



ROMANIA

REIMBURSABLE ADVISORY SERVICES AGREEMENT ON TECHNICAL SUPPORT TO ROMANIA IN ANALYZING AND ADDRESSING THE CHALLENGES IN MEETING THE UWWTD REQUIREMENTS (P167925)

Output No. 3

**Report with updated list of agglomerations above 2,000 p.e.,
details and maps based on the methodology for optimizing cost
of compliance with UWWTD**

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Purpose

This report has been delivered under the Reimbursable Advisory Services Agreement on “Technical Support to Romania in Analyzing and Addressing the Challenges in Meeting the UWWTD requirements” signed between the Ministry of Waters and Forests and the International Bank for Reconstruction and Development on January 28, 2019. It corresponds to Output 3 under the above-mentioned agreement.

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The report builds extensively on an earlier World Bank report, entitled “Report on options for optimization of compliance costs and implementation status of UWWTD, including methodology for defining agglomeration with more than 2,000 p.e.”. by summarizing the methodological approach (but sometimes using *ad verbatim* to avoid confusion) and focusing on the application of proposed optimization covering the entire territory of Romania.

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Abbreviations

ANAR	National Administration "Romanian Waters"
ANCPI	National Agency for Cadaster and Land Registration
ANRSC	National Regulatory Authority on Communal Services of Public Utilities
ARA	Romanian Water Association
BOD ₅	5-day Biochemical Oxygen Demand
CAPEX	Capital Expenditure
CLC	CORINE Land Cover
CS	Collecting System
EC	European Commission
EU	European Union
EBRD	European Bank for Reconstruction and Development
FS	Feasibility Studies
GIS	Geographic Information Systems
IAS	Individual Appropriate Systems
LAU	Local Administrative Units
LIOP	Large Infrastructure Operational Programme
LOC	Local Operating Company
MoEWF	Ministry of Environment Waters and Forests
MoWF	Ministry of Waters and Forests
NPV	Net Present Value
OPEX	Operational Expenditure
ROC	Regional Operating Company
UWWTD	Urban Waste Water Treatment Directive
UWWTP	Urban Wastewater Treatment Plant
WB	World Bank
WSS	Water Supply and Sanitation
WSSO	Water Supply and Sanitation Operators
WWM	Wastewater Management

Chapter 1. Introduction

PURPOSE

1. This *“Report with updated list of agglomerations above 2,000 p.e., details and maps based on the methodology for optimizing cost of compliance with UWWTD”* (further named the Report) represents the third output as specified in the Reimbursable Advisory Services Agreement (RAS) signed between the Ministry of Waters and Forests (MoWF)¹ and the World Bank (WB) on January 28, 2019 for the provision of “Technical support to Romania in analyzing and addressing the challenges in meeting the UWWTD requirements”. The Report summarizes the proposed methodological approach for delineation of agglomeration boundaries and calculation of their pollution load and presents its implementation covering the entire territory of Romania and resulting in a new list of agglomerations above 2,000 p.e. along with details and maps. This report is of significant importance and lays the foundations for the next *Output 4: “Report with a proposed updated Implementation Plan of Urban Waste Water Treatment Directive (UWWTD), including prioritization of measures and new timeline for compliance of the agglomerations above 2,000 p.e.”*, which is intended to be used by Romanian authorities during the discussions with the European Commission (EC) at least for the 1) preparation of investment pipeline to be financed under 2021-2027 European Union (EU) financial framework; 2) reporting on the implementation of the UWWTD; and 3) addressing potential infringement challenges and payment of penalties under the UWWTD.

SCOPE

2. As mentioned above, the scope of the Report is to provide an updated list of agglomerations above 2,000 p.e., including details and a map for each agglomeration based on the methodologies for delineation agglomeration boundaries and calculation of pollution load proposed in *Output 2: “Report on options for optimization of compliance costs and implementation status of UWWTD, including methodology for defining agglomeration with more than 2,000 p.e.* (final version of the report, which was revised to reflect comments received, was delivered to the Ministry of Environment, Waters and Forests (MoEWF), in January 2020). In order to have a self-contained document, the Report builds extensively on Output 2 by summarizing the methodological approach (and sometimes using ad verbatim to avoid confusion) and adding analysis and review of data covering the entire territory of Romania to produce a new inventory of agglomerations with more than 2,000 p.e.
3. The updated lists of agglomerations and maps presented in this report have the quality and level of detail that would allow most of the information to be used for reporting under Article 15 of the UWWTD. At the same time, having in mind that population’s usual residence changes (for details see Output 2), economy develops and knowledge on the environment and discharges enhances over time, it is recommended that the MoEWF review and revise the maps and lists at regular intervals, for example every six years to coincide with the preparation of new river basin management plans or investment

¹ The ministry was subsequently restructured and renamed to Ministry of Environment, Water and Forests at the end of 2019.

program for the WSS sector to inform EU grant financial support for achieving compliance with UWWTD.

4. Even though the Bank team approached the development of agglomerations list and maps with greatest care in terms of accuracy, veracity and reflection of up to date information as well as managed to verify some of the data received from water supply and sanitation (WSS) operators and local authorities through field visits and exchange of comments, this work is not replacing the need of feasibility studies (FS) development for WSS sector compliance investments. Only at FS stage, by way of conducting additional onsite measurements of the quality and flow of wastewater discharges from domestic and economic activities, soil conditions as well as confirmation and update of the assessments of economic activities and population, the proposed boundaries and calculated load can be confirmed, and engineering options proposed to address compliance challenges. Based on such additional work (and application of environmental considerations as described in the methodology for delineation of agglomeration boundaries) and confirmation, the boundaries and/or the pollution loads presented in this report might be updated and/or revised.

OPTIMIZATION OF UWWTD COMPLIANCE COSTS

5. The new methodical approach proposed for delineation of agglomeration boundaries and determination of their pollution load (see Output 2, the World Bank, Final Report January 2020) resulted in developing an updated list of agglomerations with different boundaries and loads, as presented in this report, in comparison to the last reporting by the Romanian authorities to the European Commission in 2018 (covering the situation as at the end of 2016). This methodological and extensive data collection work will have significant impact on the Romanian Government efforts to optimize costs and accelerate compliance with the UWWTD. However, the intense work on developing national methodologies in line with Directive 91/271/EEC requirements and their implementation in Romania is not enough to declare that an optimization of UWWTD compliance costs have been achieved. As indicated in the previous reports under this technical assistance program (Output 1, the World Bank, Final Report September 2019 and Output 2, the World Bank, Final Report January 2020) as well as in this report further efforts are needed to improve WSS services as well as accelerate UWWTD compliance. Among those the team can outline the following:

- Preparation of a national WSS Strategy to align objectives, resources and expectations for the sector;
- Changes to the existing legislation and technical standards to allow more options for individual or other appropriate systems (IAS²);
- Creation of incentives for local authorities and operators to invest, comply and report in line with UWWTD requirements;
- Aligning obligations, funding as well as support to vulnerable households to ensure improved services and address affordability issues;
- Removing all remaining bottlenecks that hamper the investment process in the WSS sector.

² It should be noted that the proposed IAS process of ensuring the same level of environmental protection as collecting systems in Romania should only be applied in agglomerations above 2,000 p.e.

6. As a result of the implementation of the proposed methodologies for delineation of agglomeration boundaries and calculation of pollution load the number of agglomerations decreased with 44 percent – from 1,870³ to 1,041 and pollution load decreased with 29 percent – from 20,236,565 p.e. to 14,342,256 p.e. This should not be a surprise since the Bank team has already indicated in its previous reports that agglomerations have not been properly established in line with UWWTD requirements and compliance reporting faces significant challenges. As a result, the team believes that this long overdue inventory of agglomerations will lead to better environmental protection, prioritization of investments and optimization of costs to achieve compliance with UWWTD. The Bank is working on the final version of Output 4 (mentioned earlier), which will present updated figures on the cost for all outstanding compliance investments as well as maintenance requirements for WSS infrastructure to sustain compliance.
7. As discussed above, some of the proposals in this report need to be validated during the preparation of FS. Using this opportunity, the Bank team would like to point out a few additional areas for further consideration by the Romanian authorities, which can further optimize compliance costs and reporting on the results of UWWTD implementation:
- **p.e. pollution load:** The total wastewater load generated by an agglomeration expresses the size of an agglomeration and is the first and main criterion for determining the treatment requirements and the corresponding obligations. Correct establishment of pollution loads will not only allow for proper determination of agglomeration size but also prevent oversizing UWWTPs and, thus, optimize the compliance costs;
 - **improving the monitoring at the inlet of the WWTPs:** Although the UWWTD does not require a minimum number of samples at the inlet of WWTPs, to allow for application of Art. 4(4) of UWWTD, which is much more precise than estimation of pollution based on specific loads of group of emitters (e.g. 60g BOD₅/capita/day for evaluating the generated load by population), there should be a national requirement for a minimum number of samples annually (for example at least 40 representative daily monitoring values of inlet flow and BOD₅ concentration per annum⁴). This will significantly improve the 1) operation and performance of UWWTPs; 2) work on UWWTD implementation reporting; as well as 3) achieving and sustaining compliance results;
 - **enhancing UWWTD reporting:** current monitoring and reporting on UWWTD implementation is substandard and a web-based information system to collect, verify and report data is badly needed. However, the advice from the team is that the Romanian authorities should not jump to the most complicated systems that are available and used by other EU Member States. A more balanced approach involving trainings to the originators of data is encouraged to increase the capacity of small WSS operators and local authorities on UWWTD requirements and new tools to be used. The need for improvement of reporting is also a result of the more systematic approach proposed by the above-mentioned methodologies and can help for

³ Data from ANAR submitted to the WB team: Excel files based on latest update of the compliance reporting requirements Art. 15 of the UWWTD, December 2017

⁴ This number of samples is recommended as sufficient for assessment of design criteria for WWTPs according to German Standard ATV-DVWK-A 131 "Bemessung von einstufigen Belebungsanlagen", Mai 2000, ISBN 3-933707-41-2

further monitoring and evaluation of Government efforts to tackle compliance issues (in line with the updated Implementation Plan of UWWTD to be proposed under Output 4) and reflect on measures to address potential infringement penalties.

The team is finalizing its work on some of the issues identified above and analysis and recommendations will be shared in the forthcoming final Outputs, however, not all topics are covered by the current assignment as well as there is no envisaged implementation support.

REPORT OVERVIEW

8. This Report has the following structure:

Chapter 1 of the report describes the scope, purpose and provides an overview of this report.

Chapter 2 presents a summary of the methodology for delineation of boundaries in agglomerations with more than 2,000 p.e. It describes the objective and proposed methodological approach; the steps for determination of boundaries and cut-off values for deciding on optimal solutions to ensure environmental protection within the boundary of an agglomeration.

Chapter 3 describes the methodology for calculation of agglomeration pollution load. The objectives and approach for determination of pollution load are presented, as well as the assumptions, required information and equations that will enable the team to implement the methodology and determine the generated pollution load of agglomeration and the respective rate of pollution load collected by collecting system and addressed by IAS.

Chapter 4 describes the development of the new list of agglomerations, related maps and calculation of their pollution load based on the newly developed methodologies.

Chapter 5 of the report covers the use of the agglomeration maps and list presented in this report; implications on the compliance costs; future investments in the WSS sector as well as the link with the preparation of updated Implementation Plan for compliance with the UWWTD.

Annex 1 includes the data used to determine the cut-off values for agglomeration boundaries.

Annex 2 presents the agglomeration maps covering the entire territory of Romania.

Annex 3 refers to information on agglomerations that no longer need to be reported under the UWWTD.

Annex 4 contains all the formula for calculation of generated load of the agglomerations.

Annex 5 includes information on tourist settlements with regional significance according to Romanian Government's Decision 852/2008.

Annex 6 presents a summary table of collected information concerning UWWTPs.

Annex 7 includes a summary information on settlements with available data about industrial loads.

Annex 8 presents a summary tables of newly defined agglomerations and respective loads for each county.

Chapter 2. Delineation of boundaries in agglomerations above 2,000 p.e.

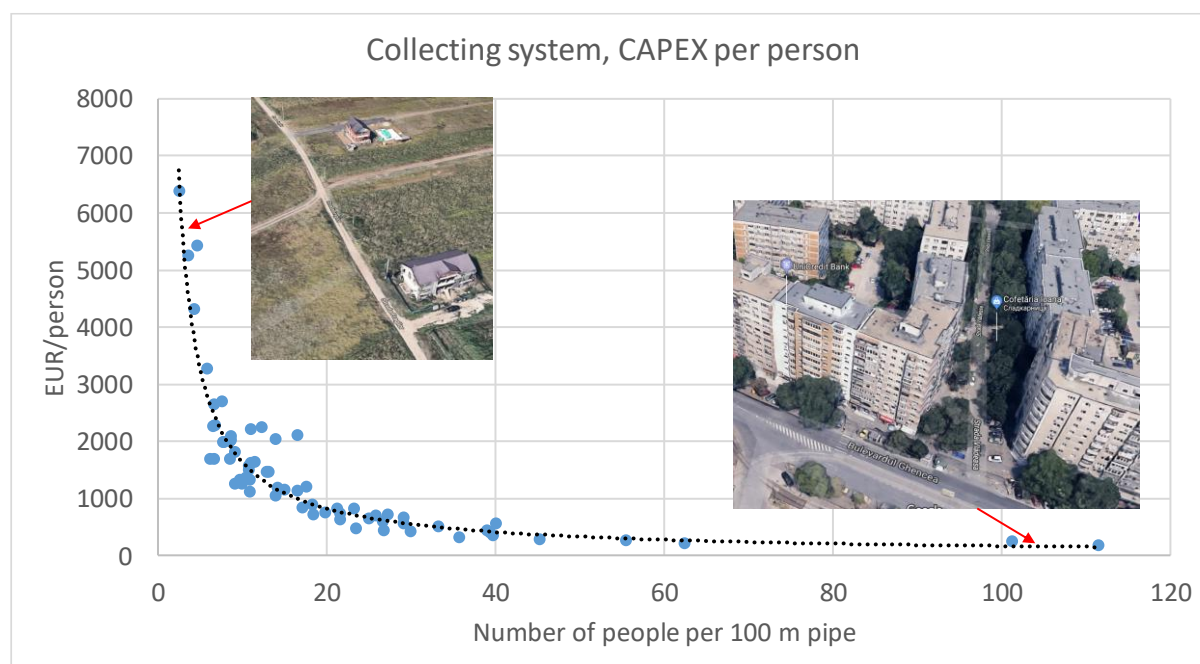
2.1 Summary of the proposed approach

9. Agglomerations play a central role in the concept of the UWWTD, which is why the proper delineation of their boundaries is of primary importance in the implementation process. The term “agglomeration” is broadly defined in article 2-4 of the UWWTD as follows:

“agglomeration” means an area where the population and/or economic activities are sufficiently concentrated for urban waste water to be collected and conducted to an urban wastewater treatment plant or to a final discharge point”

10. Though not explicitly stated in the UWWTD, there is apparent correlation between the term “sufficiently concentrated” and “the costs for the construction and operation of the collecting system per person” since the more concentrated population and economic activities are, the cheaper the price per person to collect wastewater will be. This understanding is the core of the proposed methodology for the delineation of agglomeration boundaries in Romania⁵.

Figure 1: CAPEX determination for the collecting systems



Source: WB elaboration

11. Considering that the urban planning in Romania is predominantly linear, i.e. many of the settlements are situated along one or two long streets/roads, it is suggested the cut-off criterion for delineation of areas with “sufficiently concentrated” population and/or economic activities (i.e. agglomeration boundaries) to be distance-related.

⁵ For more details see Output 2: Report on options for optimization of compliance costs and implementation status of UWWTD, including methodology for defining agglomeration with more than 2,000 p.e., The World Bank, final version, January 2020

Figure 2: Example of a linear urban development

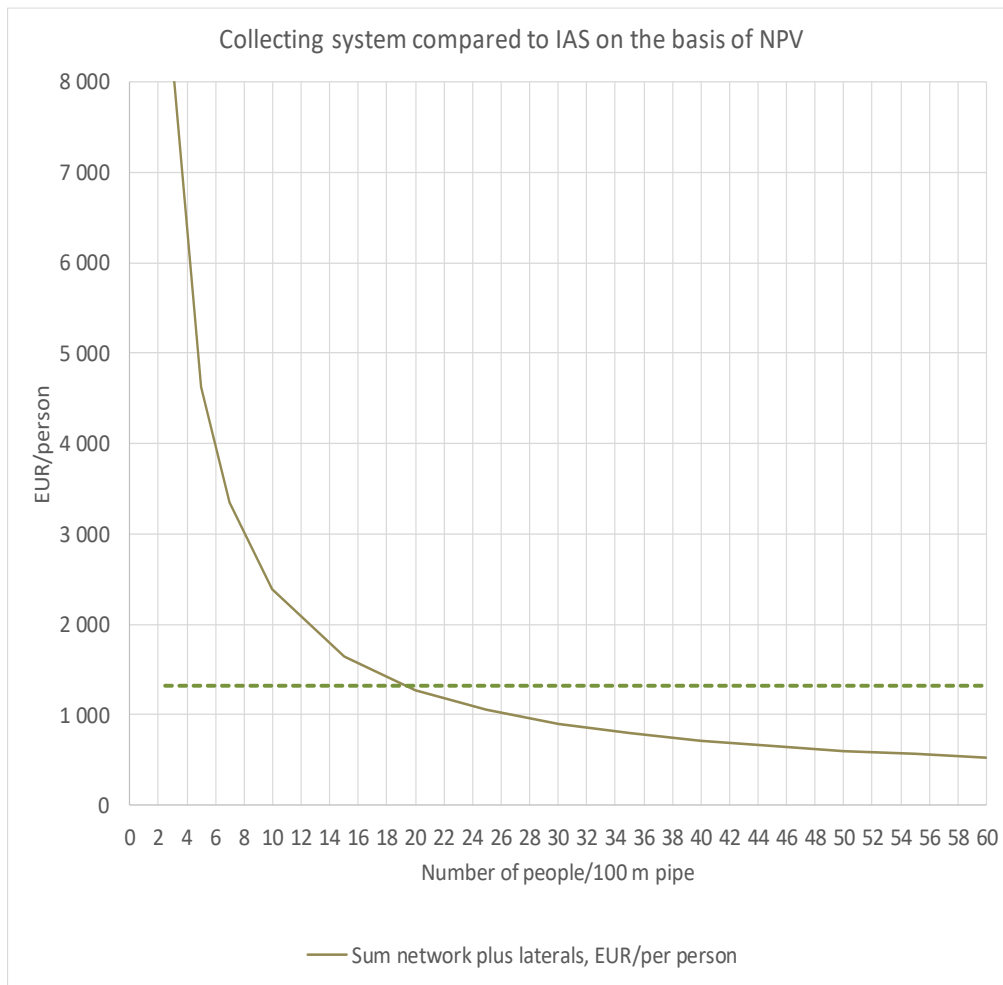


Source: WB elaboration

12. The criterion “people/houses connected per 100 meters of pipe” was proposed. Its cut-off value was determined as a result of comparison of the costs for construction and operation (based on NPV calculation) of two engineering solutions – centralized (collecting system) and decentralized (IAS).
13. General assumption of the methodology is that areas with residential buildings for more than 2 households (i.e. residential blocks) will be included in the agglomeration boundaries since there is high concentration of population. Therefore, the cut-off criterion will be applied only for individual houses. The assumptions and the calculation

are provided in **Annex 1**. The comparison between collecting system and IAS is visualized in the figure below.

Figure 3: Collecting system compared to IAS1 on the basis of NPV



Source: WB elaboration

Figure 3 shows that a piped sewerage system is cheaper than IAS1 when there are more than 19 people connected per 100 meters of pipe, i.e. 7 houses⁶.

