated in the coastal cities or coastal area | Volume in million m ³ of municipal wastewater treated per year | Type of element: non-common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 | |

| | | | | | |
|-----|------------------------------|---|---|---|---|
| | | | | Min. value: 0 Max. value: 1000 000 000 | |
| 8. | Fraction_Primary_Treatment | <p>Fraction of municipal wastewater subject to primary treatment per year.</p> <p>“Primary treatment” refers to physical and/or chemical process involving settlement of suspended solids, or other processes in which the BOD5 of the incoming waste water is reduced by at least 20% before discharge and the total suspended solids of the incoming waste water are reduced by at least 50%.</p> | <p>Fraction of municipal wastewater discharge after primary treatment expressed as a fraction of volume [%] of treated municipal wastewater per year</p> <p>The sum of % of treated MWW receiving primary, secondary and tertiary must equal 100%.</p> | <p>Type of element: non-common Datatype: decimal Decimal precision: 2 Unit: % v/v Min. size: 3 Max. size: 5 Min. value: 0 Max. value: 100</p> | <p>aggPercPrimTreatment</p> <p>But it is generated based on p.e. and not measured</p> |
| 9. | Fraction_Secondary_Treatment | <p>Fraction of municipal wastewater subject to secondary treatment per year.</p> <p>“Secondary (biological) treatment” uses biological process to decompose most of the organic matter, resulting in the reduction of 70-90% of BOD5, and remove about 20 - 30% of the nutrients. Primary treatment alone does not remove ammonium, whereas the removal rate of ammonium by secondary (biological) treatment is around 75%.</p> | <p>Fraction of municipal wastewater discharged after secondary treatment expressed as a fraction of volume [%] of treated municipal wastewater per year</p> <p>The sum of % of treated MWW receiving primary, secondary and tertiary must equal 100%.</p> | <p>Type of element: non-common Datatype: decimal Decimal precision: 2 Unit: % v/v Min. size: 3 Max. size: 5 Min. value: 0 Max. value: 100</p> | |
| 10. | Volume_Tertiary_Treatment | Volume of municipal wastewater subject to | Volume of municipal wastewater discharged after tertiary treatment expressed as a fraction of volume | <p>Type of element: non-common Datatype: decimal Decimal precision: 2</p> | |

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|-----|------------------------|---|--|---|---------------------|
| | | tertiary treatment per year. "Tertiary (advanced or more stringent) treatment" further removes nutrients (nitrogen and/or phosphorus) and/or any other pollutant affecting the quality or a specific use of water: microbiological pollution, colour, etc. | [%] of treated municipal wastewater per year The sum of % of treated MWW receiving primary, secondary and tertiary must equal 100%. | Unit: % v/v Min. size: 3 Max. size: 5 Min. value: 0 Max. value: 100 | |
| 11. | Design_Capacity_Coast1 | Total annual design capacity of functional facilities in the coastal areas (Million m ³ /year) | Volume in million m ³ per year | Type of element: non-common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | rcaPlantsCapacity54 |
| | Design_Capacity_Coast2 | Total annual design capacity of functional facilities in P.E in the coastal (if volume not available) | Population Equivalent (p.e.) | Type of element: non-common Unit: p. e. Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 12. | Number_Coast_MWWTPs | Total number of functional Municipal Wastewater Treatment Plants that discharge directly in the Mediterranean Sea or in hydrological basins that flow into the Mediterranean. | Number | Type of element: common Datatype: integer Min. size: 1 Max. size: 6 Min. value: 0 Max. value: 100 000 | |
| 13. | Data_Collection_Method | Method of data collection | Codes elements as defined in codelist vi. | Type of element: common Datatype: string Size: 1 | |
| 14. | Remarks | Remarks, comments or explanatory notes (free text). | | Type of element: common Datatype: string Min. size: 0 | |

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|--|--|--|--|-----------------|--|
| | | | | Max. size: 4096 | |
|--|--|--|--|-----------------|--|

Data table 3: Direct use of treated municipal wastewater at the National level

| | Column Name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|------------------------------------|---|--|---|-----------------------------|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Year_H2020 | Year for which data is available | Use format YYYY | Type of element: common Datatype: date Min. size: 4 Max. size: 4 Min. value: 2003 Max. value: Current year | |
| 3. | Total_Volume_Direct_Reuse | Total volume of direct reuse of municipal wastewater | Real measurement of treated wastewater intended to be reused | Type of element: common Datatype: float Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 4. | Fraction_Primary_Treatment_Reuse | Fraction of used municipal wastewater subject to primary treatment per year. "Primary treatment" refers to physical and/or chemical process involving settlement of suspended solids, or other processes in which the BOD5 of the incoming waste water is reduced by at least 20% before discharge and the total suspended solids of the incoming waste water are reduced by at least 50%. | Fraction of used municipal wastewater after primary treatment expressed as a fraction of volume [%] of treated municipal wastewater per year | Type of element: non-common Datatype: decimal Decimal precision: 2 Unit: % v/v Min. size: 3 Max. size: 5 Min. value: 0 Max. value: 100 | |
| 5. | Fraction_Secondary_Treatment_Reuse | Fraction of used municipal wastewater subject to | Fraction of used municipal wastewater after secondary treatment expressed as a fraction of | Type of element: non-common Datatype: decimal | |