Suggested cut-off criteria: 19 people connected per 100m or 7 houses/100 m of pipe

14. In the periphery of a settlement where the distances between houses are becoming larger a value of 250 meters, adopted from the international practices⁷ is applied, i.e. if the distance between the main zone and a remote zone is bigger than 250 m., the remote zone will not be included in the agglomeration boundary. The rationale is that higher distances between houses could result in excessive cost for building collecting systems. However, the value of 250 m. is just a general guideline and could be modified or waived if during the FS preparation there is evidence and justification that a better environmental option is to connect a polluter, which is situated at 300 meters for example.

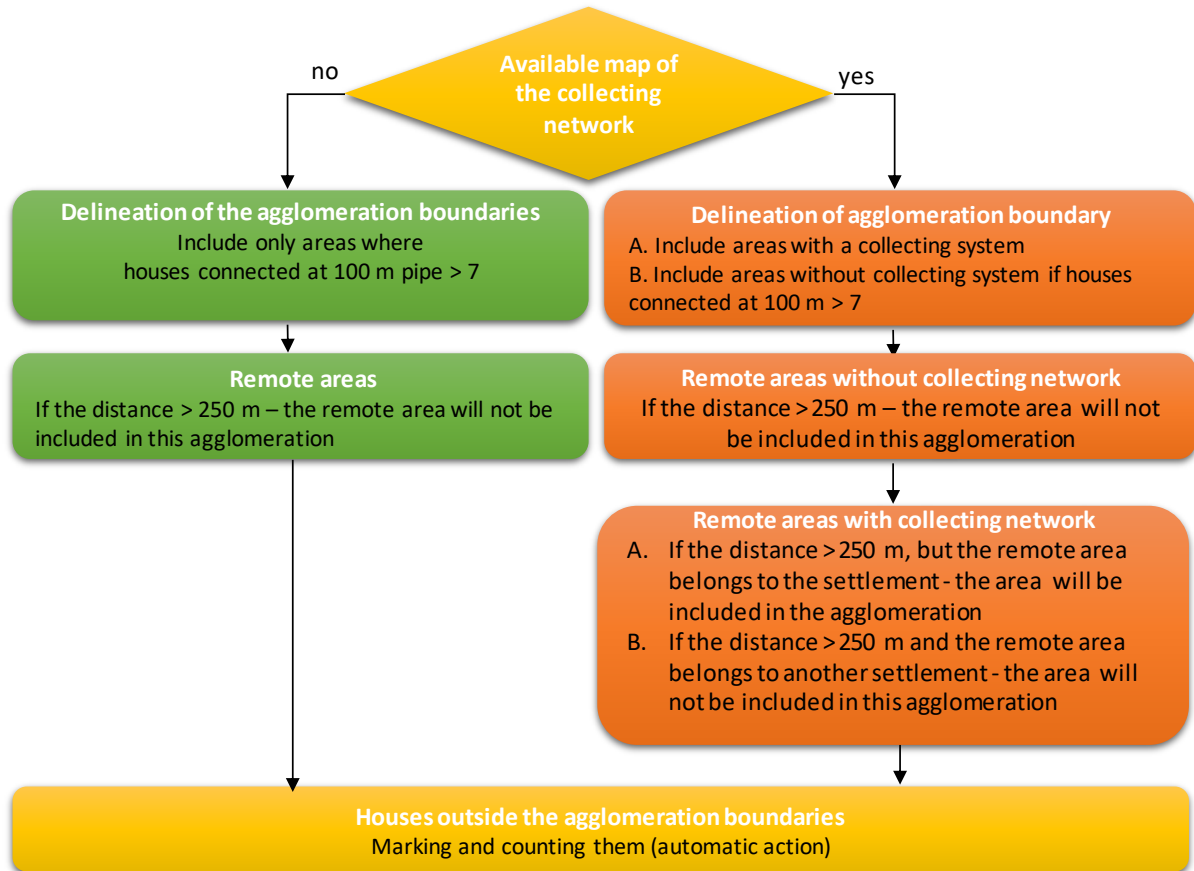
⁶ Using 2.67 people/house, NSI, census 2011

⁷ Advisory Program for Strengthening the Capacity of the SEWRC and Optimizing Cost of Compliance with Directive 91/271/EEC, Bulgaria, 2015

2.2 Delineation algorithm

15. The agglomeration boundaries have been delineated following the algorithm, developed and presented by the WB team in Output 2: Report on options for optimization of compliance costs and implementation status of UWWTD, including methodology for defining agglomeration with more than 2,000 p.e. and shown in the figure below.

Figure 4: Algorithm for delineation of agglomeration boundaries



Source: WB elaboration

16. As this report demonstrates the proposed methodology and its application is resulting in a new inventory of agglomerations in Romania, following sufficiently concentrated area approach. However, the final delineation of agglomeration boundaries can only be done and confirmed during the preparation of Feasibility Studies. For example, the national average cut-off criteria of 19 people per 100 m. of pipe is just a guideline, which could be modified or adjusted if during the FS preparation there is evidence and justification that local conditions require adjustment of these cut-off criteria (i.e. to decrease this number in some agglomerations to an average of 13 people per 100 m.). Such evidence and justification could be the local ground conditions not allowing an implementation of open tanks IASs, the presence of environmental sensitive areas, water protection areas etc. The team wants to highlight, that the new approach is not replacing the need for FS, which through measurements and onsite investigations, should verify/adjust the proposed agglomeration boundaries following this national methodology. In addition, the resulting list of agglomerations (see **Annex 8**), is just a picture of the agglomerations' situation in Romania at the end of March 2020. As discussed with both the MEFW and MEF it needs

to be regularly updated to 1) to reflect the actual situation and any new information, like results of the national census, feasibility studies, new urban developments and/or economic activities and etc.; 2) ensure the link between investment and reporting decisions towards better compliance results.

2.3 GIS delineation process

17. The GIS related information (data, maps) necessary for the delineation process is as follows:

- Aerial or satellite Orthophoto images or their analogue (Google satellite imagery);
- GIS layers with the Local administrative units (LAU2) – borders downloaded from the ANCPi through INSPIRE Geoportal;
- GIS layers with the boundaries of the built-up areas „intravilan” (existing or building permission) of all Romania’s settlements (ANCPi, as obtained by the World Bank);
- GIS layer of the population grid (National Institute of Statistics);
- GIS layers with Existing collecting system (obtained from water operators, with support from ANRSC);
- Corine Land Cover (CLC) 2018;
- Resident population number 2018 for each settlement (derived by the team from the National Institute of Statistics dataset at LAU2 level.)

GIS preparatory procedures were the following:

- Data structuring – all available data is reorganized in a new database. For easier data operation, the information is separated by counties and loaded in open source GIS software (QGIS 3.6);
- Overlaying and alignment of all available GIS data – the data are usually in different file types and coordinate systems. The information is set in the official coordinate system of Romania – EPSG: 3844 (Pulkovo1942(58)/Stereo70) using different tools georeferencing or transformation in GIS software’s.
- GIS layer creation and style definition – for the purposes of the project, 3 new layers are defined in suitable layer types and styles.
- Manual delineation of the agglomeration boundaries, considering the established methodology in predefined polygon layer for each county.
- Population data check – manually marking the houses outside of the agglomeration boundaries in predefined point layer. After the house marking, automatically house counting is executed by GIS tools for each agglomeration and the received data is presented in Excel sheet.

Chapter 3. Calculation of pollution load in agglomerations above 2,000 p.e.

3.1 Defining agglomeration size

18. The UWWTD establishes certain rules for urban wastewater collection and treatment in the agglomerations above 2000 p.e. (population equivalent, as 1 p.e. = 60 gBOD₅/d). Thus, the size of the agglomeration corresponds to the total generated (organic) pollution load within the agglomeration boundaries.

In accordance with the guidance in UWWTD-REP the emitters of organic load can be grouped as follows:

- Resident population;
- Non-resident population;
- Industries – covered by Article 11 of the UWWTD and other industries that do, or shall, discharge into the collecting system;
- All remaining wastewater generated in an agglomeration (if there is evidence for other emitters that do not fall in the above-mentioned groups).

In case of existing UWWTP, the load of the emitters collected by the collecting system and treated in a UWWTP can be calculated according to Art. 4(4) of the UWWTD, i.e. *“The load expressed in p.e. shall be calculated on the basis of the maximum average weekly load entering the treatment plant during the year, excluding unusual situations such as those due to heavy rain”*.

Depending on the social and economic development, as well as on the cultural habits of the population, the following types of wastewater management can exist within an agglomeration, see **Figure 5**.

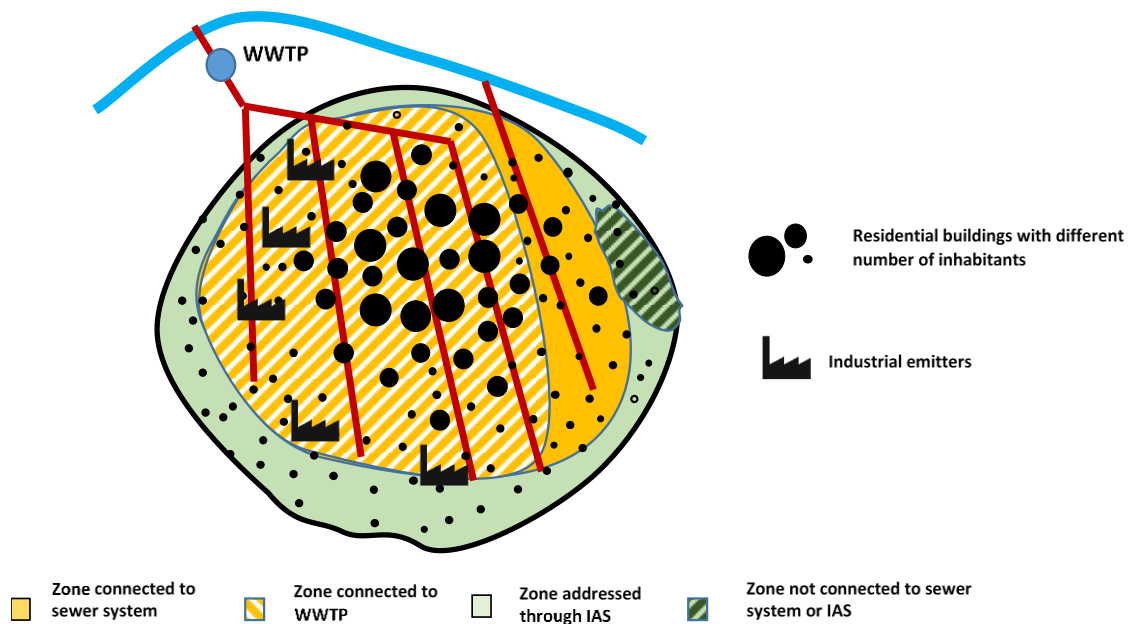
19. Following the requirements for reporting compliance with Art.15 of the UWWTD, the generated agglomeration load should be expressed as⁸:

$$\mathbf{aggGenerated} = L_{aggC1} + L_{aggC2} + L_{aggWithoutTreatment}$$

agg Generated	the generated load within the agglomeration in p.e.;
L _{aggC1}	the generated load of agglomeration collected through CS, in p.e.;
L _{aggC2}	the generated load of agglomeration addressed through IAS, in p.e.;
L _{agg WithoutTreatment}	the generated load of agglomeration not collected through CS and not addressed through IAS, in p.e.

⁸ The definitions and the short names of the parameters are identical with the definition and short name of the same parameter (if such) in the dataset for reporting compliance with Art. 15 of the UWWTD.
<http://dd.eionet.europa.eu/datasets/latest/UWWTDart15/tables/Agglomerations/>

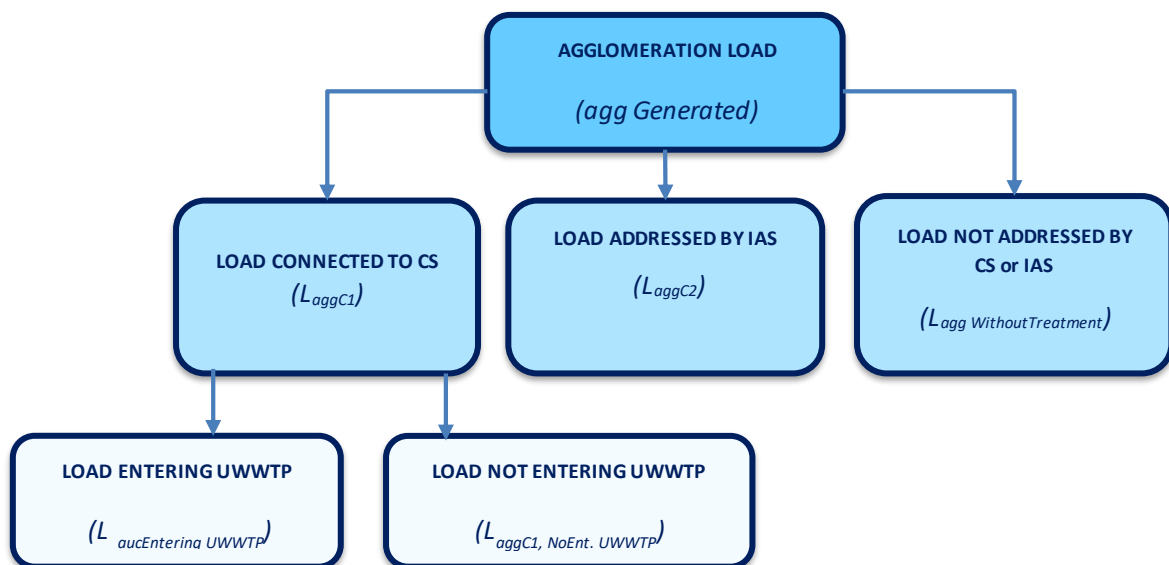
Figure 5: Conceptual models of wastewater management (WWM) within an agglomeration



Source: WB elaboration

Thus, the compliance reporting necessitates to differentiate the types of wastewater management within an agglomeration and to evaluate their respective generated loads, see **Figure 6**. The load connected to CS can be further detailed into load entering the UWWTP and load not yet entering the UWWTP, i.e. load that is collected and discharged untreated into the receiving water body. The latter is regarded as a temporary case, before construction of the necessary infrastructure to conduit all the collected wastewater to UWWTP.

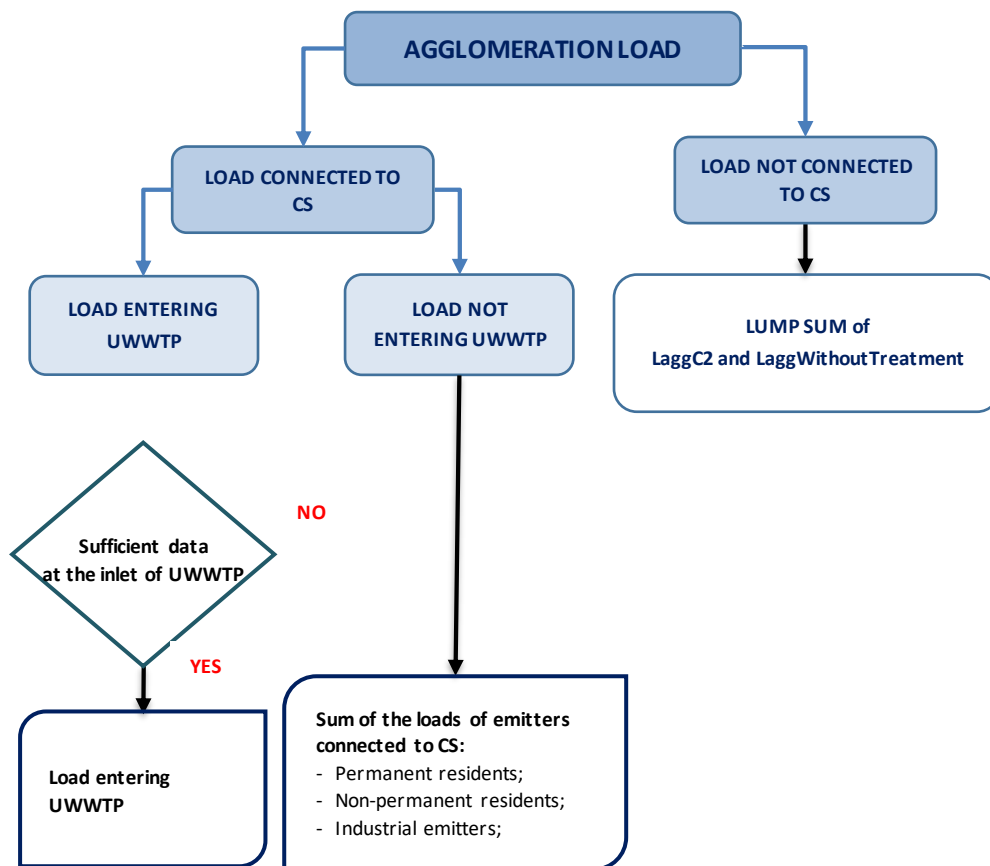
Figure 6: General concept for the agglomeration load



Source: WB elaboration

20. Decentralized wastewater management solutions are common practice in areas where there is no collecting system in Romania. However, currently, there is no register of IAS in the country, nor any specific process of documenting the status and performance of IAS. Therefore, it cannot be assessed whether all the existing individual decentralized systems provide “the same level of environmental protection” as required by the UWWTD. The fact is that at present there is only one legally allowed desentralised system in Romania – watertight tank.
21. Some Operators have contracts with customers concerning the collection and discharge of the load from decentralized individual systems (e.g. IAS) into the collecting system or the UWWTP. The information, however, is inconsistent (i.e. not all the Operators have provided such data when requested last year by the WB team). Often the information consists of annual discharged volumes, but it is not clear whether it is referring to sludge (i.e. from septic tanks) or wastewater from watertight cesspits. There is also no available information on the number of serviced decentralized systems. In addition, there is no clarity how the different Operators determine the load addressed by IAS, which they report to ANAR (for UWWTD reporting purposes), i.e. ROC Brasov reported less than 1,000 IAS (only those that are serviced by them), while ROC Iasi indicated close to 90,000 IAS (the difference between individual houses supplied with water and those with access to wastewater collection).
22. Due to the above-mentioned reasons and lack of consistent information on the number and status of IAS in Romania, separation between the load addressed by IAS (Lagg C1) and the load not collected by collecting system and not addressed by IAS (LaggWithoutTreatment) cannot be made with sufficient confidence. Hence, when determining the generated load within the agglomeration and the ways of its management they will be presented as a lump sum, presenting the load not connected through CS, i.e. $aggC1 + LaggWithoutTreatment$.
23. **Figure 7** presents the general scheme of the calculating algorithm. Detailed information about the proposed methodology for determination generated load in an agglomeration is provided in *Output 2: “Report on options for optimization of compliance costs and implementation status of UWWTD, including methodology for defining agglomeration with more than 2,000 p.e.”*. In this report are presented the key elements of the approach to ensure consistency and better understanding of the implementation results.

Figure 7: Summary algorithm for determination the generated load of the agglomeration



Source: WB elaboration

Assumptions:

- Residents connected to existing collecting systems, including wastewater treatment, are those legally using the wastewater collecting service, i.e. serviced by an operator or municipal department. Residents, who are not physically connected to the existing sewer system or use it illegally (e.g. without having a service contract with the Operator) are not considered as connected to collecting system.
- The load generated by one resident equals to 60 gBOD₅ /d, i.e. equals 1 p.e. This assumption is applied in case the generated load of the resident population is not connected to an existing UWWTP or cannot be calculated through the inlet monitoring data of existing UWWTP.
- The load generated by one tourist equals to 60 gBOD₅ /d, i.e. equals 1 p.e. This assumption is applied in case there is evidence that the generated load of the tourist accommodation facilities is not connected to an existing UWWTP or cannot be calculated using the inlet monitoring data of existing UWWTP.

3.2 Determination of components for agglomeration load

DETERMINATION OF PERMANENT POPULATION IN THE AGGLOMERATION

24. The Methodology uses statistical data about the usual resident population (as defined by NSI), since they reflect where people live physically and not where they are registered. That's why usual resident population is considered representative for determining the

agglomeration load. NSI has statistical data⁹ about the usual resident population in each settlement in 2011, based on 2011 national census. For more recent years (e.g. 2018) there is statistical information about the usual resident population at county level, at the level of urban areas and at the level of rural areas within a county.

The usual resident population in 2018, in each settlement, is determined based on the respective number of usual resident population according to Census 2011 and the available information at county level for urban and rural areas. It is assumed that:

- 1) The percentage contribution of resident population of the urban area of a settlement compared to the total urban resident population of the county is the same in 2011 and 2018;
- 2) The percentage contribution of resident population of the rural area of a settlement compared to the total rural resident population of the county is similar (less than 5 percent error) in 2011 and 2018;

Thus, the total number of usual resident population in 2018 for a given settlements is calculated as per **Equation 1** (see **Annex 4**).

25. Difference shall be made between the population within an agglomeration and the population of the settlements that form the agglomeration. Depending on the criteria for boundaries delineation, it may happen that a few houses in the outskirts area of a settlement may fall outside the agglomeration boundaries, i.e. do not fall in the “sufficiently concentrated area”. The population of an agglomeration is calculated by using **Equation 2** (see **Annex 4**).

GENERATED LOAD OF AGGLOMERATION CONNECTED TO COLLECTING SYSTEM (L_{aggC1})

26. A difference shall be made between the load that enters the UWWTP and load that is collected through CS but discharged untreated to the river body, **Equation 3** (see **Annex 4**). In Romania, in most of the cases all generated load collected through collecting system is treated into an UWWTP.

Depending on the UWWTP availability and sufficiency of inlet monitoring data, two cases are possible.

Case 1: There is an existing UWWTP with sufficient inlet monitoring data

The load connected to CS (L_{aggC1}) is the sum of the load entering the UWWTP and the load collected through CS, but not (currently) treated in the UWWTP.

The load generated by all the emitters connected to the UWWTP ($L_{auc\ EnteringUWWTP}$) is calculated pursuant to Art. 4(4) of the UWWTD, i.e. “on the basis of the maximum average weekly load entering the treatment plant during the year, excluding unusual situations such as those due to heavy rain”. This necessitates that the existing UWWTP has sufficient monitoring data at the inlet, as the samples should be 24h average daily or flow proportional.

⁹ **Data Source:** NSI, Romania (<http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>, File: POP105A - Usually resident population by age group and ages, sex, urban/ rural area, macro-regions, development regions and counties at January 1st.)

- If the inlet flow and load monitoring data are more than 104 in number, Art. 4(4) is applied, i.e. the UWWTP load is calculated based on the maximum average weekly load, entering the treatment plant during the year;
- If the inlet flow and load monitoring data are in the range of 24 to 103 in number, the UWWTP load is determined as the 95th percentile of the daily inlet UWWTP loads. The data processing shows however that the daily samples (i.e. flow and BOD₅ concentration data) shall be at least 40 per annum in order to have a reliable result concerning the load at the inlet of UWWTP;
- If the inlet flow and load monitoring data are less than 24 per annum, the monitoring data is considered insufficient to apply Art. 4(4) of the UWWTD, therefore for such cases the load entering the UWWTP will be determined as sum of the load of the groups of emitters, as described in Case 2.

Case 2: There is UWWTP with insufficient inlet monitoring data or there is no UWWTP

The load connected to CS (L_{aggC1}) is calculated as the sum of the loads of different groups of emitters, estimated through using specific load, **Equation 4** (see **Annex 4**).

- Generated load of usual resident population connected to CS, ($L_{aggC1,PR}$)

The generated load (in p.e.) of residents connected to CS ($L_{aggC1,PR}$) is equal to the number of permanent residents, based on the general assumption that the load of 1 resident is equal to 60 g BOD₅/cap/d, **Equation 5** (see **Annex 4**).

The number of residents connected to collecting system is determined based on information on the number of connected flats and/or houses, the total number of dwellings and the total number of detached/semi-detached houses as per 2018, **Equation 6** (see **Annex 4**).

The following specific assumptions are made:

- 1) All residential blocks are connected to CS and the residents not-connected to CS live in detached or semi-detached family houses;
- 2) There is only one family, living in a detached or semi-detached house;
- 3) The average number of residents in family houses is equal to the average number of residents per dwelling in the condominiums;

GENERATED LOAD OF NON-PERMANENT RESIDENTS CONNECTED TO CS ($L_{aggC1,NON PR}$)

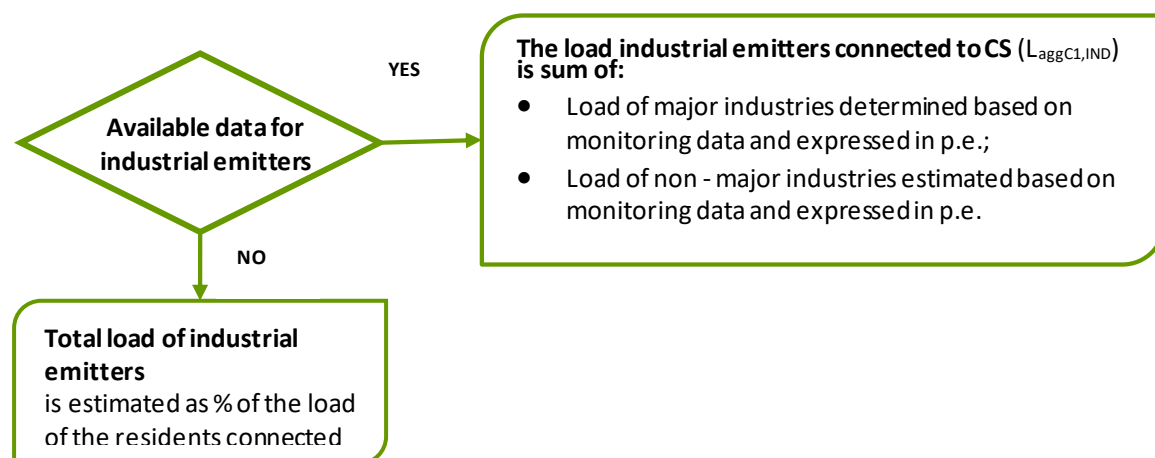
27. The load of tourists, expressed in p.e. is equal to the maximum average daily number of tourists in high season, based on the general assumption that the load of 1 tourist is equal to 1 p.e., **Equation 7** (see **Annex 4**). 47 localities have been defined as touristic with national significance and 61 localities have been further defined as touristic with regional significance according to Romanian Government's Decision 852/2008. (see **Annex 5**). It is assumed that all the tourist facilities are included within the agglomeration boundaries. Non-permanent residents in settlements which are not resorts are reflected only if there is information about them at the level of agglomeration.
28. The average number of tourists per day is determined based on the month with the maximum number of tourists as per NSI data for 2018, **Equation 8** (see **Annex 4**).

- The maximum average daily number of tourists for large resorts is calculated, assuming continuous tourists flow in high season, as the maximum monthly number of overnights spent is divided by 20 to 30 days. For small resorts, assuming mostly weekend tourist flow, the maximum monthly number of overnights spent is divided by 8 to 12 days.
- If within an ATU there is more than one resort settlement and they belong to different agglomerations, the tourist flow will be distributed based on expert assessment, depending on the size of the resorts and local information about their popularity.
- For national resorts, which are not settlements analyses are made concerning the average daily number of tourists in the most intensive month based on information from Master Plans, Regional Feasibility Studies or county administration. For these resorts, the maximum daily number of tourists will be increased by 10 percent to count for the servicing personnel, if there is no data.

GENERATED LOAD OF INDUSTRIAL EMITTERS ($L_{aggC1, IND}$)

29. In the case where there is no UWWTP (or no sufficient inlet monitoring data) the following approach will be applied concerning the generated load of industrial emitters connected to CS, see **Figure 8**.

Figure 8: Calculation algorithm for determining the industrial load connected to CS ($L_{aggC1, IND}$)



Source: WB elaboration

In case of available monitoring data for an industrial emitter, which allows the calculation of the industrial load discharged into the collecting system, the Methodology suggest to make a difference between “major” and “non-major” industries, i.e.:

- “Major” industries are those, which contribution in terms of wastewater flow ($Q_{WW, IND}$) is above 1 percent of the total accounted dry weather wastewater flow of an agglomeration ($Q_{WW, AGG}$). The latter one is a sum of the accounted wastewater from the residents, non-residents, public facilities and industrial users.
- “Non-major” industries are those, whose contribution in terms of wastewater flow is below 1 percent of the total accounted dry weather flow of an agglomeration. Usually they are not subject to monitoring;

In case there is no available data about the connected industrial emitters, the industrial load discharged into the collecting system is calculated as percentage of the population and tourist loads. The percentage factor depends on the number of residents and tourists.

If there is no data about the industrial emitters the following percentages are used:

- 20 % for agglomerations with population + tourists above 10,000;
- 10 % for agglomerations with population + tourists between 5,000 – 10,000;
- 5 % for agglomerations with population + tourists between 2,000 – 5,000;

These percentages correspond to the conclusions derived from processing the data base with information from the ROCs. Summary information of the collected data concerning the industrial emitters is presented in **Annex 5**.

30. It should be noted that the industrial load not connected to CS, which is treated and discharged separately subject to specific permissions, is not considered as part of the generated load of an agglomeration.¹⁰

GENERATED LOAD OF AGGLOMERATION NOT COLLECTED BY COLLECTING SYSTEM (*LaggC2 + LaggWithout Treatment*)

31. Based on the above analyses, it is assumed that the generated load not addressed by collecting system has predominantly domestic origin. Therefore, the amount is assessed based on the specific BOD₅ load of the population not connected to sewer collecting system **Equation 9 and Equation 10, Annex 4**.

DETERMINATION OF SPECIFIC RATES

32. After determining the specific components of the generated load and the total generated load, the following rates are calculated:

- generated load collected through sewer collecting system; *parameter aggC1, Equation 11* (see **Annex 4**);
- generated load collected through CS and treated in UWWTPs; *parameter aucPercEnteringUWWTP, Equation 12* (see **Annex 4**);
- generated load, which is not collected through sewer collecting system, **Equation 13** (see **Annex 4**);
- the sum of the percentage of the load collected through CS and the percentage of load not connected through collecting system should equal 100 percent, **Equation 14** (see **Annex 4**).

3.3 Data collection

33. The following sources of information have been used for collection of the necessary data for determination the generated pollution load within the agglomeration.

Table 1: Source of data and brief content

Source of information	Data set description
National Statistical Institute	<ul style="list-style-type: none"> • Data about the number of usual resident population in 2011 (Census) at: <ul style="list-style-type: none"> - county level, urban and rural areas within a county; - ATU level and settlement level; • Data about the number of usual resident population in 2018 at:

¹⁰ According to UWWTD-REP, the generated load of agglomeration “does not include the load of unmixed industrial waste water which is treated separately and directly discharged into waters.”

<http://ec.europa.eu/environment/water/water-urbanwaste/info/pdf/terms.pdf>

	<ul style="list-style-type: none"> - county level, urban and rural areas within a county; • Data about the number and type of dwellings in 2011 (Census) at: <ul style="list-style-type: none"> - county level, urban and rural areas within a county; - ATU level and settlement level; • Data about the number and type of dwellings in 2018 at: <ul style="list-style-type: none"> - county level and ATU level; • Data about the maximum monthly number of tourists in 2018 at ATU level;
WSS Operators (ROCs) and some LOCs	<p>For 2018 information was requested for a list of settlements prepared for each county by the Consultant. The information was organized in Questionnaires (already presented in Output 2), which contain:</p> <ul style="list-style-type: none"> • Data about the number of flats (if available) and the number of single houses which have service contracts with the Operator for: <ul style="list-style-type: none"> - water supply; - for wastewater conveyance only (i.e. without treatment) and - for wastewater conveyance and treatment; • Data about the length of water supply and sewer networks in the given settlement and about existence of UWWTP; • Aggregated data about the water supply and sewerage infrastructure serviced by the Operator at ROC level; • Monitoring data about the industrial emitters discharging into the sewer network and subject to control by the Operator; • Data about the level of servicing of IAS in a certain settlement; • Daily monitoring data about the flows and BOD₅ concentrations at the inlet of the UWWTPs.
DATA AGG. BOUNDARIES	Information about the settlements included within the agglomeration boundaries and the number of houses left out of the agglomeration boundaries (or included from other settlements)
EBRD data base	<p><i>Source: Report on Strategic Options for the Romanian water sector consolidation and development 2020-2035, EBRD, January 2020</i></p> <p>Data on the connection rates to water supply and sewer systems were used for some settlements for filling in the gaps, in case of lack of information by the WSS Operators.</p>
ANAR data base	<p><i>Source: ANAR excel files based on latest update of the compliance reporting requirements Art. 15 of the UWWTD, December 2017</i></p> <p>Data on the percentage of generated agglomeration load connected to collecting system and treated in UWWTP.</p>

Information on water supply and sewerage services was received from almost all ROCs and some LOCs by filling in the standardized Questionnaires prepared by the WB team. As at the end of December 2019 a complete set of data was received just for a few counties (e.g. Iasi, Alba, Arad). However, for most of the counties the partial information received is sufficient to determine a “tailor-made” agglomeration load. For some counties (e.g. Arges, Bacau, Bistrita-Nasaud, Calarasi, Dolj, Gorj, Giurgiu, Ialomita, Ilfov, Maramures, Olt, Prahova, Suceava, Teleorman Tulcea, Vrancea) information was received for less than 10 percent of the indicated settlements. For these counties the connection rates of the settlements are estimated based on information from ANAR/EBRD. For most of them, however, the connection rate to water supply/sewer system is at ATU level and not at settlement level.

Due to the efforts of MoEWF and ANRSC the team continued to receive data beyond December 2019 and this additional information are reflected in the final version of this report.

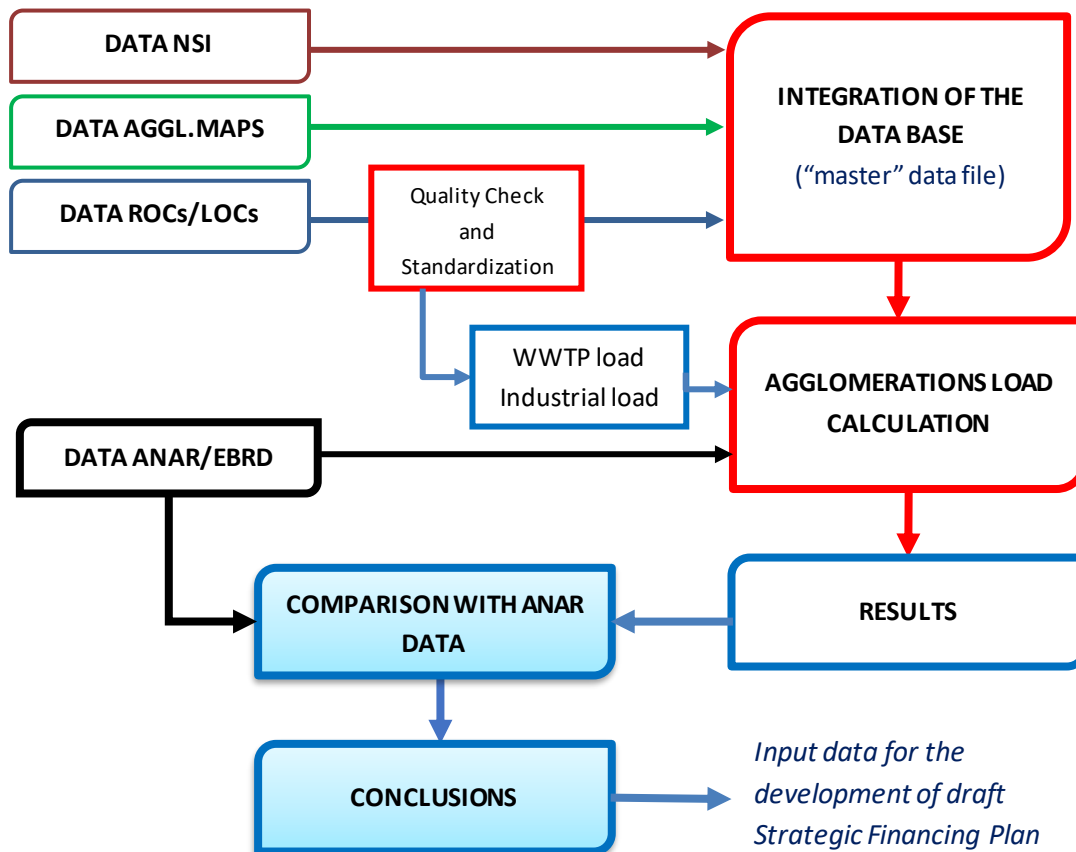
Table 2: Data received from regional and local operators

	County	ROCs/LOCs that provided information
1	Alba	Alva Apa CTTA ROC
2	Arges	SC Apa Canal 2000, Aquaterm Curtea de Arges;
3	Arad	Compania de Apa Arad ROC, Termoconstruct Sebis LOC
4	Bacau	Raja SA ROC
5	Bihor	Apa Oradea ROC, Apa Canal ord Vest ROC
6	Bistrita-Nasaud	Aquabis ROC
7	Botosani	Nova ApaServ
8	Braila	CUP Dunarea Braila ROC
9	Brasov	Apa Brasov ROC, Victoria Parc Industrial, Morani Impex SRL LOC
10	Bucuresti	ApaNova ROC
11	Buzau	Compania de Apa Buzau
12	Caras Severin	Aquacaras ROC
13	Calarasi	ECOAqua ROC, RAJA ROC
14	Constanta	RAJA ROC
15	Covasna	Gospodarire Comunala
16	Cluj	Compania de Apa Somes, Compania de Apa Aries
17	Dambovita	RAJA ROC, Compania de Apa Targoviste
18	Dolj	Apa Oltenia ROC
19	Galati	Focsani ROC, Apa Canal Galati
20	Giurgiu	Apa Service Giurgiu ROC
21	Gorj	Apa Oltenia ROC; Apa Regio Gorj
22	Harghita	AquaServ ROC, Gospodarire Oraseneasca SA, SC Aqua Calimani LOC, Harviz LOC, Redisza LOC
23	Hunedoara	Goscom SA, ApaProd ROC, ApaServValea Jiului ROC
24	Ialomita	(ECOAqua ROC, RAJA ROC);
25	Ifov	VAS Veolia Apa Servicii
26	IASI	ApaVital Roc
27	Maramures	Vital ROC
28	Mehedinti	Secom ROC, Floricola SA LOC
29	Mures	AquaServ ROC, Servicii Technice Comunale LOC
30	Neamt	ApaVital ROC, ApaServ ROC
31	Olt	Compania de Apa Olt ROC
32	Ploesti	(R.A.S.P Ploesti);
33	Sibiu	Apa Canal Sibiu ROC, Apa Tarnavei Mari ROC
34	Salaj	Compania de Apa Somes ROC
35	Satu Mare	Apa Serv ROC
36	Suceava	Acet Suceava ROC
37	Teleorman	Apa Serv SA ROC
38	Timis	Aquatim SA ROC
39	Tulcea	AquaServ ROC
40	Valcea	Apavil SA ROC
41	Vrancea	Focsani CUP ROC
42	Vaslui	AquVas ROC

3.4 Organization of data processing and data integration

34. The data processing was a complex process consisting of 3 steps, see **Figure 9**.

Figure 9: Data integration and processing



Source: WB elaboration

STEP 1: PREPARATORY WORK

35. It consists of collecting and organizing the necessary data in a structured way for processing. An important action in this phase is the quality check of the data received from ROCs/LOCs (received data revision, contact/feedback with the operators for clarification, correction/extension of data, standardization/formatting and validation of data entries). SIRUTA codes (inferior and superior) were attributed to each settlement and served as ID keys in the database, which were then used for joining the different data sources. Some advance calculations are also done, e.g. calculation of population and dwellings as per 2018, calculation of industrial loads based on received monitoring data, calculation of WWTPs inlet loads. Although relatively rich data has been about concerning the existing WWTPs, the inlet monitoring data for about 80 percent of them are insufficient to allow their effective use. **Annex 6** provides information about the WWTPs and the number of the daily inlet flow and BOD₅ load monitoring data.