| | | | | | |
|----|------------------------------------|--|--|---|--|
| | | <p>secondary treatment per year.</p> <p>“Secondary (biological) treatment” uses biological process to decompose most of the organic matter, resulting in the reduction of 70-90% of BOD5, and remove about 20 - 30% of the nutrients. Primary treatment alone does not remove ammonium, whereas the removal rate of ammonium by secondary (biological) treatment is around 75%</p> | <p>volume [%] of treated municipal wastewater per year</p> | <p>Decimal precision: 2 Unit: % v/v Min. size: 3 Max. size: 5 Min. value: 0 Max. value: 100</p> | |
| 6. | Fraction_Tertiary_Treatment_Reuse | <p>Fraction of used municipal wastewater subject to tertiary treatment per year.</p> <p>“Tertiary (advanced or more stringent) treatment” further removes nutrients (nitrogen and/or phosphorus) and/or any other pollutant affecting the quality or a specific use of water: microbiological pollution, colour, etc.</p> | <p>Fraction of used municipal wastewater after tertiary treatment expressed as a fraction of volume [%] of treated municipal wastewater per year</p> | <p>Type of element: non-common Datatype: decimal Decimal precision: 2 Unit: % v/v Min. size: 3 Max. size: 5 Min. value: 0 Max. value: 100</p> | |
| 7. | Total_Volume_Direct_Reuse_Activity | <p>Volume of direct reuse of municipal wastewater per type of activity</p> | <p>Codes elements as defined in codelist vii</p> | <p>Type of element: common Unit: Mm³/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000</p> | <p>dcplrrigation</p> <p><i>This value should be reported if part or all the treated waste water is reused. Report “R” in case of irrigation use of treated waste</i></p> |

| | | | | | |
|----|------------------------|---|--|--|--|
| | | | | | <i>water outside the treatment plant site, "INF" in case reuse for groundwater recharge and other in case of other reuse outside the treatment plant site.</i> |
| 8. | Data_Collection_Method | Method of data collection. | Codes elements as defined in codelist vi | Type of element: common Datatype: string Size: 1 | |
| 9. | Remarks | Remarks, comments or explanatory notes (free text). | | Type of element: common Datatype: string Min. size: 0 Max. size: 4096 | |

Data table 4: Release of nutrients from municipal effluents per catchment/ hydrological basin at the coastal area

| | Column name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|--|---|--|---|------------------------------------|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Hydrological_Basin | Name of catchment/ hydrological basin at the coastal area | Name of catchment/ hydrological basin at the coastal area | String codelist: iii Type of element: common Datatype: string Size: 3 | |
| 3. | Year_H2020 | Year for which data is available | Use format YYYY | Type of element: common Datatype: date Min. size: 4 Max. size: 4 Min. value: 2003 Max. value: Current year | |
| 4. | Total_Pop_Coast_Hydro_Basin | Total population living in the coastal area and in the hydrological basins (catchment) of coastal areas | See Table D | | |
| 4. | Total_Population_≥2000 Inhabitants_Hydro_Coast | (In case data for the total population in the hydrological basin is not available) Total population in agglomerations ≥ 2000 inhabitants located within the hydrological basin of coastal areas and within coastal areas that discharge directly in the Mediterranean (in case total population in coastal areas and coastal | See Table D | | |

| | | | | | |
|-----|---|---|---|---|--|
| | | hydrological basins is not available) | | | |
| 5. | Total_Population_≥2000 Inhabitants_Coast | Total population living in coastal agglomerations ≥ 2000 inhabitants | See Table D | | |
| 6. | Total_UWW_Generated_Hydro_Coast | Estimated urban wastewater generated annually in the coastal hydrological basin in p. e. | Sum of generated urban wastewater (in population equivalent) in the hydrological basins (catchments) of coastal areas and in the coastal agglomerations directly discharging into the coastal areas | Type of element: common Unit: p. e. Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 7. | Total_UWW_Generated_Coast | Estimated urban wastewater generated annually in the coastal agglomerations in p. e. | Generated urban wastewater (in population equivalent) in the coastal agglomerations directly discharging into the coastal areas | Type of element: common Unit: p. e. Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 8. | Total_Volume_Discharged_MWWTP_Hydro_Coast | Total volume of urban wastewater discharged annually by WWTPs in the hydrological basin (catchment) of coastal area and directly in the coastal areas | Total treated and discharged volume of urban wastewater from existing Municipal WWTPs in the hydrological basin (catchments) of coastal areas and in the coastal agglomerations | Type of element: non-common Datatype: decimal Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 9. | Total_Volume_Discharged_MWWTP_Coast | Total volume of urban wastewater discharged annually by WWTPs directly in the coastal areas | Total treated and discharged volume of urban wastewater from existing Municipal WWTPs in the coastal agglomerations | Type of element: non-common Datatype: decimal Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 10. | Estimated_BOD_Load_Treat | Estimated BOD load discharged annually from Municipal WWTPs | BOD loads from treated WWTP after primary, secondary and tertiary treatment | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | uwwBODDischargeMeasured <i>The value (either measured, calculated or estimated) should be reported for an</i> |