Additional data that was imported from NSI sources included population data at ATU level and tourist activity intensity. These were integrated in the main data file also using SIRUTA code IDs. It must be noted that one of the limitations of the NSI available data is that the

lowest reporting level is the basic administrative-territorial unit (i.e. city, town, commune), requiring different disaggregation methods based on weights and estimates.

The preparatory work ends with organizing almost all received data into one file, i.e. the master data file which was as the main source of information for calculation of agglomerations loads. At the end the algorithm generates a final CSV (i.e. comma separated values) text file that can be easily read into third-party software. The main data file is a result of multiple iterations, as a result of the back-and-forth processes of the WB team in order to ensure the most accurate data at the time of the last file generation process considering the limited available data from the source files.

STEP 2: AGGLOMERATIONS LOAD CALCULATION

36. The load calculation is organized in Excel files, as there is a file for each county. The load of each settlement, falling within the agglomeration boundary, is calculated, followed by calculation of the total generated load of the agglomeration, as well as the loads addressed by collecting system and the loads not addressed by collecting system.

All the collected information has been considered in this step. In case that no data has been received for a settlement, external sources of approximate, but relevant data have been used. These sources are: 1) the ANAR latest compliance report, concerning the connection rates to collecting system and IAS at agglomeration level and 2) the EBRD data base containing information on the connection rates to water supply or sewer system either at the level of settlements or at ATU level.

The load calculation algorithm is organized in Excel files and in case of available correct information, the time and labor for data processing can be significantly decreased.

STEP 3: COMPARISON OF THE RESULTS

37. The results are compared with the ANAR data base, as per the latest compliance report. The difference between the generated load of the newly delineated agglomerations and the respective load of the agglomerations according to ANAR data base is calculated. Short explanation is provided on the way the load has been calculated.

Agglomerations according to ANAR data base, which for some reason do not fall in the list of new delineated agglomerations are also given.

Based on the comparison and analyses conclusions are made. They serve as input data for the development of a draft Strategic Financing Plan for reaching compliance with the UWWTD.

Chapter 4. List, maps and load of agglomerations above 2,000 p.e.

4.1 Updated list of agglomerations based on the methodology

38. The implementation of the above-described methodologies for delineation of agglomeration boundaries and calculation of the pollution load resulted in a new inventory of the agglomerations in Romania. The total number of agglomerations, defined by implementing the proposed national methodology, is **1,041**. Maps of the newly delineated agglomerations covering the entire territory of Romania are provided in **Annex 2**.

A significant number of agglomerations – 933, no longer need to be reported following the UWWTD requirements, when compared to ANAR list of agglomerations as at the end of 2017. These agglomerations are listed in Annex 3, where further explanations are provided. A summary of the number of the excluded agglomerations per county as well as the reason for the exclusion is provided in the Table 3 below.

There are four main reasons leading to existing/reported agglomeration no longer being into category of agglomerations above 2,000 p.e. under the UWWTD:

- A. Population in an agglomeration is below 2,000 or the reported agglomeration consists of a number of settlements, each below 2,000 people and situated at distance longer than 250 m.;
- B. Density of the reported agglomeration is below 7 houses/100 m pipe
- C. Combination of A and B;
- D. The entire agglomeration or some settlements of it are merged/included in another agglomeration.

The data in the table is visualized in Figure 10 and show that the reason for exclusion of approximately 90 percent of the reported agglomerations in Table 3 is that their population in 2018 dropped below 2,000 or that the “existing” agglomerations were not properly defined following the principle of sufficiently concentrated population and/or economic activities. 100 agglomerations are merged with other agglomerations forming a bigger one.

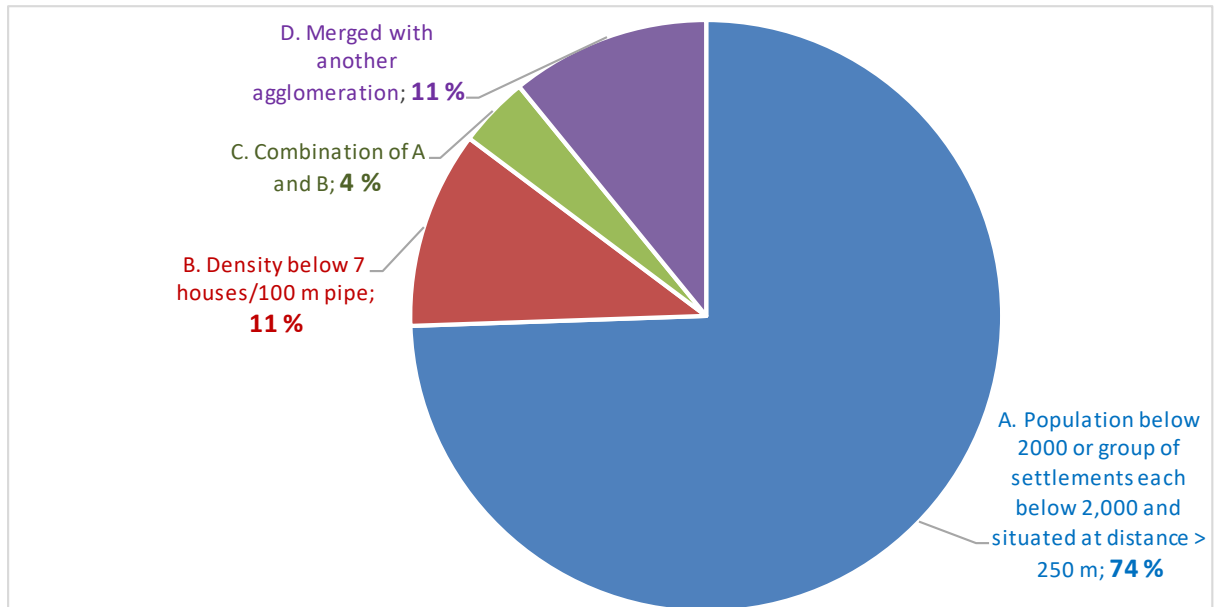
The highest number of “excluded” agglomerations because of this reason is in the counties Bacău (53), Argeş (47) and Suceava (43). The highest number of agglomerations “excluded” because of low density is observed in Suceava (21). “Excluding” agglomerations due to merger and/or inclusion of settlements in another agglomeration actually means that there is rather a modification of the boundaries, which affects “existing” agglomerations. The highest number of merged agglomerations is observed in Ilfov, due to increased population leaving in Bucharest suburbs and “expansion” of the capital through “engulfing” settlements in Ilfov administrative boundary (22) from the perspective of UWWTD implementation. It should be noted that some new agglomerations were formed as well, hence the reconciliation is as follows: **1,870 – 933 + 104 = 1,041**

104 is the number of new agglomerations, as the highest number is in Dambovită (10 nr.).

Table 3: Summary of the number of the agglomerations that no longer need to be reported for the purposes of UWWTD implementation

N	County	Number of excluded agglomerations				Total
		A Population below 2,000 or group of settlements each below 2,000 and situated at distance > 250 m	B Density below 7 houses/100 m pipe	C Combination of A and B	D Merged with another agglomeration	
1	ALBA	30	1	0	0	31
2	ARGES	42	1	4	1	48
3	ARAD	16	0	1	0	17
4	BACAU	50	3	0	1	54
5	BIHOR	13	0	4	2	19
6	BISTRITA NASAUD	10	1	0	0	11
7	BOTOSANI	12	8	0	0	20
8	BRAILA	5	2	0	1	8
9	BRASOV	14	1	1	2	18
10	BUCHAREST	0	0	0	0	0
11	BUZAU	13	4	4	0	21
12	CALARASI	13	1	0	0	14
13	CARAS SEVERIN	0	1	1	0	2
14	CLUJ	16	0	1	2	19
15	CONSTANTA	1	0	1	2	4
16	COVASNA	12	1	0	1	14
17	DAMBOVITA	31	3	1	10	45
18	DOLJ	18	2	1	3	24
19	GORJ	9	1	3	3	16
20	GALATI	5	2	2	0	9
21	GIURGIU	15	0	3	2	20
22	HARGHITA	13	3	0	1	17
23	HUNEDOARA	18	0	0	1	19
24	IALOMITA	0	4	0	1	5
25	IASI	29	6	1	0	36
26	ILFOV	1	0	0	22	23
27	MEHEDINTI	4	0	0	0	4
28	MARAMURES	20	3	1	0	24
29	MURES	14	0	2	0	16
30	NEAMT	30	6	0	7	43
31	OLT	27	4	3	5	39
32	PRAHOVA	27	6	5	6	44
33	SALAJ	5	0	0	0	5
34	SATU MARE	15	3	0	1	19
35	SIBIU	15	0	0	2	17
36	SUCEAVA	20	22	1	1	44
37	TELEORMAN	33	4	0	8	45
38	TIMIS	19	0	0	2	21
39	TULCEA	11	3	0	0	14
40	VALCEA	37	2	0	11	50
41	VASLUI	16	2	0	0	18
42	VRANCEA	13	1	0	2	16
Total		692	101	40	100	933

Figure 10: Percent distribution of the excluded agglomerations in relation to the reason for exclusion



4.2 Updated calculation of the pollution load based on the methodology

39. **Table 4** below presents summary information on the agglomerations and pollution loads by county for the entire territory of Romania based on the application of the methodologies for delineation of agglomeration boundaries and calculation of pollution load.

Table 4: Summary table of agglomerations number and pollution loads at county level

County	CODE	AGGLOMERATIONS PROJECT						CODE	AGGLOMERATIONS ANAR					
		≥ 10,000 p.e.		between 2,000-10,000 p.e.		TOTAL			≥ 10,000 p.e.		between 2,000-10,000 p.e.		TOTAL	
		nr	load, p.e.	nr	load, p.e.	nr	load, p.e.		nr	load, p.e.	nr	load, p.e.	nr	load, p.e.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ALBA	AB	5	135,148	15	57,825	20	192,973	AB	6	178,767	39	148,568	45	327,335
ARGES	AG	5	352,526	10	43,546	15	396,072	AG	6	469,574	55	169,576	61	639,150
ARAD	AR	3	205,144	32	121,702	35	326,846	AR	5	212,506	44	183,030	49	395,536
BACAU	BC	6	294,807	21	73,820	27	368,627	BC	8	362,029	71	330,132	79	692,161
BIHOR	BH	4	295,579	25	99,351	29	394,930	BH	6	316,935	41	152,022	47	468,957
BISTRITA NASAUD	BN	3	108,713	16	66,967	19	175,680	BN	4	198,186	19	65,625	23	263,811
BOTOSANI	BT	2	151,136	11	42,150	13	193,286	BT	4	197,045	29	109,330	33	306,375
BRAILA	BR	2	183,718	15	49,292	17	233,010	BR	1	243,227	24	86,568	25	329,795
BRASOV	BV	5	363,914	21	99,078	26	462,992	BV	7	553,993	34	158,790	41	712,783
BUCHAREST	B	1	1,841,807	0	0	1	1,841,807	B	1	2,159,995	0	0	1	2,159,995
BUZAU	BZ	2	182,730	26	83,712	28	266,442	BZ	3	201,394	43	169,103	46	370,497
CALARASI	CL	2	95,147	29	118,832	31	213,979	CL	2	98,183	41	175,288	43	273,471
CARAS SEVERIN	CS	4	131,977	9	45,894	13	177,871	CS	3	136,611	11	50,258	14	186,869
CLUJ	CJ	5	445,496	8	36,159	13	481,655	CJ	5	556,736	25	88,627	30	645,363
CONSTANTA	CT	10	692,693	23	104,755	33	797,448	CT	13	929,602	23	107,746	36	1,037,348
COVASNA	CV	3	124,024	13	47,012	16	171,036	CV	3	104,954	27	115,348	30	220,302
DAMBOVITSA	DB	7	170,799	39	138,645	46	309,444	DB	5	154,462	76	379,349	81	533,811
DOLJ	DJ	6	330,251	36	136,271	42	466,522	DJ	6	406,477	60	225,175	66	631,652
GORJ	GJ	3	130,964	12	53,356	15	184,320	GJ	3	132,026	28	100,128	31	232,154
GALATI	GL	5	288,070	26	89,234	31	377,304	GL	4	408,506	30	150,015	34	558,521
GIURGIU	GR	1	71,752	31	110,818	32	182,570	GR	2	87,370	44	185,622	46	272,992
HARGHITA	HR	6	142,769	22	88,510	28	231,279	HR	7	170,269	35	137,333	42	307,602
HUNEDOARA	HD	8	263,373	6	36,743	14	300,116	HD	7	306,974	22	84,436	29	391,410
IALOMITA	IL	5	127,853	23	76,381	28	204,234	IL	4	123,692	26	91,195	30	214,887

County	CODE	AGGLOMERATIONS PROJECT						CODE	AGGLOMERATIONS ANAR					
		≥ 10,000 p.e.		between 2,000-10,000 p.e.		TOTAL			≥ 10,000 p.e.		between 2,000-10,000 p.e.		TOTAL	
		nr	load, p.e.	nr	load, p.e.	nr	load, p.e.		nr	load, p.e.	nr	load, p.e.	nr	load, p.e.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
IASI	IS	4	665,345	24	81,500	28	746,845	IS	5	1,063,534	56	208,395	61	1,271,929
ILFOV	IF	3	39,558	22	95,085	25	134,643	IF	10	247,444	32	184,876	42	432,320
MEHEDINTI	MH	1	98,186	9	36,737	10	134,923	MH	1	105,870	12	46,444	13	152,314
MARAMURES	MM	4	248,747	24	91,444	28	340,191	MM	5	293,391	41	182,091	46	475,482
MURES	MS	6	366,278	18	55,585	24	421,863	MS	6	289,673	32	130,125	38	419,798
NEAMT	NT	3	210,303	17	70,410	20	280,713	NT	4	203,745	57	251,630	61	455,375
OLT	OT	4	147,553	36	117,350	40	264,903	OT	5	139,017	73	227,367	78	366,384
PRAHOVA	PH	11	349,701	41	165,446	52	515,147	PH	12	418,347	82	347,155	94	765,502
SALAJ	SJ	1	58,818	7	35,194	8	94,012	SJ	3	88,951	10	39,823	13	128,774
SATU MARE	SM	3	156,743	23	81,659	26	238,402	SM	3	157,187	40	159,070	43	316,257
SIBIU	SB	3	246,711	23	89,900	26	336,611	SB	5	289,695	36	133,021	41	422,716
SUCEAVA	SV	7	239,487	34	134,434	41	373,921	SV	8	250,585	74	313,191	82	563,776
TELORMAN	TR	4	113,322	23	76,075	27	189,397	TR	5	166,263	65	215,820	70	382,083
TIMIS	TM	4	486,307	36	126,509	40	612,816	TM	4	515,580	56	185,201	60	700,781
TULCEA	TL	1	81,060	16	60,292	17	141,352	TL	3	120,173	28	97,359	31	217,532
VALCEA	VL	2	148,196	16	60,816	18	209,012	VL	4	188,923	63	214,268	67	403,191
VASLUI	VS	3	128,083	11	35,139	14	163,222	VS	4	223,287	27	80,433	31	303,720
VRANCEA	VN	2	96,408	23	97,432	25	193,840	VN	5	153,445	32	132,410	37	285,855
TOTALS		169	11,011,196	872	3,331,060	1,041	14,342,256		207	13,624,623	1,663	6,611,943	1 870	20,236,565
% difference		-18.4%	-19.2%	-47.6%	-49.6%	-44.3%	-29.1%							

Detailed information about the agglomerations in each county is presented in **Annex 8**.

The following key conclusions can be made:

- The total number of agglomerations, defined according to the new methodology for boundaries delineation is **1,041** compared to **1,870** according to the latest report of ANAR for compliance according to Art. 15, i.e. there is over 44 percent reduction of the total number of agglomerations, as:
 - The total number of project agglomerations equal or above 10,000 p.e. is **169**, compared to **207** according to ANAR data as of the end of 2017, i.e. there is about 18 percent reduction in agglomerations number;
 - The total number of project agglomerations between 2,000 p.e. and 10,000 p.e. is **872**, compared to **1663** according to ANAR latest compliance report, i.e. there is over 47 percent reduction in agglomerations number;
- The total generated load of the agglomerations, determined by applying the new methodology for calculation of agglomeration pollution load is **14,342,256** p.e. compared to **20,236,565** p.e. based on the latest ANAR data as of the end of 2017; i.e. the decrease is with 29 percent, as:
 - The total generated load of project agglomerations equal or above 10,000 p.e. is **11,011,196** p.e. compared to **13,624,623** p.e. according to the latest ANAR data, i.e. there is over 19 percent reduction;
 - The total generated load of project agglomerations between 2,000-10,000 p.e. is **3,331,060** p.e. compared to **6,611,943** p.e., i.e. there is over 49 percent decrease;

The most significant reduction both in number of Agglomerations and generated loads is observed for the agglomerations between 2,000 and 10,000 p.e.

The main reasons for these differences are the following:

- Delineation of the agglomeration boundaries follows the principle of sufficiently concentrated area as established by the new methodology;
- More precise “tailor-made” calculation of the pollution load, using wherever available and sufficient WWTPs inlet monitoring data and/or specific data concerning the industrial emitters within the agglomerations.

Findings:

- The calculation of the agglomeration load demands extensive data base concerning the connection rate to collecting system (as defined in Art. 2(5) of the UWWTD), the connection rate to UWWTP, information on the industrial emitters, as well as inlet monitoring data about flow and BOD₅ load of the existing UWWTPs. The most challenging in the whole process is the provision of this information from the local and regional WSS Operators. In this aspect:
- Information concerning the connection rates of the households to collecting system and UWWTPs within a settlement is usually not systematized and when collected incomplete. Correct information on the connection rates of the households at settlement level is a milestone for determining the current status of the wastewater management and the need for future investments within an agglomeration.

- Most of the agglomerations/settlements are connected to UWWTPs and this is a very positive outcome of the years' long efforts of the state authorities to fulfil the EU Acquis Communautaire and to improve the ecological situation in the country.
- An extensive data base concerning the inlet flow and load monitoring data of the existing UWWTPs has been received during the project implementation. At the same time, only about 30 percent of this data base could be utilized due to:
 - Not provided inlet daily flows, which makes impossible the calculation of the BOD₅ inlet loads;
 - Insufficient BOD₅ inlet monitoring data. As above mentioned, the data processing has shown that if the samples are less than 40 per annum, the determination of the load, based on WWTP inlet monitoring data is not reliable.
 - For smaller UWWTPs, where there are less than 24 samples per annum at the inlet, an extensive data could be collected, which will allow more reliable determination of the inlet BOD₅ load.
 - The team is aware that requesting additional information, in a short period of time, is an extra burden for the WSS Operators. That's why a small software product could be developed to allow the WSS operators to fill in information on connection rates and UWWTP inlet monitoring data, at regular intervals. This information can be automatically transferred to the responsible state bodies and directly implemented in the load calculation.
- Most of the agglomerations around or slightly above than 2,000 p.e., included in the last compliance report of ANAR have less than 2,000 population. In addition, no evidence from the regional and local WSS Operators was provided for significant industrial activities in these agglomerations.

Annex 8 provides detailed information at county level on all agglomerations delineated by application of the new national methodology, settlements included within each agglomeration, the respective generated loads and the rate of connection to collecting system and IAS.

Chapter 5. Use of Maps and List Report

40. The information presented in this Output 3, which includes maps and list of agglomerations, have implications on the overall cost of compliance with Directive 91/271/EEC and (indirectly) and informs the future investment process, compliance efforts and timeline to achieve UWWTD requirements.

5.1 Implications on the compliance costs

41. The methodology presented above has been developed in full compliance with the requirements of the UWWTD and further guidance as the “Terms and Conditions” document¹¹, as well as it has considered the results of relevant cases and practices in other EU MS (see Output 2).