| | | | | | |
|-----|---------------------------------------|---|--|---|---|
| | | | | | <i>UWWTP that has a design capacity more than 100 000 p.e. (link to E-PRTR facility).</i> |
| 11. | Estimated_TN_Load_Treat | Estimated Total Nitrogen load discharged annually from Municipal WWTPs | TN loads from treated WWTP after primary, secondary and tertiary treatment | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | uwwNIncoming Measured |
| 12 | Estimated_TP_Load_Treat | Estimated Total Phosphorus load discharged annually from Municipal WWTPs | TP loads from treated WWTP after primary, secondary and tertiary treatment | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | uwwPIncoming Measured |
| 13 | | Estimated BOD load discharged annually from untreated MWW | Estimated BOD loads for wastewater discharged without treatment in the hydrological basin (catchments) of coastal areas and in the coastal agglomeration. Person load BOD, g/person/d (15-80); COD, g/person/d (25-200) | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 14 | Total_Volume_Untreated_WW_Hydro_Coast | Total volume of wastewater discharged without treatment in the hydrological basin (catchment) of coastal area and directly in the coastal areas | Total volume of wastewater discharged without treatment in the hydrological basin (catchment) of coastal area and directly in the coastal areas | Type of element: non-common Datatype: decimal Unit: Mm ³ /yr Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |
| 15 | TN_Load_MWW_Untreated_Hydro_Coast | Estimated TN load discharged annually from untreated MWW | Estimated TN loads for wastewater discharged without treatment in the hydrological basin (catchments) of coastal areas and in the coastal agglomeration. Person load Nitrogen g/person/d (2-15) | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | rcaNDischarge d54 |

| | | | | | |
|----|--------------------------------------|--|---|--|----------------------|
| 16 | TP_Load_MWW Untreated_Hydro_Coast | Estimated TP load discharged annually from MWW collected without treatment | Estimated TP loads for wastewater discharged without treatment in the hydrological basin (catchments) of coastal areas and in the coastal agglomeration. Person load Phosphorus, g/person/d (1-3) | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | rcaPDischarge d54 |
| 17 | Total_BOD_Load_Hydro_Coast | Total BOD load discharged annually from treated and untreated MWW | Total discharged BOD loads from treated and untreated wastewater originating in agglomerations (of size ≥ 2000) located in the hydrological basin of coastal areas and those directly discharging into the Mediterranean, as defined by the LBS Protocol | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 18 | TN_Load_Hydro_Coast | Total Nitrogen load discharged annually from treated and untreated MWW | Total discharged Nitrogen loads from treated and untreated wastewater originating in agglomerations (of size ≥ 2000) located in the hydrological basin of coastal areas and those directly discharging into the Mediterranean, as defined by the LBS Protocol | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 19 | TP_Load_Hydro_Coast | Total Phosphorus load discharged annually from treated and untreated MWW | Total discharged Phosphorus loads from treated and untreated wastewater originating in agglomerations (of size ≥ 2000) located in the hydrological basin of coastal areas and those directly discharging into the Mediterranean, as defined by the LBS Protocol | Type of element: common Datatype: decimal Unit: Ton/yr Min. size: 1 Max. size: 10 Min. value: 0 Max. value: 1000 000 000 | |
| 20 | Data_Collection_Method | Method of data collection. | Codes elements as defined in codelist vi. | Type of element: common Datatype: string Size: 1 | |
| 21 | Remarks | Remarks, comments or explanatory notes (free text). | | Type of element: common Datatype: string Min. size: 0 Max. size: 4096 | |

IND5. Dataset: Coastal and Marine Water Quality

Dataset definition

| | |
|--------------------------------|--|
| Policy theme | Nutrient concentrations |
| Short name | Nutrients |
| Indicators | 5.1 and 5.2 |
| Key words | Nutrient concentrations, bathing water quality |
| Spatial coverage | Transitional waters, Coastal waters and Marine waters |
| Dataset relevance | This dataset is relevant for populating H2020 Water Indicators– see Annex 1. These indicators are directly linked to the Ecological Objectives 5 – Eutrophication and 9 – Contaminants, as they correspond to IMAP’s common indicators 13 and 21, respectively. |
| Parameters | Mean TN and TP summer and winter, Seasonal aggregated (Winter and Summer) TN and TP, Spatial aggregated TN and TP, Station, Depth, Mean Orthophosphate (o-PO ₄) concentration, mean Nitrate (NO ₃) concentration, mean Ammonium (NH ₄) concentration, mean Nitrate (NO ₃) concentration, Number of bathing water sites in the Mediterranean and on Intestinal Enterococci (IE) concentrations at the coastal monitoring sites. |
| Methodology for obtaining data | Delivered by country |
| Planned update frequency | Every 1 year |