There are cost implications resulting from having a different list of agglomerations, different loads and different boundaries of agglomerations when compared to the existing list of agglomerations and loads as reported by the Romanian MoEWF to the European Commission. As pointed out in **Chapter 4**, the implementation of methodologies is leading to significant changes in comparison to the latest reporting by Romanian authorities. The main reasons for these changes are listed in the report as well as details provided in the Annexes.

It is unknown yet what would be the overall optimization (reduction) of compliance cost since the work on the strategic financing plan is ongoing, however the expectations are that, due to the significant reduction of number of agglomerations the investment needs will also reduce significantly, while ensuring appropriate level of environmental protection because the reduction of pollution load is with much smaller percentage (details presented in **Chapter 4** and Annexes to this report). The actual implication on compliance costs reflecting the assessment of bringing 1,041 agglomerations in compliance will be presented in the next Output 4, which will present updated implementation/acceleration plan to achieve compliance with the UWWTD requirements. Thus, the Romanian authorities could optimize compliance costs with the UWWTD, without compromising on the environmental protection.

5.2 Implications on investments in the WSS sector

42. It should be clarified that the final measures that an investment project in the sector will finance, should be determined at the FS stage, taking into consideration the newly defined agglomeration boundaries, current context and future situation. Having this in mind the availability of detailed agglomeration maps with supporting justification provide an excellent starting point. However, it will be important that any FS suggesting significant deviations between the proposed collecting network compared to the agglomeration boundaries need to justify such a change. This is expected both for FS where the proposed collecting network does not cover the entire agglomeration, and for FS where the proposed network extends beyond the identified agglomeration boundaries. The same applies also to the determination of the size of the agglomeration load (in p.e.) at the level of the FS compared to the load calculated within this technical assistance. The calculation of the pollution load at the FS level should be based on: i) extended on-site data and

¹¹ UWWTD-REP Working Group (2007): Terms and Definitions of the Urban Wastewater Treatment Directive 91/271/EEC; <https://ec.europa.eu/environment/water/water-urbanwaste/info/pdf/terms.pdf>

assessment of the future socio-economic development of the agglomeration, as well as ii) additional representative and sufficient monitoring data on the generated wastewater load and flow.

The team would also like to clarify that all ongoing investments or projects approved for financing should be implemented and not affected by the current inventory of agglomerations in Romania. The work on the agglomeration boundaries is not intended to block the ongoing investment process in the WSS sector. On the contrary, the efforts to properly define agglomeration boundaries and pollution load should inform investment decisions, help for prioritizations of measures to accelerate compliance; lead to optimization of compliance costs and last but not least accelerate the investment process by clearly identifying where and what investments are to happen in order to bring an agglomeration in compliance.

5.3 Preparation of updated Implementation Plan for compliance with the UWWTD

43. The team is working on the finalization of Output 4 (see above), which will present updated figures on the cost for all outstanding compliance investments, as well as maintenance requirements for WSS infrastructure to sustain compliance.

The newly developed list of agglomerations above 2,000 p.e. is of significant importance for the final Output 4. It serves as a ground for the bottom-up calculation of the updated investment needs to address the challenges of the UWWTD requirements. Based on this, and considering the limited financial resources available, the existing funding gap will be estimated, and a Strategic Financing Plan will be developed for closing it down in a cost-efficient, socially-affordable and environmentally-reasonable way.

The Strategic Financing plan, part of Output 4, will take into account not only the UWWTD-driven investments, but also the associated operating and maintenance costs, as well as the adequate operations and needed reinvestments in the overall WSS system, because the targeted positive impact from meeting the requirements of the UWWTD could be achieved and sustained only if the service quality levels are not deteriorated. And all these are to be achieved under affordability constraints that are to be also adequately addressed.

Hence, the issues of UWWTD investment needs, affordability and sustainability will be addressed jointly through prioritization, where the biggest agglomerations with already built WWTPs will be given the highest priority, and the smallest agglomerations with relatively low density of the population and no WWTPs will be assigned the lowest priority. In such a way, bigger environmental polluters with regard to UWWTD, that at the same time are more cost efficient and socially affordable, will be addressed first. Not only this would allow “fast compliance”, but also it would create lower financial burden on the population and WSSOs. Agglomerations where IAS will ensure the same level of environmental treatment at lower costs than the collecting system will be further considered.

As a result, an indicative timetable for meeting the requirements of Directive 91/271/EEC, considering the available financial resources, and the environmental, social and economic aspects of the UWWTD, will be prepared to support the Romanian authorities during the discussions with the European Commission (EC) at least for the preparation of investments to be financed under 2021-2027 European Union (EU) programming period.

Annex 1: Assumptions and calculation to determine the cut-off values for Romania

Assumptions in NPV calculations

- The economic lifetime of all civil construction facilities (IAS, collecting system) is 50 years;
- The economic lifetime of the equipment is 10 years;
- The equipment renewal will be once per 10 years;
- The discount rate is 4 percent in real terms as an indicative benchmark for discounting cash flows back to the present¹².

Determination of CAPEX of the collecting system

Information on historical project costs and estimated project costs from Feasibility Studies (FS) financed under Large Infrastructure Operational Programme (LIOP) has been analyzed. Completion reports from EU funded WSS projects received from Ministry of EU Funds covering 2007-2014 budgetary framework were also reviewed. In total 96 projects are included in this analysis. The data includes the following information:

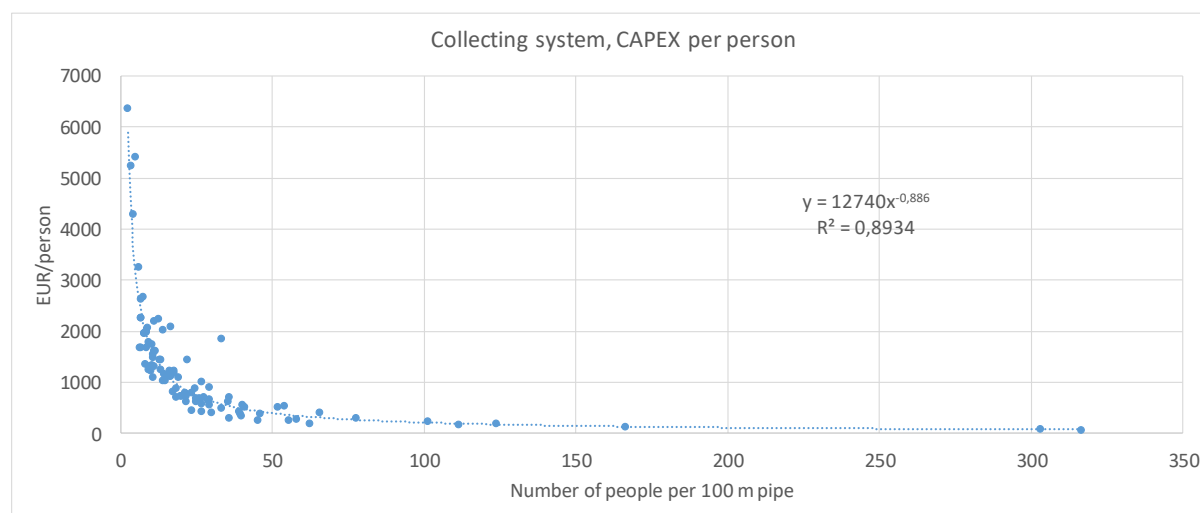
- People to be connected to the system;
- Length of the new pipelines (main and secondary);
- Costs for construction (pipes, collectors, pumping stations), EUR.

Based on these data, the following has been calculated:

- Cost per person connected, EUR.
- Number of people connected/100 m constructed sewer pipe.

The data can be correlated to show a relationship between the people connected per 100 m and the cost per person. The correlation is shown in the figure below.

Figure 11: CAPEX determination for the collecting systems (EUR/person) in relation to people connected per 100 m pipe



¹² Art. 19 (3) of Commission Delegated Regulation (EU) No 480/2014

Source: WB elaboration

The data shows that there is a strong correlation ($R^2 = 0.89$) between number of people per 100 m pipe and cost of collecting system per person.

Determination of OPEX of the collecting system

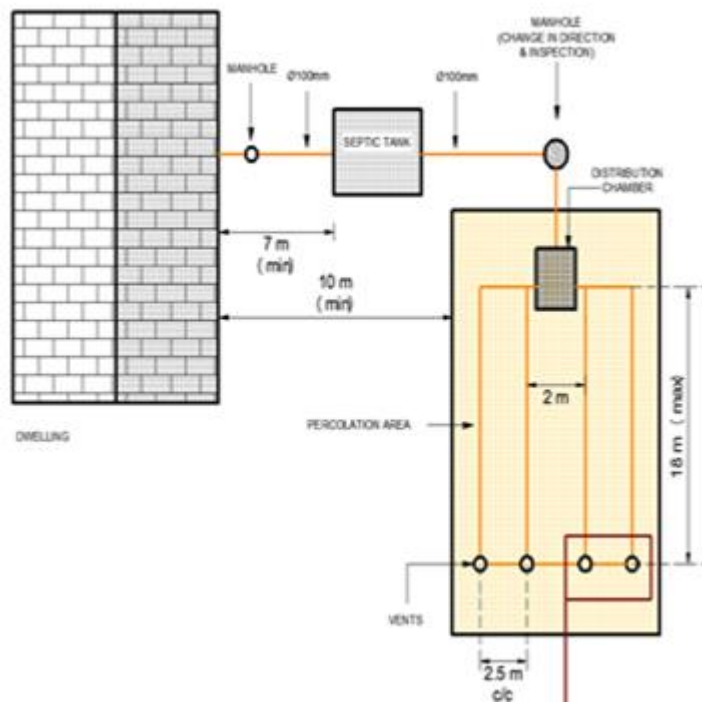
O&M costs for the collecting system is assumed 1 percent of its CAPEX.

Determination of CAPEX and OPEX of IAS

There are a significant number of IAS that are available on the market, each of them having their own specificities related to technology, environmental protection and price. The cheapest and most commonly used IAS in Europe that provides a good ratio between environmental benefits, CAPEX and OPEX was used for comparative purposes: IAS1 Septic tank plus soil infiltration system. NPV was calculated based on the current market costs.

This IAS1 is a combination of two standardized units – septic tank and soil infiltration system.

Figure 12: IAS - 1 Septic tank plus soil infiltration systems



Source: Irish EPA, 2009

Table 5: Investment costs for IAS 1 - Septic tank plus soil infiltration system (including installation)

	cost, €
Septic tank 2.6 m ³ and connections	1,530
Soil infiltration system	580
Total	2,110

Table 6: Annual operational costs for IAS 1 - Septic tank plus soil infiltration system

	cost, €/year
Cleaning 2 times/year	140
Total	140

- Summary table IAS 1: Septic tank plus soil infiltration system

The summary financial and treatment level information is shown in the table below.

Table 7: Summary information for IAS 1: Septic tank plus soil infiltration system

Item	Values or description
Treatment level	Secondary treatment
Investment cost for 3-person family house	From 2,110 €
Life time	50 years
Annual operational costs for 3-person family house	From 140 €/year

Annex 2: Agglomeration maps covering the entire territory of Romania

Electronic maps in PDF format are provided on USB drive as part of this report. Folders, with hard copies of maps in A1 and A2 formats are provided separately due to their volume. The folders are organized by a county, starting with a county overview map (A1 format), where all the agglomerations are presented and continuing alphabetically with a map of each agglomeration (A2 format) in the county. The source SHP files will be provided to the ministry with the final version of this report after reflecting all comments from county, local authorities as well as WSS operators.

All the comments received by the WB team from central and local authorities as well as from operators have been reviewed. Following the receipt of additional information, maps and discussions some of the agglomeration boundaries have been revised and updated. Setting up agglomeration boundaries is a dynamic process, which should follow population and economic activities. Hence, if additional information appears (development of collecting system, impermeable soil, stricter environmental requirements, urbanization and etc.) the boundaries should be updated to reflect the actual situation to the extent possible.

The electronic maps can be accessed below:

<https://1drv.ms/u/s!AqA2u4QrN31mhacHNI3RSc5Z34Y0Hg?e=tYmK3H>

Annex 3: Agglomerations, according to counties that no longer need to be reported under the UWWTD

1. ALBA

Agglomeration code	Justification	A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_2149	Albac	X			
ROAG_2390	Arieșeni	X			
ROAG_2924	Baia de Arieș		X		
ROAG_2997	Berghin	X			
ROAG_3048	Bistra	X			
ROAG_4115	Câlnic	X			
ROAG_3967	Cetatea de Baltă	X			
ROAG_1080	Ciugud	X			
ROAG_3976	Crăciunelu de Sus	X			
ROAG_4151	Cricău	X			
ROAG_4375	Galda de Jos	X			
ROAG_4491	Gârbova	X			
ROAG_4776	Horea	X			
ROAG_4954	Ighiu	X			
ROAG_5112	Jidvei	X			
ROAG_5229	Lopadea Nouă	X			
ROAG_5318	Lunca Mureșului	X			
ROAG_5345	Lupșa	X			
ROAG_5586	Metăș	X			
ROAG_5719	Mihalt	X			
ROAG_6770	Roșia Montană	X			
ROAG_7053	Săliște	X			
ROAG_7927	Sânmiclăuș	X			
ROAG_7393	Sântimbru	X			
ROAG_7106	Săsciori	X			
ROAG_7829	Șibot	X			
ROAG_7455	Sohodol	X			
ROAG_7954	Șpring	X			
ROAG_7776	Stremț	X			
ROAG_8023	Șugag	X			
ROAG_8363	Valea Lungă	X			
TOTAL		30	1	0	0

2. ARGES

Agglomeration code	Justification	A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_14003	Aninoasa	X			
ROAG_14094	Babana	X			
ROAG_14281	Balilesti	X			
ROAG_14414	Berevoesti			X	
ROAG_14762	Bradulet	X			
ROAG_14931	Bughea de Jos			X	
ROAG_15242	Cateasca	X			
ROAG_15322	Cepari	X			
ROAG_15411	Cetateni	X			
ROAG_15457	Cicanesti	X			
ROAG_15509	Ciofrangeni	X			
ROAG_15689	Cocu	X			
ROAG_15750	Corbeni	X			
ROAG_15992	Cotmeana	X			
ROAG_16141	Cuca	X			
ROAG_17263_01	Draghici	X			
ROAG_16481	Dragoslavele	X			
ROAG_16560	Godeni	X			
ROAG_16622	Harsesti	X			
ROAG_16668	Hartiesti	X			
ROAG_16953	Lunca Corbului	X			
ROAG_17058	Malureni	X			
ROAG_13980	Mares	X			
ROAG_17263	Mihaesti	X			
ROAG_17405	Mirosi	X			
ROAG_17432	Moraresti	X			
ROAG_17584	Mozaceni	X			
ROAG_17655	Musatesti	X			
ROAG_17735	Negrasi	X			
ROAG_17833	Oarja		X		
ROAG_18037	Poiana Lacului	X			
ROAG_17977	Poienarii de Muscel	X			
ROAG_18171	Popesti	X			
ROAG_18340	Ratesti	X			
ROAG_18563	Salatrucu	X			
ROAG_18518	Serbanesti	X			
ROAG_18787	Stalpeni				X
ROAG_19123	Stefan cel Mare	X			

Agglomeration code	Justification	A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_18867	Stoenesti	X			
ROAG_18947	Stolnici	X			
ROAG_19150	Suici	X			
ROAG_19258	Tigveni	X			
ROAG_19409	Uda	X			
ROAG_19579	Ungheni	X			
ROAG_19640	Valea Danului	X			
ROAG_19800	Vedea	X			
ROAG_20000	Vladesti			X	
ROAG_16720	Vulturesti			X	
	TOTAL	42	1	4	1

3. ARAD

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_9798	Apateu	X			
ROAG_10113	Bârzava	X			
ROAG_10373	Cermei	X			
ROAG_10462	Conop	X			
ROAG_9510	Dorobanți	X			
ROAG_9315	Frumușeni	X			
ROAG_10916	Grăniceri(Șiclău)	X			
ROAG_10943	Gurahonț	X			
ROAG_11361	Iratoșu	X			
ROAG_11548_01	Păuliș	X			
ROAG_12153	Sagu			X	
ROAG_11575	Sâmbăteni	X			
ROAG_11851	Săvârșin	X			
ROAG_11995	Seleuș	X			
ROAG_9379	Sofronea	X			
ROAG_12509	Târnova	X			
ROAG_11628	Turnu	X			
	TOTAL	16	0	1	0

4. BACAU

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_21016	Agas	X			
ROAG_21105	Ardeoani	X			
ROAG_21463	Barsanesti	X			
ROAG_21258	Beresti - Bistrita	X			
ROAG_21347	Beresti - Tazlau	X			
ROAG_21427	Berzunti		X		
ROAG_21579	Bogdanesti	X			
ROAG_21677	Buhoci	X			
ROAG_21766	Caiuti	X			
ROAG_21891	Colonesti, Zapodia	X			
ROAG_21980	Corbasca	X			
ROAG_22068	Cotofanesti	X			
ROAG_22415	Cucuieti				X
ROAG_22237	Dealul Morii	X			
ROAG_22488	Filipeni	X			
ROAG_22585	Filipesti	X			
ROAG_22665	Gaiceana	X			
ROAG_22754	Ghimes - Faget	X			
ROAG_22834	Glavanesti	X			
ROAG_20616	Gura Vaii	X			
ROAG_22905	Helegiu	X			
ROAG_22950	Horgesti	X			
ROAG_23056	Huruiesti	X			
ROAG_23207	Lipova	X			
ROAG_23298	Livezi	X			
ROAG_23396	Magiresti	X			
ROAG_23494	Motoseni	X			
ROAG_23653	Negri	X			
ROAG_23957	Orbeni	X			
ROAG_23984	Palanca	X			
ROAG_24196	Pancesti	X			
ROAG_24098	Parincea	X			
ROAG_24347	Parjol	X			
ROAG_24427	Plopana	X			
ROAG_24285	Pragaresti	X			
ROAG_24837	Rachitoasa	X			
ROAG_24720	Racova		X		

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_25004	Rosiori	X			
ROAG_25157	Sanduleni	X			
ROAG_25077	Sascut	X			
ROAG_25308	Scorteni	X			
ROAG_25371	Secuieni	X			
ROAG_25497	Solont	X			
ROAG_25521	Stanisesti	X			
ROAG_20689	Stefan cel Mare	X			
ROAG_25638	Strugari	X			
ROAG_25709	Tamasi	X			
ROAG_25754	Tatarasti	X			
ROAG_25834	Tg. Trotus	X			
ROAG_25870	Traian	X			
ROAG_25941	Ungureni	X			
ROAG_26038	Urechesti	X			
ROAG_26118	Vultureni	X			
ROAG_26298	Zemes		X		
TOTAL		50	3	0	1

5. BIHOR

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_26742	Astileu (Pestere, Chistag)			X	
ROAG_27285	Avram Iancu (Tamasda)	X			
ROAG_27686	Bratca (Beznea)	X			
ROAG_28709	Campani (Fanate, Harsesti, Sighistel)	X			
ROAG_28246	Cefa (Inand)	X			
ROAG_29154	Dobresti			X	
ROAG_29403	Finis (Fizis, Ioanis, Suncuis)	X			
ROAG_29902	Lugasu de Jos (Lugasu de Sus)	X			
ROAG_26920	Nucet	X			

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_30229	Olcea (Calacea, Ucuris)	X			
ROAG_30336	Pietroasa	X			
ROAG_30470	Pomezau	X			
ROAG_30648	Rabagani	X			
ROAG_30844	Rosia			X	
ROAG_32187	Rosiori			X	
ROAG_31510	Suncuius (Balnaca)	X			
ROAG_32201	Toboliu (Cheresig)	X			
ROAG_30274	Osorhei (Fughiu, Alparea)				X
ROAG_26582	Sanmartin (Baile Felix, Haieu, Rontau, Cihei, Cordau)				X
TOTAL		13	0	4	2

6. BISTRITA-NASAUD

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_32820	Caianu Mic	X			
ROAG_32937	Cetate	X			
ROAG_33131	Chiuza	X			
ROAG_33186	Cosbuc	X			
ROAG_33211	Dumitra	X			
ROAG_33346	Ilva Mare	X			
ROAG_33523	Lesu	X			
ROAG_33998	Nimigea	X			
ROAG_34164	Parva		X		
ROAG_34654	Sieu	X			
ROAG_34707	Sieu Magherus	X			
TOTAL		10	1	0	0

7. BRAILA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_42968	Ciocile	X			
ROAG_43279	Gradistea	X			
ROAG_43625	Mircea Voda		X		
ROAG_44113	Surdila Gaiseanca	X			
ROAG_43073_01	Tataru	X			
ROAG_44435	Victoria		X		
ROAG_44462	Visani	X			
ROAG_44560	Cazasu				X
	TOTAL	5	2	0	1

8. BOTOSANI

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_36131	Albești	X			
ROAG_36499	Calarasi	X			
ROAG_36569	Copălău		X		
ROAG_36603	Coșula	X			
ROAG_36907	Cristești		X		
ROAG_37173	Drăgușeni	X			
ROAG_37770	Hudești	X			
ROAG_37823	Ibănești		X		
ROAG_37850	Leorda	X			
ROAG_37912	Lunca	X			
ROAG_38456	Nicșeni	X			
ROAG_38544	Pomârla		X		
ROAG_38580	Prăjeni	X			
ROAG_35884	Roma		X		
ROAG_38982	Suharău		X		
ROAG_39051	Sulița	X			
ROAG_39417	Ungureni		X		
ROAG_39694	Vârful Câmpului	X			
ROAG_39328	Trușești		X		
ROAG_39738	Vlădeni	X			
	TOTAL	12	8	0	0

9. BRASOV

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_40777	Cata	X			
ROAG_40866	Comana	X			
ROAG_41257	Homorod	X			
ROAG_41293	Jibert	X			
ROAG_41391	Maierus	X			
ROAG_41480_01	Moeciu				X
ROAG_41550	Ormenis	X			
ROAG_41587	Parau	X			
ROAG_41630	Poiana Marului		X		
ROAG_41827	Sercaia	X			
ROAG_41863	Sinca	X			
ROAG_41952	Soars	X			
ROAG_42110	Ucea	X			
ROAG_42165	Ungra	X			
ROAG_42183	Vama Buzaului			X	
ROAG_42245	Vistea	X			
ROAG_42316	Voila	X			
ROAG_41934	Sanpetru				X
	TOTAL	14	1	1	2

10. BUCHAREST

No excluded agglomerations.