Overview of data tables

| Data table | Name | Definition | Short description |
|------------|---|--|---|
| 5.1. | Nutrient concentrations in transitional, coastal and marine waters | <p>Main indicator: The levels and trends in total nitrogen (TN) and total phosphorus (TP) concentration in the transitional, coastal and marine waters of the Mediterranean Sea.</p> <p>Sub-indicator: These sub indicators (NO₃, NO₂, NH₄, o-PO₄) refer to the levels and trends in: nitrate, nitrite, ammonia and ortho-phosphate concentration in transitional, coastal and marine waters of the Mediterranean Sea.</p> <p>Transitional waters are surface waters in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by fresh waters</p> <p>Coastal waters are surface waters at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters.</p> | <p>The Mediterranean Sea is one of the most oligotrophic (poor in nutrients) oceanic systems. However, some coastal hotspots receive excessive loads of nutrients from sewage effluents, river fluxes, aquaculture farms, fertilizers, and industrial facilities, resulting into intense eutrophic phenomena.</p> <p>This indicator reflects the concentration of key nutrients in the water column and provides information relative to eutrophication. It is a «state» indicator and can relate more directly to land-based sources of nutrients, in particular when assessed in combination with indicators 4.2.</p> |

| | | | |
|------|------------------------------|--|---|
| | | Marine waters are the part of the ocean that extends further to the coastal waters to the open seas | |
| 5.2. | Bathing water quality | <p><u>Percentage of intestinal enterococci concentration measurements in bathing water sites within established standards</u></p> <p>Limit values are (in CFU/100 mL)²:</p> <ul style="list-style-type: none"> - <100 (excellent) - 101-200 (good) - 185 (sufficient) >185 (poor) <p>In case data for E. coli is available, this can be provided as complementary indicator</p> | <p>Tourism is an important component of socio-economic development in the Mediterranean region and therefore it is crucial to monitor the water quality of bathing sites to ensure the safety of public and visitors.</p> <p>Enterococci sp. has been demonstrated to be an appropriate indicator for faecal bacteria in brackish and marine waters and is known to be a good indicator for human pathogens in wastewater discharges.</p> |

² Methods on how to determine this are in the Annex I and II of the EC directive on Bathing Water (2006) <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007> and the Criteria and Standards for Microbial Water Quality (Decision IG.20/9) in the frame of the implementation of Article 7 of the LBS Protocol from the Barcelona Convention

Data table 1: Nutrient concentrations in transitional, coastal and marine waters (Station)

| | Column Name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|-----------------------|---|---|--|------------------------------------|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | National_Station_ID | Station code | Use the former sampling guidelines provided by UNEP-MAP | Type of element: non-common Datatype: string Min. size: 0 Max. size: 255 | |
| 3. | National_Station_Name | Name of the station | Use the former sampling guidelines provided by UNEP-MAP | Type of element: non-common Datatype: string Min. size: 0 Max. size: 255 | |
| 4. | Longitude | Longitude in the reference system WGS84 decimal degrees | This is a required, not null field. Use the common geodetic datum WGS84. The bathing water must be located within country border. | Type of element: non-common Datatype: decimal Unit: decimal degrees Datatype: decimal Minimum size:7 Maximum size: 9 Minimum value: -180 Maximum value: 180 Decimal precision: 6 | |
| 5. | Latitude | Latitude in the reference system WGS84 decimal degrees | This is a required, not null field. Use the common geodetic datum WGS84. The bathing water must be located within country border. | Type of element: non-common Datatype: decimal Unit: decimal degrees Minimum size:7 Maximum size: 8 Minimum value: -90 Maximum value: 90 Decimal precision: 6 | |
| 6. | Closest_Coast | Distance from the station to the Coast (km) | Measured distance between the station point and closest coast | Type of element: non-common Datatype: decimal Unit: km Min. value: 0 Max. value: 1000 | |

| | | | | | |
|-----|-----------|---|--|--|--|
| 7. | Sea_Depth | Depth of the Sea bed (m) | Measured distance between the Sea depth and the station point location | Type of element: non-common Datatype: decimal Unit: m Min. value: 0 Max. value: 1000 | |
| 8. | Mixing | Mixing characteristics of the water column in the station point, enter one of the values in the list (FM = Fully mixed, PM = Partially mixed, VS = Vertically stratified) | Degree of mixing of water column | Type of element: common Datatype: string Min. size: 2 Max. size: 2 | |
| 9. | Area_Type | Type of monitored area, enter one of the values in the list (HS = Hot spot, PSA = Protected Sea Area, LTER = Long Term Ecological Research Network, O = Other) | Type of station point | Type of element: common Datatype: string Min. size: 1 Max. size: 4 | |
| 10. | Remarks | Remarks, comments or explanatory notes (free text). | | Type of element: common Datatype: string Min. size: 0 Max. size: 4096 | |

Data table 2: Nutrient concentrations in transitional, coastal and marine waters (Parameters)

| | Column Name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|-------------------------|---|--|---|-----------------------------|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | National_Station_ID | Station code | Use the former sampling guidelines provided by UNEP-MAP | Type of element: non-common Datatype: string Min. size: 0 Max. size: 255 | |
| 3. | Sampling_Time | Date and time of sampling | Use the format YYYY-MM-DD HH:MM | Type of element: common Datatype: date Min. size: 8 Max. size: 8 Min. value: 2003-01-01 Max. value: Current date | |
| 4. | Sample_ID | Sample code in case multiple replicas are made with the same value of Year, Month, Day and Time | Use the former sampling guidelines provided by UNEP-MAP | Type of element: non-common Datatype: string Min. size: 0 Max. size: 255 | |
| 5. | Determinant_Nutrients | Name of the chemical-physical or nutrient parameter, enter one of the values in the codelist: v | Codelist v | Type of element: non-common Datatype: string Min. size: 0 Max. size: 10 | |
| 6. | Unit_Nutrients_Seawater | Unit of parameters according to codelist v | Codelist v | Type of element: common Datatype: string Min. size: 2 Max. size: 5 | |
| 7. | Concentration_Flag | Enter the value '<' if the concentration value is lower than the limit of quantification or the value | Concentration status | Type of element: common Datatype: string Min. size: 2 Max. size: 5 | |

| | | | | | |
|-----|------------------------|--|--|--|--|
| | | 'l' if the concentration value is lower than the limit of detection. In other cases leave the field empty. | | | |
| 8. | Concentration | Concentration value | Codelist v | Type of element: non-common Datatype: decimal Unit: depends on the parameter (codelist v) Min. value: 0 Max. value: 1000 | |
| 9. | Sample_Depth | Depth of Sample collection (m) | Measured distance between the Sea depth and the station point location | Type of element: non-common Datatype: decimal Unit: m Min. value: 0 Max. value: 1000 | |
| 10. | Data_Collection_Method | Method of data collection. | Codes elements as defined in codelist vi. | Type of element: common Datatype: string Size: 1 | |
| 11. | Remarks | Remarks, comments or explanatory notes (free text). | | Type of element: common Datatype: string Min. size: 0 Max. size: 4096 | |

Data table 3: Bathing Water Quality

| | Column Name | Column definition | Methodology | Data specifications | Equivalent in WISE if exist |
|----|--------------------------|---|--|--|--|
| 1. | Country_Code | Country codes as defined in the codelist. | ISO 3166-alpha-2, Codes elements as defined in codelist: i | Type of element: common Datatype: string Size: 2 | |
| 2. | Bathing_Water_Name | Name of bathing water. | Use the former sampling guidelines provided by UNEP-MAP | Datatype: string Minimum size: 1 Maximum size: 100 | |
| 3. | Short_Bathing_Water_Name | Short name of bathing water. | Must be ≤ 20 characters. If Bathing Water Name ≤ 20 characters it can be used for ShortBathingWaterName as well. | Datatype: string Minimum size: 1 Maximum size: 20 | |
| 4. | Bathing_Water_ID | Unique identification code of bathing water | This is a required, not null field. Must be unique according to each country guidance | Datatype: string Minimum size: 3 Maximum size: 24 | |
| 5. | Longitude | Longitude in the reference system WGS84 decimal degrees | This is a required, not null field. Use the common geodetic datum WGS84. The bathing water must be located within country border. | Datatype: decimal Maximum size: 9 Minimum value: -180 Maximum value: 180 Decimal precision: 4 Unit: decimal degrees | <i>Same coordinate system used in WISE</i> |
| 6. | Latitude | Latitude in the reference system WGS84 decimal degrees | This is a required, not null field. Use the common geodetic datum WGS84. The bathing water must be located within country border. | Datatype: decimal Maximum size: 8 Minimum value: -90 Maximum value: 90 Decimal precision: 4 Unit: decimal degrees | <i>Same coordinate system used in WISE</i> |
| 7. | Start_Date | Start date of the bathing season | This is a required, not null field. Format: YYYY-MM-DD (year-month-day); YYYY must be the same as attribute of Bathing_Sampling_Year (YYYY) Must be < End_Date | Datatype: date | |
| 8. | End_Date | End date of the bathing season | This is a required, not null field. Format: YYYY-MM-DD (year-month-day); YYYY must be the same as attribute of Bathing_Sampling_Year (YYYY) Must be > Start_Date | Datatype: date | |