11. BUZAU

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_45003	Beceni			X	
ROAG_45619	Breaza	X			
ROAG_45682	Buda	X			
ROAG_46180	Chiojdu	X			
ROAG_46910	Glodeanu Silistea	X			
ROAG_49643_01	Grajdana	X			
ROAG_47079	Gura Teghii	X			
ROAG_47453_01	Lipia	X			
ROAG_47300	Luciu		X		
ROAG_49484_01	Lunca Jaristei	X			
ROAG_49849_02	Maxenu		X		
ROAG_47453	Merei			X	
ROAG_48557	Parscov		X		
ROAG_48487	Pietroasele			X	
ROAG_48691	Podgoria	X			
ROAG_49849_01	Pogonele	X			
ROAG_48851	Puiesti			X	
ROAG_49073	Sageata	X			
ROAG_50102	Vernesti		X		
ROAG_50326	Viperesti	X			
ROAG_50415	Zarnesti	X			
	TOTAL	13	4	4	0

12. CALARASI

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_94125	Alexandru Odobescu	X			
ROAG_93370_01	Dalga	X			
ROAG_93441	Dorobantu	X			
ROAG_93539	Dragos Voda	X			
ROAG_93771	Independenta		X		
ROAG_93851	Lehliu	X			
ROAG_104092	Luica	X			
ROAG_93931	Lupsanu	X			
ROAG_100647	Mitreni	X			
ROAG_104644	Plataresti	X			
ROAG_105231	Sohatu	X			
ROAG_105259	Spantov	X			
ROAG_94580	Stefan Voda	X			
ROAG_94768	Vlad Tepes	X			
TOTAL		13	1	0	0

13. CARAS SEVERIN

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_51519	Berzovia			1	
ROAG_54396	Topleț		1		
TOTAL		0	1	1	0

14. CLUJ

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_55605	Aiton	X			
ROAG_55927	Baisoara	X			
ROAG_56363	Caianu	X			
ROAG_56434	Calarasi	X			
ROAG_56675	Caseiu	X			
ROAG_57323	Catcau	X			
ROAG_56853	Ceanu Mare	X			
ROAG_57591	Feleacu	X			
ROAG_57751	Frata	X			
ROAG_57957	Garbau	X			
ROAG_58151	Iclod	X			
ROAG_58268	Jucu	X			
ROAG_58632	Mociu	X			
ROAG_58730	Moldovenesti	X			
ROAG_59416	Sic			X	
ROAG_59773	Tureni (Martinesti)	X			
ROAG_59899	Unguras	X			
ROAG_55696	Apahida				X
ROAG_55071	Cuzdrioara				X
	TOTAL	16	0	1	2

15. CONSTANTA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_60516	Navodari				X
ROAG_62324	Saligny	X			
ROAG_60730	Tuzla				X
ROAG_62887	Sacele			X	
	TOTAL	1	0	1	2

16. COVASNA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_63633	Barcani		X		
ROAG_63811	Batanii	X			
ROAG_63900	Bodoc	X			
ROAG_63946	Borosneu Mare	X			
ROAG_64050	Bradut	X			
ROAG_64149	Catalina	X			
ROAG_64274	Dobarlau	X			
ROAG_64354	Ghidfalău	X			
ROAG_64407	Haghig	X			
ROAG_64434	Ilieni	X			
ROAG_64577	Moacsa	X			
ROAG_64782	Reci	X			
ROAG_64915	Valea Crisului	X			
ROAG_63688	Sita Buzaului				X
	TOTAL	12	1	0	1

17. DAMBOVITA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_66250	Barbuletu	X			
ROAG_66438	Buciumeni	X			
ROAG_101564	Butimanu	X			
ROAG_66535	Candesti	X			
ROAG_66633	Cobia	X			
ROAG_66777	Contesti	X			
ROAG_66866	Corbii Mari	X			
ROAG_67014	Cornesti	X			
ROAG_67194	Crangurile	X			
ROAG_102295	Crevedia *				X
ROAG_67292	Dobra	X			
ROAG_67336	Dragodana	X			
ROAG_67416	Dragomiresti			X	

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_67470	Finta	X			
ROAG_65716	Gura Fcii	X			
ROAG_67684	Hulubesti	X			
ROAG_65869	Iedera	X			
ROAG_67951	Malu cu Flori	X			
ROAG_68075	Matasaru	X			
ROAG_68137	Mogosani	X			
ROAG_68262	Morteni		X		
ROAG_65645	Motaieni	X			
ROAG_68351	Odobesti	X			
ROAG_65761	Petresti	X			
ROAG_68538	Produlesti	X			
ROAG_67808	Raciu	X			
ROAG_69376	Rascaeti		X		
ROAG_68716	Runcu	X			
ROAG_68878	Salcioara	X			
ROAG_68985	Uliesti	X			
ROAG_69063	Valea Lunga	X			
ROAG_69189	Valea Mare	X			
ROAG_69312	Valeni Dambovita		X		
ROAG_69394	Visinesti	X			
ROAG_69535	Voinesti	X			
ROAG_69615	Vulcana Bai	X			
ROAG_179640	Vulcana Pandele				X
ROAG_68574	Pucheni				X
ROAG_105543	Tartasesti				X
ROAG_65510	Ulmi				X
ROAG_65379	Aninoasa				X
ROAG_66009	Branesti				X
ROAG_66161	Branistea				X
ROAG_67130	Costestii din Vale				X
ROAG_67595	Gura Ocnitei				X
	TOTAL	31	3	1	10

* Crevedia moved to Bucharest agglomeration.

18. DOLJ

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_70520	Afumati	X			
ROAG_70566	Almaj	X			
ROAG_70726	Apele Vii			X	
ROAG_71055	Bradesti	X			
ROAG_69964	Bucovat	X			
ROAG_71536	Carpen	X			
ROAG_71572	Castranova	X			
ROAG_71910	Cotofenii din Dos	X			
ROAG_72061	Diosti	X			
ROAG_72169	Dragotesti	X			
ROAG_72221	Dranic	X			
ROAG_70469	Fratostita		X		
ROAG_72463	Gighera	X			
ROAG_72506	Giubega		X		
ROAG_73068	Malu Mare	X			
ROAG_73102	Melinesti	X			
ROAG_73424	Murgasi	X			
ROAG_73914	Rastu Nou	X			
ROAG_73932	Robanesti	X			
ROAG_74073	Scaesti	X			
ROAG_74420	Teslui	X			
ROAG_70174	Simnicu de Sus				X
ROAG_74509	Tuglui				X
ROAG_70245	Milesti				X
	TOTAL	18	2	1	3

19. GORJ

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_78472	Albeni	X			
ROAG_78604	Aninoasa			X	
ROAG_81139	Closani	X			
ROAG_82779_01	Covrigi			X	

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_80285	Farcasesti	X			
ROAG_82430_01	Pocruia (Pocruia, Isverna, Costeni)	X			
ROAG_81399	Polovragi		X		
ROAG_82314	Stoina	X			
ROAG_82680	Tantareni			X	
ROAG_82430	Tismana	X			
ROAG_82555	Turburea	X			
ROAG_82831	Vladimir	X			
ROAG_80249	Dragotesti				X
ROAG_78016	Dragutesti				X
ROAG_81273	Plopsoru				X
ROAG_81576_01	Balta (Balta, Baltisoara, Valea Mare)	X			
TOTAL		9	1	3	3

20. GALATI

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_75864	Cavadinesti	X			
ROAG_77224_01	Cismele	X			
ROAG_76139	Cuca			X	
ROAG_76282	Foltesti			X	
ROAG_76763	Namoloasa	X			
ROAG_76816	Nicoresti	X			
ROAG_77082	Rediu	X			
ROAG_77377	Tepu		X		
ROAG_75150	Vanatori		X		
TOTAL		5	2	2	0

21. GIURGIU

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_101387	Bucsani	X			
ROAG_101626	Buturugeni	X			
ROAG_101993	Clejani			X	
ROAG_102115	Comana			X	
ROAG_102455	Daia	X			
ROAG_103201	Gaujani	X			
ROAG_103363	Gostinu			X	
ROAG_103416	Gradinari	X			
ROAG_103489	Greaca	X			
ROAG_103648_01	Herasti	X			
ROAG_104056	Letca Noua	X			
ROAG_104724	Putineiu	X			
ROAG_104797	Rasuceni	X			
ROAG_105115	Singureni	X			
ROAG_105302	Stanesti	X			
ROAG_105357	Stoenesti	X			
ROAG_154718	Toporu	X			
ROAG_105981	Vanatorii Mici	X			
ROAG_105632	Ulmi				X
ROAG_104001	Joita				X
TOTAL		15	0	3	2

22. HARGHITA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_83945	Bilbor		X		
ROAG_85813	Cozmeni	X			
ROAG_84273	Dealu	X			
ROAG_84479	Galautas	X			
ROAG_84754	Lunca de Jos	X			
ROAG_84656	Lunca de Sus	X			
ROAG_84834	Lupeni	X			
ROAG_84932	Martinis	X			
ROAG_85083	Mihaileni	X			
ROAG_86080	Mihaileni	X			
ROAG_85298	Plaiesii	X			
ROAG_85699_01	Sântimbru		X		
ROAG_85537	Sarmas	X			
ROAG_85886	Subcetate	X			
ROAG_86142	Tulghes		X		
ROAG_86197	Tusnad	X			
ROAG_83160	Bradesti				X
TOTAL		13	3	0	1

23. HUNEDOARA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_118012	Baita	X			
ROAG_88001	Baru	X			
ROAG_88270	Beriu	X			
ROAG_88458	Bosorod	X			
ROAG_88653	Bretea Romana	X			
ROAG_89259	Certeju de Sus	X			
ROAG_89865_01	Dobra	X			
ROAG_86892	Ghelari	X			
ROAG_89810	Harau	X			
ROAG_89865	Ilia	X			
ROAG_90351	Orastioara de Sus	X			
ROAG_90547	Pui	X			
ROAG_90887	Rau de Mori	X			
ROAG_91009	Romos	X			
ROAG_91125	Salasu de Sus	X			
ROAG_91349	Soimus	X			
ROAG_86945	Teliucu Inferior	X			
ROAG_91991	Vetel	X			
ROAG_91241	Santamaria Orlea				X
TOTAL		18	0	0	1

24. IALOMITA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_93021	Bucu		X		
ROAG_102749	Fierbinti				X
ROAG_103862	Ion Roata		X		
ROAG_104270	Movilita		X		
ROAG_94795	Vladeni		X		
TOTAL		0	4	0	1

25. IASI

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_95621	Alexandru I. Cuza	X			
ROAG_98079	Ciohorani	X			
ROAG_96334	Coarnele Caprei		X		
ROAG_96370	Comarna		X		
ROAG_96192_01	Coropniceni, Satu Nou	X			
ROAG_100282	Costești, Giurgești	X			
ROAG_96423_01	Covasna, Hilița	X			
ROAG_96593	Cozmești	X			
ROAG_96888	Dobrovăț		X		
ROAG_99673_01	Gârbești		X		
ROAG_97189	Gorban	X			
ROAG_97090_03	Grădinari	X			
ROAG_97321	Gropnița	X			
ROAG_99584	Hărmanești	X			
ROAG_97474	Heleșteni	X			
ROAG_97615	Lespezi	X			
ROAG_98060	Miroslovești	X			
ROAG_98177	Mogoșești		X		
ROAG_98113	Mogoșești (Budești)	X			
ROAG_98435	Popești	X			
ROAG_98649	Progota	X			
ROAG_98916	Scânteia	X			
ROAG_99058	Sinești	X			
ROAG_99370	Șipote	X			
ROAG_99110	Sirețel			X	
ROAG_99174	Stolniceni-Prajescu	X			
ROAG_99209	Strunga	X			
ROAG_99487	Tătăruși	X			
ROAG_99780	Țibănești	X			
ROAG_99600	Trifești	X			
ROAG_99922	Tutora	X			
ROAG_99977	Valea Seaca	X			
ROAG_100095	Vânători	X			
ROAG_100004	Victoria	X			
ROAG_98505_01	Vulturi-Vânători		X		
ROAG_99441	Tansa	X			
	TOTAL	29	6	1	0

26. ILFOV

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_103149	Ganeasa	X			
ROAG_100843	Afumati				X
ROAG_179230	Bragadiru				X
ROAG_100585	Buftea				X
ROAG_179356_01	Catelu				X
ROAG_179258	Chiajna				X
ROAG_179294	Chitila				X
ROAG_102044	Clinceni				X
ROAG_102552_01	Copaceni				X
ROAG_102160	Corbeanca				X
ROAG_179329	Dobroiesti				X
ROAG_102589	Domnesti				X
ROAG_179392	Jilava				X
ROAG_179418	Magurele				X
ROAG_179472	Mogosoia				X
ROAG_179490	Otopeni				X
ROAG_179524	Pantelimon				X
ROAG_179542	Popesti Leordeni				X
ROAG_105589	Tunari				X
ROAG_105945	Vidra				X
ROAG_179560	Voluntari				X
ROAG_105160	Snagov				X
ROAG_102160_01	Tamasi				X
TOTAL		1	0	0	22

* The agglomerations Afumati, Bragadiru, Buftea, Catelu, Chiajna, Chitila, Clinceni, Dobroesti, Domnesti, Jilava, Mogosoia, Magurele, Otopeni, Pantelimon, Popesti Leordeni, Tunari, Vidra, Voluntari are merged with Bucharest Agglomeration.

27. MEHEDINTI

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_109924	Baia de Arama	X			
ROAG_111444	Cujmir (Aurora, Cujmirul Mic)	X			
ROAG_109791	Gura Vaih	X			
ROAG_113894	Vanjulet	X			

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
TOTAL		4	0	0	0

28. MARAMURES

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_107010	Ardusat			X	
ROAG_107163	Băiuț, Strâmbu-Băiuț	X			
ROAG_107289	Bistra	X			
ROAG_107528	Budești	X			
ROAG_107555	Călinești	X			
ROAG_107591	Cernești	X			
ROAG_107742	Copalnic-Mănăstur	X			
ROAG_107939	Cușeni	X			
ROAG_107984	Desești	X			
ROAG_108044	Dumbrăvița	X			
ROAG_108115	Fărcașa	X			
ROAG_108160	Giulești	X			
ROAG_108259	Leordina		X		
ROAG_108277	Mireșu Mare	X			
ROAG_108419	Ocna Șugatag	X			
ROAG_108464	Petrova	X			
ROAG_108507	Remetea Chioarului	X			
ROAG_108801	Săcălășeni	X			
ROAG_108927	Sălsig-Gârdani	X			
ROAG_108721	Satulung	X			
ROAG_109050	Suciu de Sus		X		
ROAG_109014	Stramtura		X		
ROAG_109274	Ulmeni	X			
ROAG_109363	Valea Chioarului	X			
TOTAL		20	3	1	0

29. MURES

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_115085	Adamus	X			
ROAG_115156	Alunis			X	
ROAG_115584	Bagaciu	X			
ROAG_115316	Bahnea			X	
ROAG_115646	Baluseri	X			
ROAG_115717	Beica De Jos	X			
ROAG_115904	Brancovenesti	X			
ROAG_115860	Breaza	X			
ROAG_116055	Chetani	X			
ROAG_116297	Craciunesti	X			
ROAG_116554	Deda	X			
ROAG_116607	Eremitu	X			
ROAG_116992	Gheorghe Doja	X			
ROAG_117051	Ghindari	X			
ROAG_118067	Lunca Bradului	X			
ROAG_119983	Valea Larga	X			
TOTAL		14	0	2	0

30. NEAMT

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_121117	Agapia	X			
ROAG_124938	Alexandru cel Bun	X			
ROAG_123022_06	Balusesti	X			
ROAG_121395	Bara	X			
ROAG_121359	Bicazu Ardelean	X			
ROAG_121616	Bodesti	X			
ROAG_121661	Borca	X			
ROAG_121947	Brusturi-Drăgănești	X			
ROAG_122070	Candesti	X			
ROAG_122034	Ceahlau	X			
ROAG_122196	Cracaoani		X		
ROAG_121910	Cuci	X			

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_121876_01	Cuci	X			
ROAG_125098	Dochia	X			
ROAG_122356	Doljesti	X			
ROAG_122560	Farcasa	X			
ROAG_125150	Gadinti	X			
ROAG_122873	Grinties	X			
ROAG_122917	Grumazesti		X		
ROAG_123184	Margineni	X			
ROAG_124732_01	Miron Costin	X			
ROAG_125052	Nemtisor-Lunca	X			
ROAG_123610_01	Oantu	X			
ROAG_123610	Pangarati	X			
ROAG_123610_02	Pangaricior	X			
ROAG_123807_08	Petru Voda	X			
ROAG_123530	Pipirig	X			
ROAG_123807	Poiana Teiului	X			
ROAG_123923	Raucesti		X		
ROAG_121714	Sabasa	X			
ROAG_124242	Secuieni	X			
ROAG_124082_02	Silistea		X		
ROAG_124509	Tarcau	X			
ROAG_124625	Tazlau		X		
ROAG_124670	Timisesti	X			
ROAG_124732	Trifesti		X		
ROAG_125070	Zanesti				X
ROAG_120833	Savinesti-Roznov				X
ROAG_121741	Borlesti				X
ROAG_120897	Cordun				X
ROAG_123683	Podoleni				X
ROAG_124144	Slobozia				X
ROAG_124643	Tamaseni				X
TOTAL		30	6	0	7