| | | | | | |
|-----|--|--|--|---|---|
| 9. | Bathing_Sampling_Time | Date and time of sampling | This is a required, not null field. Format: YYYY-MM-DD (year-month-day). | Datatype: date | |
| 10. | Bathing_Classification_UNEP-MAP_Criteria_Standards | Classification of the bathing site according to the criteria and standards agreed for the Mediterranean ³ | % of samples < 100 CFU : Excellent water 101 – 200 CFU ⁴ : Good 185 ⁵ CFU: Sufficient > 185 ⁶ : Poor | Datatype: string Minimum size: 4 Maximum size: 100 | Class |
| 11. | Other_Bathing_Classification_Used | Classification of the bathing site when it differs from UNEP-MAP classification | Provide the used Criteria and Standards (please provide the reference document) | Datatype: string Minimum size: 4 Maximum size: 100 | |
| 12. | Concentration_IE | Measured concentration of intestinal enterococci per sample in "colony forming unit" per 100 ml (cfu/100ml). | This is a required, not null field. Minimum value is minimal detection limit. Zero value is replaced by minimal detection limit. Upper detection limit: 35000 with 2 dilutions for all methods. | Datatype: decimal Maximum size: 10 Maximum value: 35000 Unit: cfu / 100 ml | ConcIE <i>Same parameter, unit and protocol are used in WISE under the Directive 2006/7/EC</i> |
| 13. | Concentration_EC | Measured concentration of <i>Escherichia coli</i> per sample in "colony forming unit" per 100 ml (cfu/100ml). | This is a required, not null field. Minimum value is minimal detection limit. Zero value is replaced by minimal detection limit. Upper detection limit: 35.000 with 2 dilutions for all methods. | Datatype: decimal Maximum size: 10 Maximum value: 35000 Unit: cfu / 100 ml | ConcEC <i>Same parameter, unit and protocol are used in WISE under the Directive 2006/7/EC</i> |
| 14. | Remarks | Remarks, comments or explanatory notes (free text). | | Datatype: string Type of element: common Min. size: 0 Max. size: 4096 | |

³ UNEP/MED, 2012. Decision IG.20/9 - Criteria and Standards for bathing waters quality in the framework of the implementation of Article 7 of the LBS Protocol. <https://wedocs.unep.org/rest/bitstreams/8498/retrieve>

⁴ 95th percentile intestinal enterococci/100 mL (applying the formula 95th Percentile = antilog ($\mu + 1,65 \sigma$))

⁵ 90th percentile intestinal enterococci/100 mL (90th Percentile=antilog ($\mu + 1,282 \sigma$), μ =calculated arithmetic mean of the log10 values; σ = calculated standard deviation of the log10 values)

⁶ 90th percentile intestinal enterococci/100 mL (90th Percentile=antilog ($\mu + 1,282 \sigma$), μ =calculated arithmetic mean of the log10 values; σ = calculated standard deviation of the log10 values)

Annex 1: Codelists

i. List of country codes

Type: Fixed

| Value | Definition |
|-------|------------|
| DZ | Algeria |
| EG | Egypt |
| IL | Israel |
| JO | Jordan |
| LB | Lebanon |
| LY | Libya |
| MA | Morocco |
| PS | Palestine |
| TN | Tunisia |

ISO 3166-1-alpha-2 code

http://www.iso.org/iso/home/standards/country_codes/country_names_and_code_elements.htm

ii. Codelist of Administrative Mediterranean Regions

| Country | Region |
|---------|----------------|
| Albania | Peqini |
| Albania | Vlora |
| Albania | Saranda |
| Albania | Delvina |
| Albania | Kavaja |
| Albania | Fieri |
| Albania | Kruja |
| Albania | Durres |
| Albania | Kurbini |
| Albania | Lushnja |
| Albania | Mallakastra |
| Albania | Elbasan |
| Albania | Shkodra |
| Albania | Lezha |
| Albania | Tirana |
| Algeria | El Tarf |
| Algeria | Tlemcen |
| Algeria | Ain Temouchent |
| Algeria | Oran |
| Algeria | Mostaganem |
| Algeria | Chlef |
| Algeria | Tipaza |
| Algeria | Alger |
| Algeria | Boumerdes |

| | |
|--------------------|------------------------|
| Algeria | Tizi Ouzou |
| Algeria | Bejaia |
| Algeria | Jijel |
| Algeria | Skikda |
| Algeria | Annaba |
| Bosnia Herzegovina | Coastal Area - Neum |
| Bosnia Herzegovina | Trebisnjica |
| Bosnia Herzegovina | Cetina |
| Bosnia Herzegovina | Neretva |
| Croatia | Primorsko-Goranska |
| Croatia | Zadarska |
| Croatia | Licko-Senjska |
| Croatia | Sibensko-Kninska |
| Croatia | Istarska |
| Croatia | Dubrovacko-Neretvanska |
| Croatia | Splitsko-Dalmatinska |
| Cyprus | Cyprus |
| Egypt | Alexandria |
| France | Champagne-Ardenne |
| France | Franche-Comte |
| France | Herault |
| France | Alpes maritimes |
| France | Pyrenees orientales |
| France | Aude |
| France | Bourgogne |

| | |
|---------|----------------------------|
| France | Provence-Alpes-Cote d'Azur |
| France | Gard |
| France | Corse |
| France | Bouches du Rhone |
| France | Rhone-Alpes |
| Greece | Aegean Islands |
| Greece | West Macedonia |
| Greece | West Continental Greece |
| Greece | West Peloponnes |
| Greece | North Peloponnes |
| Greece | Attica |
| Greece | East Peloponnes |
| Greece | Epirus |
| Greece | Thrace |
| Greece | East Macedonia |
| Greece | East Continental Greece |
| Greece | Crete |
| Greece | Central Macedonia |
| Greece | Thessalia |
| Israel | Israel |
| Italy | Puglia |
| Italy | Umbria |
| Italy | Veneto |
| Italy | Toscana |
| Italy | Lombardia |
| Italy | Valle d Aosta |
| Italy | Liguria |
| Italy | Friuli |
| Italy | Molise |
| Italy | Marche |
| Italy | Sardegna |
| Italy | Trentino |
| Italy | Emilia Romagna |
| Italy | Abruzzo |
| Italy | Calabria |
| Italy | Piemonte |
| Italy | Basilicata |
| Italy | Lazio |
| Italy | Sicilia |
| Italy | Campania |
| Lebanon | Lebanon |
| Libya | Alnigat Alkhams |

| | |
|------------|-----------------|
| Libya | Sirt |
| Libya | Ajdabiya |
| Libya | Tripoli |
| Libya | Dernah |
| Libya | Azzawiya |
| Libya | Al jifarah |
| Libya | Al batnan |
| Libya | Misratah |
| Libya | Al Khums |
| Libya | Benghazi |
| Libya | Alnigat ilkamse |
| Malta | Malta |
| Montenegro | Budva |
| Montenegro | Ulcinj |
| Montenegro | Tivat |
| Montenegro | Kotor |
| Montenegro | Herceg Novi |
| Montenegro | Bar |
| Morocco | Nador |
| Morocco | Tanger |
| Morocco | Tetouan |
| Palestine | Wadi Gaza |
| Slovenia | Slovenia |
| Spain | Barcelona |
| Spain | Alava |
| Spain | Cuenca |
| Spain | Huesca |
| Spain | Alicante |
| Spain | Albacete |
| Spain | Burgos |
| Spain | Granada |
| Spain | Valencia |
| Spain | Lleida |
| Spain | Girona |
| Spain | Malaga |
| Spain | Tarragona |
| Spain | Baleares |
| Spain | Navarra |
| Spain | Murcia |
| Spain | Zaragoza |
| Spain | Melilla |
| Spain | Rioja |

| | |
|---------|------------|
| Spain | Teruel |
| Spain | Soria |
| Spain | Cantabria |
| Spain | Cadiz |
| Spain | Almeria |
| Spain | Castellon |
| Syria | Tartous |
| Syria | Lattakia |
| Tunisia | Gabes |
| Tunisia | Sfax |
| Tunisia | Bizerte |
| Tunisia | Mahdia |
| Tunisia | Sousse |
| Tunisia | Ariana |
| Tunisia | Nabeul |
| Tunisia | Ben Arous |
| Tunisia | Monastir |
| Tunisia | Medenine |
| Tunisia | Tunis |
| Turkey | Denizli |
| Turkey | Hatay |
| Turkey | Antalya |
| Turkey | Kahramanma |
| Turkey | Isparta |
| Turkey | Manisa |
| Turkey | Mugla |
| Turkey | Uzak |
| Turkey | Icel |
| Turkey | Kutahya |
| Turkey | Osmaniye |
| Turkey | Afyon |
| Turkey | Izmir |
| Turkey | Balikesir |
| Turkey | Canakkale |
| Turkey | Aydin |
| Turkey | Adana |

iii. Hydrological basins per country codelist

Type: Suggested

| Catchment/ hydrological basin at the coastal area | Country code |
|---|-----------------|
| | DZ |
| | EG |
| | IL |
| | JO |
| | LB |
| | LY |
| | MA |
| | PS |
| | TN |