31. OLT

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_125882	Bobicesti	X			
ROAG_126031	Brancoveni	X			
ROAG_126086	Bucinisu	X			
ROAG_126175	Carlogani	X			
ROAG_126237	Colonesti	X			
ROAG_126512	Cungrea			X	
ROAG_127073	Ganeasa	X			
ROAG_126656	Deveselu	X			
ROAG_126727	Dobrosloveni	X			
ROAG_125597	Garcov	X			
ROAG_127180	Gradinari	X			
ROAG_127395	Izvoarele	X			
ROAG_127634	Morunglav	X			
ROAG_127698	Movileni		X		
ROAG_127769	Obarsia			X	
ROAG_128230	Plesoiu	X			
ROAG_128310	Poboru	X			
ROAG_128481	Radomiresti	X			
ROAG_128533	Redea		X		
ROAG_128668	Schitu	X			
ROAG_128873	Seaca		X		
ROAG_125383	Slatioara		X		
ROAG_129059	Sprancenata	X			
ROAG_129148	Strejesti	X			
ROAG_129193	Studina	X			
ROAG_129638	Urzica	X			
ROAG_129996	Valcele	X			
ROAG_129665	Valea Mare			X	
ROAG_129825	Verguleasa	X			
ROAG_129923	Vitomiresti	X			
ROAG_130035	Vladila	X			
ROAG_130071	Voineasa	X			
ROAG_130133	Vulpeni	X			
ROAG_130240	Vulturesti	X			
ROAG_125855	Barza				X
ROAG_126335	Corbu				X
ROAG_126594	Daneasa				X
ROAG_127153	Gostavatu				X
ROAG_129399	Teslui				X
	TOTAL	27	4	3	5

32. PRAHOVA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_131988	Alunis	X			
ROAG_131899	Adunati	X			
ROAG_132164	Baba Ana	X			
ROAG_134443	Baltesti-Podenii	X			
ROAG_136278	Batrani	X			
ROAG_132342	Bertea		X		
ROAG_132574	Cerasu	X			
ROAG_132716	Cocorastii Misli	X			
ROAG_133508_02	Crivina	X			
ROAG_133018	Draganesti	X			
ROAG_132896_01	Drajna de Jos	X			
ROAG_131461	Dumbravesti	X			
ROAG_133394	Fulga	X			
ROAG_133615	Gornet-Cricov			X	
ROAG_133688	Gura Vadului			X	
ROAG_133722	Iordacheanu			X	
ROAG_134096_01_01	Izvoarele		X		
ROAG_134194	Manesti	X			
ROAG_133722_01	Mocesti	X			
ROAG_136250	Olari	X			
ROAG_134559_01	Ologeni Tatarai	X			
ROAG_134336	Pacureti	X			
ROAG_134390	Plopu	X			
ROAG_134559	Poenarii Burchii	X			
ROAG_134648	Posesti	X			
ROAG_134853_01	Provita			X	
ROAG_135020	Rafov	X			
ROAG_135146	Salciile	X			
ROAG_135244	Sangeru		X		
ROAG_132574_01	Slon		X		
ROAG_135501	Soimari			X	
ROAG_135618	Stefesti	X			
ROAG_130892	Targsoru Vechi		X		
ROAG_135725	Teisani	X			
ROAG_135850	Tinosu	X			

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_132315_01	Urleta	X			
ROAG_136134	Varbilau		X		
ROAG_135949_07	Valea Calugareasca 2	X			
ROAG_130678	Blejoi				X
ROAG_135020_01	Buda				X
ROAG_130847_01	Gageni				X
ROAG_131835	Gura Vitoarei				X
ROAG_133964	Lipanesti				X
ROAG_130847	Paulesti				X
TOTAL		27	6	5	6

33. SALAJ

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_140333	Bocsa (Borla, Campia, Salajeni)	X			
ROAG_140510	Chiesd	X			
ROAG_140556	Cizer	X			
ROAG_142783	Surduc	X			
ROAG_143030	Varsolt	X			
TOTAL		5	0	0	0

34. SATU MARE

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_136722	Acaș	X			
ROAG_58026	Agriș	X			
ROAG_137112	Bârsău (Bârsău de Jos, Bârsău de Sus)		X		
ROAG_137041	Bervenii	X			
ROAG_137149	Bogdand	X			
ROAG_137238	Călinești-Oaș		X		
ROAG_137559_01	Cărășeu	X			
ROAG_137684	Dorolt	X			
ROAG_137853	Hodod	X			
ROAG_137906	Homoroade	X			
ROAG_138217	Moftin	X			
ROAG_138360	Orasu Nou (Prilog)	X			
ROAG_138627	Pomi	X			
ROAG_138734	Santău	X			
ROAG_138930_02	Supuru de Jos	X			
ROAG_139018	Tarna Mare (Tarna Mare, Bocicau, Valea Seaca)	X			
ROAG_139063	Terebești	X			
ROAG_139349	Vama				X
ROAG_139401	Viile Satu Mare (Viile Satu Mare, Cionchesti, Medisa, Tataresti, Tireac)		X		
TOTAL		15	3	0	1

35. SIBIU

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_143968	Arpasul de Jos	X			
ROAG_144241	Barghis	X			
ROAG_144205	Biertan	X			
ROAG_144562	Darlos	X			
ROAG_144660	Iacobeni	X			

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_144740	Laslea	X			
ROAG_144802	Loamnes	X			
ROAG_145006	Micasasa	X			
ROAG_144937	Miercurea Sibiului	X			
ROAG_145159	Nocrich	X			
ROAG_145300	Porumbacude Jos	X			
ROAG_145417	Rosia	X			
ROAG_145809	Sura Mica	X			
ROAG_145943	Turnu Rosu	X			
ROAG_145970	Valea Viilor	X			
ROAG_144125	Axente sever				X
ROAG_145211	Orlat				X
TOTAL		15	0	0	2

36. SUCEAVA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_147081	Boroaia	X			
ROAG_147170	Botosana		X		
ROAG_147367	Brosteni	X			
ROAG_151521	Burla		X		
ROAG_147544	Cacica	X			
ROAG_151503	Capu Campului	X			
ROAG_147704	Ciprian Porumbescu	X			
ROAG_147795	Cornu Luncii	X			
ROAG_147964	Darmanesti	X			
ROAG_148211	Dorna Candrenilor	X			
ROAG_148391	Draguseni		X		
ROAG_151488	Fantana Mare	X			
ROAG_148621	Frasin		X		
ROAG_148676	Fratautii Noi		X		
ROAG_148738	Frumosu			X	
ROAG_150267_02	Gainesti	X			
ROAG_148925	Gramesti	X			

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_148989	Granicesti	X			
ROAG_151512	Hantesti		X		
ROAG_151549	Hartop	X			
ROAG_149129	Horodnic		X		
ROAG_147660	Ilisesti		X		
ROAG_149389	Manastirea Humorului		X		
ROAG_146441_01	Mihoveni		X		
ROAG_149423	Moara	X			
ROAG_149548	Moldovita		X		
ROAG_149664	Ostra		X		
ROAG_151585	Poieni-Solca	X			
ROAG_149977	Preutesti	X			
ROAG_148015_01	Probota	X			
ROAG_150089	Radaseni		X		
ROAG_151460	Serbauti	X			
ROAG_146717	Solca		X		
ROAG_150301	Straja		X		
ROAG_150365	Stulpicani		X		
ROAG_150597	Udesti		X		
ROAG_150944	Vama		X		
ROAG_150999	Vatra Moldovitei		X		
ROAG_151558	Voitineli		X		
ROAG_151086	Vicovu de Jos		X		
ROAG_151255	Zamostea		X		
ROAG_151353	Zvoristea	X			
ROAG_150597_01	Poieni-Suceava	X			
ROAG_146441	Scheia				X
	TOTAL	20	22	1	1

37. TELEORMAN

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_152001	Balaci	X			
ROAG_152092	Blejesti				X
ROAG_152136	Bogdana	X			
ROAG_152181	Botoroaga	X			
ROAG_152369	Calinesti	X			
ROAG_152421	Calmatuiu	X			
ROAG_152476	Calmatuiu de Sus	X			
ROAG_152537	Ciolanesti	X			
ROAG_152626	Crangeni	X			
ROAG_152877	Draganesti de Vede	X			
ROAG_153008	Frumoasa	X			
ROAG_152957	Furculesti	X			
ROAG_153035	Galateni	X			
ROAG_153071	Gratia	X			
ROAG_153133	Lisa	X			
ROAG_153160	Lunca	X			
ROAG_153259	Magura	X			
ROAG_153348	Marzanesti	X			
ROAG_153302	Mereni	X			
ROAG_153213_01	Nenciulesti	X			
ROAG_153482	Olteni		X		
ROAG_153632	Plopii Slavitesti	X			
ROAG_153703	Poeni	X			
ROAG_153838	Putineiu	X			
ROAG_153874	Radoiesti	X			
ROAG_153945	Salcia	X			
ROAG_154148	Seaca	X			
ROAG_154022	Scrioastea		X		
ROAG_154237	Silistea	X			
ROAG_154399	Smardioasa	X			
ROAG_154530	Talpa	X			
ROAG_154594	Tatarestii de Jos	X			
ROAG_154745	Traian		X		
ROAG_154807	Troianul	X			
ROAG_154763	Trivalea-Mosteni	X			
ROAG_154941	Vartoape		X		
ROAG_154861	Vedea	X			

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_153785	Vitanesti	X			
ROAG_152261	Brancenii				X
ROAG_152573	Contesti				X
ROAG_152047_01	Frasinet				X
ROAG_151772	Lita				X
ROAG_151825	Nanov				X
ROAG_151843	Poroschia				X
ROAG_154843	Tiganesti				X
	TOTAL	33	4	0	8

38. TIMIS

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_155430	Bacova	X			
ROAG_155804	Belint	X			
ROAG_158582	Beregsau Mare	X			
ROAG_157479	Bulgarus	X			
ROAG_158671	Carani	X			
ROAG_156286	Cenei	X			
ROAG_156302	Checea	X			
ROAG_156632	Darova	X			
ROAG_158083	Dinias	X			
ROAG_156776	Dumbrava	X			
ROAG_156393	Ghilad	X			
ROAG_157558	Gottlob	X			
ROAG_157488	Grabat	X			
ROAG_157460	Lenauheim	X			
ROAG_157442	Padureni	X			
ROAG_158797	Parta	X			
ROAG_158403	Remetea Mare	X			
ROAG_158742	Sanpetru Mare	X			
ROAG_157889	Urseni	X			
ROAG_157843	Mosnita Noua				X
ROAG_157861	Mosnita Veche				X

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
TOTAL		19	0	0	2

39. TULCEA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_159972	Casimcea	X			
ROAG_160109	Ceamurlia de Jos	X			
ROAG_160136	Cerna	X			
ROAG_160181	Chilia Veche		X		
ROAG_160314	Daeni		X		
ROAG_160396	Frecatei	X			
ROAG_160573	Izvoarele	X			
ROAG_160840	Mihai Bravu	X			
ROAG_160886	Mihail Kogalniceanu	X			
ROAG_160920	Murighiol	X			
ROAG_160993	Nalbant	X			
ROAG_161062	Nufaru	X			
ROAG_161491	Valea Nucarilor	X			
ROAG_161311	Somova		X		
TOTAL		11	3	0	0

40. VALCEA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_168238	Alunu	X			
ROAG_169137	Caineni	X			
ROAG_169057	Cernisoara	X			
ROAG_169226	Copaceni	X			

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_169262	Costesti	X			
ROAG_169360	Daesti	X			
ROAG_169404	Danicei	X			
ROAG_169556	Dragoesti		X		
ROAG_169690	Fartatesti	X			
ROAG_169903	Francesti	X			
ROAG_170006	Galicea	X			
ROAG_170220	Golesti	X			
ROAG_170355	Gradistea	X			
ROAG_170523	Ionesti	X			
ROAG_170694	Ladesti	X			
ROAG_170621	Lalosu	X			
ROAG_170792	Lapusata	X			
ROAG_170881	Livezi	X			
ROAG_170961	Lungesti	X			
ROAG_171076	Mateesti	X			
ROAG_171548	Muereasca	X			
ROAG_171628	Nicolae Balcescu	X			
ROAG_168130	Ocnele Mari	X			
ROAG_172000	Pausesti	X			
ROAG_171815	Olanu	X			
ROAG_171940	Otesani	X			
ROAG_172162	Perisani	X			
ROAG_172386	Popesti	X			
ROAG_172590	Roesti	X			
ROAG_172705	Rosiile	X			
ROAG_173695	Sirineasa		X		
ROAG_173070	Slatioara	X			
ROAG_173249	Stoenesti	X			
ROAG_173383	Stoilesti	X			
ROAG_173542	Stroiesti	X			
ROAG_173800	Susani	X			
ROAG_173864	Tetoiu	X			
ROAG_173944	Tomsani	X			
ROAG_174307	Zatreni	X			
ROAG_174094	Valea Mare				X
ROAG_174165	Vladesti				X
ROAG_168693	Berislavesti				X
ROAG_168915	Bujoreni				X

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_169315	Creteni				X
ROAG_171888	Orlesti				X
ROAG_172091	Pausesti Maglasi				X
ROAG_172359	Pietrari				X
ROAG_172466	Prundeni				X
ROAG_173007	Sinesti				X
ROAG_173604	Sutesti				X
TOTAL		37	2	0	11

41. VASLUI

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_162327	Bacani	X			
ROAG_162381	Bacesti		X		
ROAG_163002	Codaiesti		X		
ROAG_163137	Costesti	X			
ROAG_163324	Deleni	X			
ROAG_166654	Feresti	X			
ROAG_163618_04	Ghermanesti	X			
ROAG_164133	Grivita	X			
	Ivesti	X			
ROAG_164598	Laza	X			
ROAG_164749	Lunca Banului	X			
ROAG_164936	Muntanii de Jos	X			
ROAG_165130	Osesti	X			
ROAG_166477	Rafaila	X			
ROAG_163618_05	Rasesti	X			
ROAG_166191	Tanacu	X			
ROAG_166529	Tutova	X			
ROAG_166985	Vulturesti	X			
TOTAL		16	2	0	0

42. VRANCEA

Agglomeration		A. Population below 2000 or group of settlements each below 2,000 and situated at distance > 250 m	B. Density below 7 houses/100 m pipe	C. Combination of A and B	D. Merged with another agglomeration
ROAG_175215	Balesti	X			
ROAG_178929	Biliesti	X			
ROAG_175689	Campuri		X		
ROAG_175741	Cirligele	X			
ROAG_177664_05	Cornetu				X
ROAG_175894	Cotesti	X			
ROAG_175992	Dumitresti	X			
ROAG_176800	Movilita	X			
ROAG_178885	Negrilesti	X			
ROAG_177361	Pufesti	X			
ROAG_178956	Rastoaca	X			
ROAG_177566	Ruginesti	X			
ROAG_177995	Tataranu	X			
ROAG_178698	Vartescoiu	X			
ROAG_178386	Vidra	X			
ROAG_175377	Bolotesti				X
TOTAL		13	1	0	2

Annex 4: Calculation of generated load of the agglomerations

$$\text{Equation 1} \quad PR_{S,2018} = \frac{PR_{U/R,2018}}{PR_{U/R,2011}} \times PR_{S,2011}$$

- $PR_{S, 2018}$ total number of usual resident population of the settlement in year 2018;
- $PR_{S, 2011}$ total number of usual resident population of the settlement in year 2011 (*source: NSI*);
- $PR_{U/R, 2018}$ total number of usual resident population in urban, respectively rural area of the county in 2018, depending on the settlement affiliation to urban area or rural area, as stated in the data base of Census 2011 (*source: NSI*);
- $PR_{U/R, 2011}$ total number of usual resident population in urban, respectively rural area of the county in 2011, depending on the settlement affiliation to urban area or rural area, as stated in the data base of Census 2011 (*source: NSI*)

$$\text{Equation 2} \quad PR_{AGG,2018} = (PR_{S1,2018} - PR_{EX,S1,2018}) + (PR_{S2,2018} - PR_{EX,S2,2018}) \dots + (PR_{Sn,2018} - PR_{EX,SN,2018}) + PR_{IN,Sn+1,2018}$$

- $PR_{AGG, 2018}$ total number of usual resident population of the agglomeration in year 2018;
- $PR_{Si, 2018}$ total number of usual resident population of the settlements (1,2,..n), in year 2018;
- $PR_{EX,Si, 2018}$ total number of usual resident population of the settlements (1,2,..n), in year 2018, which is outside from agglomeration boundaries. This number is determined based on the number of houses outside the agglomeration boundaries and the average number of people per dwelling in 2018. The average number of people per dwelling is different in the urban and rural areas of the county. It is calculated based on the total number of usual residents and total number of dwellings in urban/rural areas of the county using NSI data;
- $PR_{IN,Sn+1, 2018}$ total number of usual resident population of the settlement (n+1), in year 2018, which is included to the given agglomeration. There are cases where some scattered residential areas of a distant settlement can be included to another agglomeration, based on criteria for agglomeration boundaries delineation. This number of resident population is determined in a similar way as the number of excluded population.

$$\text{Equation 3} \quad L_{aggC1} = L_{aucEnteringUWWTP} + L_{aggC1,NoEnt.UWWTP}$$

- L_{aggC1} the generated load entering the CS, in p.e.;
- $L_{auc EnteringUWWTP}$ the load entering the UWWTP, in p.e.;
- $L_{aggC1, NoEnt.UWWTP}$ the load collected through CS, but not treated in the UWWTP in p.e.;

$$\text{Equation 4} \quad L_{aggC1} = L_{aggC1,NoEnt.UWWTP} = L_{aggC1,PR} + L_{aggC1,NonPR} + L_{aggC1,IND}$$

- L_{aggC1} the generated load entering the CS, in p.e.;
- $L_{aggC1, NoEnt.UWWTP}$ the load collected through CS, but not treated in the UWWTP in p.e.;

- $L_{aggC1, PR}$ the generated load of usual resident population connected to CS, in p.e.;
- $L_{aggC1, Non PR}$ the generated load of non-permanent residents connected to CS, in p.e.;
- $L_{agg C1, IND}$ the generated load of industrial emitters connected to the CS, in p.e.;

$$\text{Equation 5} \quad L_{aggC1,PR} = PR_{aggC1}$$

- $L_{aggC1,PR}$ the generated load of resident population connected to CS, in p.e.;
- PR_{aggC1} number of usual resident population connected to CS;

$$\text{Equation 6} \quad PR_{aggC1} = TNDW_{aggC1} * PR_{DW,2018}$$

$$TNDW_{aggC1} = NDW_{cond} + NFH_{aggC1}$$

$TNDW_{aggC1}$ total number of dwellings (condominiums and family houses) connected to the collecting system.