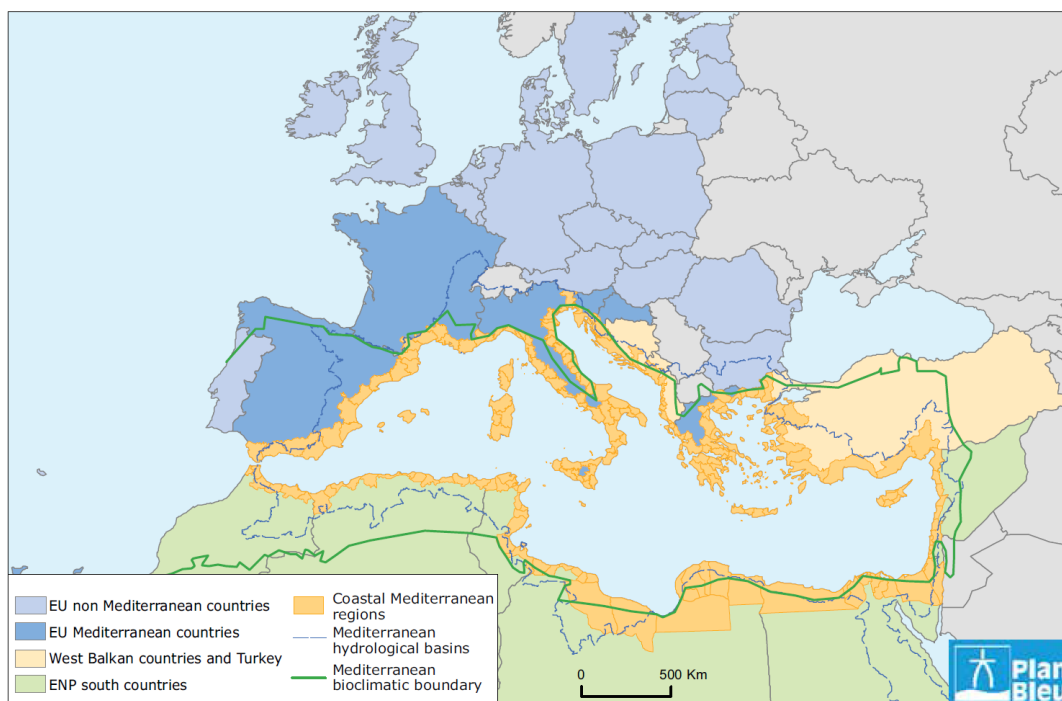


Figure 1. Coastal hydrological basins draining into the Mediterranean Sea

iv. Unit of measurement codelist and abbreviations

Type: Suggested

| Value | Definition |
|---------------------|---|
| Mm ³ /yr | Volume in million m ³ per year of collected municipal wastewater |
| Mm ³ /yr | Volume in million m ³ per year of municipal wastewater treated |
| % v/v | volume of municipal wastewater treated by primary, secondary or |

| | |
|-------|--|
| | tertiary treatment divided by treated municipal wastewater |
| p. e. | Population Equivalent |
| MWW | Municipal Waste Water |
| cfu | Colony-forming Unit |

v. List_parameters_Chemical-Physics

| Value | Description |
|-------------------------|---|
| Temperature (water) | Water temperature expressed in degree Celsius (Cel) |
| Salinity | Practical Salinity Unit (psu) |
| Electrical conductivity | Electrical conductivity in Siemens per meter (S/m) |
| Dissolved oxygen | Dissolved oxygen ($\mu\text{mol O}_2/\text{l}$) |
| Oxygen saturation | Oxygen saturation expressed in percentage of saturation (%) |
| pH | pH |
| Chlorophyll a | Chlorophyll a ($\mu\text{g}/\text{l}$) |
| Secchi depth | Secchi depth (m) |
| Nitrate | Milligram of Nitrate per litre ($\text{mg}\{\text{NO}_3\}/\text{L}$) |
| Nitrite | Expressed in mass of Nitrite per volume ($\text{mg}\{\text{NO}_2\}/\text{L}$). Conversion factor: $1 \text{ mg}\{\text{N}\}/\text{L} = 3.2845 \text{ mg}\{\text{NO}_2\}/\text{L}$ |
| Ammonium | Expressed in mass of Ammonium per volume ($\text{mg}\{\text{NH}_4\}/\text{L}$). Conversion factor: $1 \text{ mg}\{\text{N}\}/\text{L} = 1.2888 \text{ mg}\{\text{NH}_4\}/\text{L}$ |
| Total phosphorus | Total phosphorus Expressed in mass of Phosphorus per volume ($\text{mg}\{\text{P}\}/\text{L}$). |
| Orthophosphates | Expressed in mass of Phosphate per volume $\text{mg}\{\text{PO}_4\}/\text{L}$. Conversion factor: $1 \text{ mg}\{\text{P}\}/\text{L} = 3.0662 \text{ mg}\{\text{PO}_4\}/\text{L}$ |
| Total nitrogen | Expressed in mass of Nitrogen per volume ($\text{mg}\{\text{N}\}/\text{L}$). |
| Silicate | Silicate expressed in mass of Silicate per volume $\text{mg}\{\text{SiO}_3\}/\text{L}$. Conversion factor: $1 \text{ mg}\{\text{Si}\}/\text{L}$ (Silicon) = $2.7090 \text{ mg}\{\text{SiO}_3\}/\text{L}$ |

vi. Method of data collection codelist

Type: Suggested

| Value | Definition | Short description |
|-------|------------|-------------------|
| C | Calculated | |
| E | Estimated | |
| M | Measured | |

vii. Volume of direct reuse of municipal wastewater per type of activity codelist

Type: Suggested

| Value | Definition | Short description |
|-------|---|-------------------|
| Agri | Agriculture irrigation (e.g. food crops) | |
| Aqua | Aquaculture and fish ponds | |
| Dual | Dual water supply systems for urban non-potable use (toilet flushing, garden use) | |
| Indu | Industrial processes, water for manufacturing and construction industry (cooling and process water) | |
| Recr | Recreation (e.g. recreational water bodies, irrigation of areas for sports, etc.) | |
| Rech | Aquifer recharge (e.g. through injection wells for saline intrusion control) | |

| | | |
|-------|--|--|
| Rest | Water restoration and recreation of existing or creating new aquatic ecosystems | |
| Urba | Irrigation of public gardens and landscape, firefighting, street washing, dust suppression, etc. | |
| Other | Other purposes | |

Table D

| Methodology | Data specifications | Equivalent in WISE if exist |
|--|---|------------------------------------|
| The population as of the reference year (Year_H2020) | Type of element: non-common Datatype: integer Unit: inhabitants Min. size: 1 Max. size: 10 Min. value: 1 Max. value: 1000 000 000 | |