NDW_{cond} the number of dwellings in the condominiums (*information to be provided by the county/municipal administration or NSI*);

NFH_{aggC1} the number of family houses connected to collecting system (*information to be provided by the WSS Operator, based on individual contracts*);

$PR_{DW,2018}$ average number of residents per dwelling in 2018 in urban/rural areas calculated as the respective total number of usual residents in urban/rural areas is divided by the total number of households in the area (using NSI data);

PR_{aggC1} number of resident population connected to sewer collecting system;

$$\text{Equation 7} \quad L_{aggC1,Non PR} = Non PR_{aggC1}$$

$L_{aggC1,Non PR}$ the generated load of tourists connected to CS expressed in p.e.;

$Non PR_{aggC1}$ number of non-permanent residents connected to CS;

$$\text{Equation 8} \quad NonPR_{aggC1} = \frac{MAX(NonPR_{month})}{ND_{month}}$$

$NonPR_{aggC1}$ maximum average daily number of tourists in high season in 2018 (source: NSI);

$MAX(NonPR_{month})$ maximum number of tourists per month in high season;

ND_{month} number of days in the month tourist flow;

$$\text{Equation 9} \quad PR_{agg 2018} - PR_{aggC1} = PR_{aggC2+aggWithout Treatment}$$

$$\text{Equation 10} \quad L_{aggC1+aggWithout Treatment} = PR_{aggC2+aggWithout Treatment}$$

$PR_{agg, 2018}$ total number of usual resident population of the agglomeration in year 2018 (see Eq. 4)

PR_{aggC1} number of usual resident population connected to sewer collecting system (see Eq. 10);

$PR_{aggC2+aggWithout Treatment}$ number of usual resident population not connected to sewer collecting system;

$L_{aggC1+aggWithout Treatment}$ the generated load not connected to collecting system in p.e.; equal to the number of people in the respective zone;

$$\text{Equation 11 } \mathit{aggC1} = \frac{L_{\mathit{aggC1}}}{\mathit{aggGenerated}} \cdot 100$$

$\mathit{aggC1}$	rate of generated load of agglomeration collected through collecting system %;
L_{aggC1}	generated load of agglomeration collected through collecting system in p.e.;
$\mathit{aggGenerated}$	generated load of the agglomeration in p.e.;

$$\text{Equation 12 } \mathit{aggPercEnteringUWWTP} = \frac{L_{\mathit{aggEnteringUWWTP}}}{\mathit{aggGenerated}} \cdot 100$$

$\mathit{aggPercEnteringUWWTP}$	rate of generated load of agglomeration collected through collecting system and entering UWWTP %;
$L_{\mathit{aggPercEnteringUWWTP}}$	generated load of agglomeration collected through collecting system and entering the UWWTP in p.e.;
$\mathit{aggGenerated}$	generated load of agglomeration in p.e.

$$\text{Equation 13 } \mathit{aggC2} + \mathit{aggWithoutTreatment} = \frac{L_{\mathit{aggC2+aggWithoutTreatment}}}{\mathit{aggGenerated}} \cdot 100$$

$\mathit{aggC2+aggWithoutTreatment}$	rate of generated load not collected through collecting system in %;
$L_{\mathit{aggC2+aggWithoutTreatment}}$	generated load of agglomeration not connected to collecting system in p.e.;
$\mathit{aggGenerated}$	generated load of the agglomeration in p.e.;

$$\text{Equation 14 } \mathit{aggC1} + (\mathit{aggC2} + \mathit{aggPercWithoutTreatment}) = 100\%$$

$\mathit{aggC1}$	rate of generated load of agglomeration collected through collecting system %;
$\mathit{aggC2+aggPercWithoutTreatment}$	rate of generated load of agglomeration not connected to collecting system %;

Annex 5: Tourist settlements with regional significance according to Romanian Government's Decision 852/2008

ANEXA
(Anexa nr. 5 la Hotărârea Guvernului nr. 852/2008)

LISTA LOCALITĂȚILOR ATESTATE CA STAȚIUNI TURISTICE DE INTERES NAȚIONAL, RESPECTIV LOCAL

I. Stațiuni turistice de interes național:	
1. Amara	- județul Ialomița
2. Azuga	- județul Prahova
3. Bușteni	- județul Prahova
4. Buziaș	- județul Timiș
5. Băile Govora	- județul Vâlcea
6. Băile Felix	- județul Bihor
7. Băile Herculane	- județul Caraș-Severin
8. Băile Olănești	- județul Vâlcea
9. Băile Tușnad	- județul Harghita
10. Borsec	- județul Harghita
11. Borșa	- județul Maramureș
12. Câmpulung Moldovenesc	- județul Suceava
13. Cap Aurora	- județul Constanța
14. Călimănești-Căciulata	- județul Vâlcea
15. Costinești	- județul Constanța
16. Covasna	- județul Covasna
17. Dâmbovicioara	- județul Argeș
18. Eforie Nord	- județul Constanța
19. Eforie Sud	- județul Constanța
20. Geoagiu-Băi	- județul Hunedoara
21. Gura Humorului	- județul Suceava
22. Jupiter	- județul Constanța
23. Mamaia	- județul Constanța
24. Mangalia	- județul Constanța
25. Moneasa	- județul Arad
26. Neptun-Olimp	- județul Constanța
27. Poiana Brașov	- județul Brașov
28. Predeal	- județul Brașov
29. Pucioasa	- județul Dâmbovița
30. Râșnov	- județul Brașov
31. Slănic	- județul Prahova
32. Saturn	- județul Constanța
33. Sinaia	- județul Prahova
34. Sângeorz-Băi	- județul Bistrița-Năsăud
35. Slănic-Moldova	- județul Bacău
36. Sovata	- județul Mureș
37. Sucevița	- județul Suceava

38. Târgu Ocna	- județul Bacău
39. Târgu Neamț	- județul Neamț
40. Techirghiol	- județul Constanța
41. Vatra Dornei	- județul Suceava
42. Venus	- județul Constanța
43. Voineasa	- județul Vâlcea
44. Zona Mamaia Nord, Orașul Năvodari	- județul Constanța
45. Zona Parâng-Petroșani	- județul Hunedoara
46. Zona Peștera-Padina, Comuna Moroeni	- județul Dâmbovița
47. Zona turistică a municipiului Piatra-Neamț	- județul Neamț
II. Stațiuni turistice de interes local:	
1. 1 Mai	- județul Bihor
2. Albac	- județul Alba
3. Albeștii de Muscel (Bughea de Sus)	- județul Argeș
4. Arieseni	- județul Alba
5. Balványos	- județul Covasna
6. Baia de Fier	- județul Gorj
7. Bazna	- județul Sibiu
8. Bălțătești	- județul Neamț
9. Băile Homorod	- județul Harghita
10. Băile Turda	- județul Cluj
11. Băile Băița	- județul Cluj
12. Boghiș	- județul Sălaj
13. Bran	- județul Brașov
14. Breaza	- județul Prahova
15. Cacica	- județul Suceava
16. Călacea	- județul Timiș
17. Cheia	- județul Prahova
18. Colibița	- județul Bistrița Năsăud
19. Crivaia	- județul Caraș-Severin
20. Dorna Candrenilor	- județul Suceava
21. Durau	- județul Neamț
22. Harghita-Băi	- județul Harghita
23. Horezu	- județul Vâlcea
24. Izvoru Mureșului	- județul Harghita
25. Lacu Roșu	- județul Harghita
26. Lacu Sărat	- județul Brăila
27. Lipova	- județul Arad
28. Moieciu	- județul Brașov
29. Moisei	- județul Maramureș
30. Negrești Oaș	- județul Maramureș
31. Ocna Sibiului	- județul Sibiu
32. Ocna Sugatag	- județul Maramureș

33. Oncești	- Județul Maramureș
34. Păltiniș	- județul Sibiu
35. Pârâul Rece	- județul Brașov
36. Poiana Stampei	- județul Suceava
37. Pojorâta	- județul Suceava
38. Praid	- județul Harghita
39. Săcelu	- județul Gorj
40. Sărata Monteoru	- județul Buzău
41. Secu	- județul Caraș-Severin
42. Semenic	- județul Caraș-Severin
43. Snagov	- județul Ilfov
44. Solca	- județul Suceava
45. Sângeorgiu de Mureș	- județul Mureș
46. Stâna de Vale	- județul Bihor
47. Straja	- județul Hunedoara
48. Soveja	- județul Vrancea
49. Tășnad	- județul Satu Mare
50. Timișu de Sus	- județul Brașov
51. Tinca	- județul Bihor
52. Trei Ape	- județul Caraș-Severin
53. Vălenii de Munte	- județul Prahova
54. Vata de Jos	- județul Hunedoara
55. Vișeu de Sus	- județul Maramureș
56. Zona Băile Banffy (Municipiul Toplița)	- județul Harghita
57. Zona Băile Ocna Dej (Municipiul Dej)	- Județul Cluj
58. Zona Fântânele	- județul Cluj
59. Zona Moinești Băi (Municipiul Moinești)	- județul Bacău
60. Zona Muntele Băișorii	- județul Cluj
61. Zona Șuior-Baia Sprie	- județul Maramureș

Annex 6: Summary table of collected information concerning UWWTPs

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
			Nr/A	Nr/A		
Alba	AB	Aiud	0	12	No	
Alba	AB	Alba Iulia	0	12	No	
Alba	AB	Blaj	0	12	No	
Alba	AB	Campeni	0	12	No	
Alba	AB	Cugir	0	12	No	
Alba	AB	Ocna Mures	0	12	No	
Alba	AB	Sebes	0	12	No	
Arges	AG	Barla	12	12	No	
Arges	AG	Bradul	12	12	No	
Arges	AG	Costesti	24	23	No	No Daily Flows
Arges	AG	Pitesti	14	14	No	
Arges	AG	Topoloveni	24	24	No	No daily flow
Arges	AG	Curtea de Arges	365	365	No	Non reliable flow data
Arad	AR	Arad	12	11	No	
Arad	AR	Curtici	12	9	No	
Arad	AR	Ineu	12	11	No	
Arad	AR	Lipova	12	11	No	
Arad	AR	Nadlac	12	11	No	
Arad	AR	Pancota	12	12	No	
Arad	AR	Pecica	12	11	No	
Arad	AR	Sagu	3	1	No	
Bacau	BC	Onesti New	365	140	No	Non reliable flow data
Bacau	BC	Onesti Old	365	140	No	Non reliable flow data
Bacau		Buhusi	235	130	No	Non reliable BOD ₅ data
Bacau		Bacau	365	331	No	Non reliable BOD ₅ data
Bacau		Moinesti Nord	47	43	Yes	
Bacau		Moinesti Sud	46	46	Yes	
Bihor	BH	Beius	365	95	No	No Daily Flows
Bihor	BH	Bors	365	0	No	
Bihor	BH	Oradea	365	104	No	Non reliable flow data
Bihor	BH	Tileagd	365	3	No	
Bihor	BH	Tinca	365	2	No	
Bistrita-Nasaud	BN	Arcalia	245	1	No	
Bistrita-Nasaud	BN	Beclean	365	23	No	

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
Bistrita-Nasaud	BN	Bistrita L1	362	362	No	No sufficient info for load deviation between Bistrita L1 and Bistrita L3
Bistrita-Nasaud	BN	Bistrita L3	365	365	No	
Bistrita-Nasaud	BN	Blajeni	365	7	No	
Bistrita-Nasaud	BN	Cetate	334	2	No	
Bistrita-Nasaud	BN	Chintelnic	365	7	No	
Bistrita-Nasaud	BN	Chiuza	365	2	No	
Bistrita-Nasaud	BN	Colibita	365	5	No	
Bistrita-Nasaud	BN	Dumitra	365	7	No	
Bistrita-Nasaud	BN	Feldru	365	12	No	
Bistrita-Nasaud	BN	Ilva Mica	31	0	No	
Bistrita-Nasaud	BN	Lechinta	365	7	No	
Bistrita-Nasaud	BN	Lesu	365	7	No	
Bistrita-Nasaud	BN	Milas	365	12	No	
Bistrita-Nasaud	BN	Salva	365	25	No	Not Representative Data
Bistrita-Nasaud	BN	Sangeorz-Bai	365	24	No	No Daily Flows
Bistrita-Nasaud	BN	Țârlișua	365	4	No	
Bistrita-Nasaud	BN	Teaca	365	8	No	
Botosani	BT	Anl Bucovina	12	12	No	
Botosani	BT	Anl Cismea	12	12	No	
Botosani	BT	Botosani	363	49	No	No Reliable Flow
Botosani	BT	Catamarasti	12	12	No	
Botosani	BT	Darabani	20	20	No	
Botosani	BT	Dorohoi	334	222	No	No Reliable Flow
Botosani	BT	Rachiti	12	12	No	
Botosani	BT	Saveni	15	15	No	
Botosani	BT	Trusesti	12	12	No	
Braila	BR	Braila	365	70	Yes	
Braila	BR	Faurei	364	142	Yes	
Braila	BR	Movila Miresii	12	12	No	
Braila	BR	Unsuratei	365	125	Yes	
Brasov	BV	Bod	27	18	No	
Brasov	BV	Brasov	227	134	Yes	
Brasov	BV	Fagaras	0	0	No	
Brasov	BV	Feldioara	28	16	No	
Brasov	BV	Hoghiz	20	7	No	
Brasov	BV	Lunca Calnicului	23	16	No	

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
Brasov	BV	Predeal	365	12	No	
Brasov	BV	Zarnesti	0	0	No	
Bucuresti	B	Bucuresti	365	365	YES	
Buzau	BZ	Beceni	12	12	No	
Buzau	BZ	Buzau	12	12	No	
Buzau	BZ	Cernatesti	11	11	No	
Buzau	BZ	Chiojdu	6	6	No	
Buzau	BZ	Cislau	12	12	No	
Buzau	BZ	Merei	6	6	No	
Buzau	BZ	Nehoiu	12	12	No	
Buzau	BZ	Patarlagele	12	12	No	
Buzau	BZ	Pogoanele	12	12	No	
Buzau	BZ	Rm Sarat	12	12	No	
Cluj	CJ	Apahida	0	4	No	
Cluj	CJ	Arghiresu	365	4	No	
Cluj	CJ	Bontida	365	2	No	
Cluj	CJ	Cluj-Napoca	365	49	Yes	
Cluj	CJ	Copaceni	365	10	No	
Cluj	CJ	Dej	365	362	Yes	
Cluj	CJ	Gherla	363	362	Yes	
Cluj	CJ	Gilau Vest	365	4	No	
Cluj	CJ	Huedin	364	247	No	Extraneous Water
Cluj	CJ	Seaucampia Turz	364	89	No	Extraneous Water
Calarasi	CL	Calarasi	365	353	Yes	
Calarasi	CL	Fundulea	44	44	No	No Reliable Flow
Calarasi	CL	Lehliu Gara	45	44	No	No Reliable Flow
Caras-Severin	CS	Caransebes	0	0	No	
Caras-Severin	CS	Resita	0	0	No	
Constanta	CT	Cernavoda	365	229	No	Bod 5 Not Representative
Constanta	CT	Cta Nord	364	342	Yes	
Constanta	CT	Cta Sud	364	356	Yes	
Constanta	CT	Eforie Sud	358	112	Yes	
Constanta	CT	Harsova	363	50	No	Not Representative Data
Constanta	CT	Mangalia	365	236	Yes	
Constanta	CT	Medgidia	364	114	No	Extraneous Water
Constanta	CT	Mihail Kogalniceanu	332	60	Yes	

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
Constanta	CT	Poarta Alba	364	277	Yes	
Constanta		Negru Voda	0	40	No	
Covasna	CV	Bodoc	0	0	No	
Covasna	CV	Covasna	361	335	Yes	
Covasna	CV	Ghidfalau	0	0	No	
Covasna	CV	Intorsura Buzaului	0	51	No	
Covasna	CV	Ozun	0	0	No	
Covasna	CV	Sfantu Gheorgehe	359	355	Yes	
Covasna	CV	Sita Buzaului	0	0	No	
Covasna	CV	Sugas Bai	0	0	No	
Covasna	CV	Targu Secuiesc	365	365	Yes	
Dambovita	DB	Brănești	0	0	No	
Dambovita	DB	Cojasca	0	0	No	
Dambovita	DB	Comișani	0	0	No	
Dambovita	DB	Dobra	0	0	No	
Dambovita	DB	Doicești	0	0	No	
Dambovita	DB	Fieni	0	0	No	
Dambovita	DB	Gaesti	365	290	No	Bod 5 Not Representative
Dambovita	DB	Gura Ocnitei	0	0	No	
Dambovita	DB	Mărcești	0	0	No	
Dambovita	DB	Moreni	0	0	No	
Dambovita	DB	Niculești	0	0	No	
Dambovita	DB	Priboiu	0	0	No	
Dambovita	DB	Priseaca	0	0	No	
Dambovita	DB	Psihiatrie Gura Ocnitei	0	0	No	
Dambovita	DB	Pucioasa	0	0	No	
Dambovita	DB	Raciu	0	0	No	
Dambovita	DB	Rascaeti	0	0	No	
Dambovita	DB	Targoviste Nord	0	25	No	
Dambovita	DB	Targoviste Sud	363	363	Yes	
Dambovita	DB	Tbc Moroeni	0	0	No	
Dambovita	DB	Titu	0	0	No	
Dambovita	DB	Visinesti	0	0	No	
Dolj	DJ	Calafat	49	48	No	No Daily Flows
Dolj	DJ	Facai	248	120	No	No Daily Flows
Dolj	DJ	Filiasi	32	32	No	No Daily Flows
Galati	GL	Galati	365	271	Yes	
Galati	GL	Liesti	365	246	No	Extraneous Water
Galati	GL	Pechea	365	126	No	Extraneous Water
Galati	GL	Tecuci	365	144	Yes	

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
Galati	GL	Tg Bujor	365	149	No	Extraneous Water
Giurgiu	GR	Bolintin Vale	0	240	No	
Giurgiu	GR	Giurgiu	0	248	No	
Giurgiu	GR	Malu	0	45	No	
Giurgiu	GR	Mihailesti	0	245	No	
Gorj	GJ	Novaci	0	0	No	
Hunedoara	HD	Brad	334	8	No	
Hunedoara	HD	Danutoni	362	50	Yes	
Hunedoara	HD	Deva	364	140	Yes	
Hunedoara	HD	Geoagiu Bai	4	12	No	
Hunedoara	HD	Geoagiu Oras	4	11	No	
Hunedoara	HD	Hateg	365	12	No	
Hunedoara	HD	Hunedoara	364	46	No	Bod 5 Not Representative
Hunedoara	HD	Orastie	363	59	No	Low Flow
Hunedoara	HD	Simeria	359	13	No	
Hunedoara	HD	Uricani	365	44	Yes	
Harghita	HR	Bradesti	0	0	No	
Harghita	HR	Cristuru Secuiesc	365	81	No	No Reliable Data
Harghita	HR	Frumoasa	0	0	No	
Harghita	HR	Gheorghieni	365	44	No	No Reliable Data
Harghita	HR	Harghita Bai	0	0	No	
Harghita	HR	Homorod Bai	0	0	No	
Harghita	HR	Madaras	338	11	No	
Harghita	HR	Praid	121	4	No	
Harghita	HR	Remetea	12	12	No	
Harghita	HR	Sanmartin	111	2	No	
Harghita	HR	Siculeni	214	12	No	
Harghita	HR	Toplita	365	250	No	No Reliable Data
Harghita	HR	Vlahita	344	12	No	
Harghita	HR	Zetea	365	12	No	
Harghita	HR	Odorheiu Secuiesc	365	52	YES	
Ilfov	IF	Branesti	0	16	No	
Ilfov	IF	Bragadiru	0	10	No	
Ilfov	IF	Buftea	365	21	No	
Ilfov	IF	Domnesti	0	9	No	
Ilfov	IF	Otopeni	364	4	No	
Ialomita	IL	Fetesti	364	37	Yes	
Ialomita	IL	Fierbinti	364	0	No	
Ialomita	IL	Tandareni	365	7	No	
Ialomita	IL	Urziceni	364	247	Yes	

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
Iasi	IS	Belcesti	364	12	No	
Iasi	IS	Bivolari	365	21	No	
Iasi	IS	Cotnari	365	24	Yes	
Iasi	IS	Dumești	365	6	No	
Iasi	IS	Hălăucești	365	2	No	
Iasi	IS	Harlau	365	24	Yes	
Iasi	IS	Iasi	365	36	Yes	
Iasi	IS	Letcani	365	12	No	
Iasi	IS	Moșna	365	24	Yes	
Iasi	IS	Moțca	365	0	No	
Iasi	IS	Pascani	363	103	Yes	
Iasi	IS	Podu Iloaiei	365	18	No	
Iasi	IS	Raducaneni	364	12	No	
Iasi	IS	Strunga	0	0	No	
Iasi	IS	Tansa	252	12	No	
Iasi	IS	Tg Frumos	365	50	Yes	
Iasi	IS	Țibanești	365	11	No	
Iasi	IS	Țiganași	353	12	No	
Iasi	IS	Vladeni	365	11	No	
Mehedinti	MH	Baia De Aramă	10	8	No	
Mehedinti	MH	Drobeta Turnu Severin	363	98	No	No Daily Flows
Mehedinti	MH	Orsova	0	0	No	
Mehedinti	MH	Vânju Mare	13	10	No	
Maramures	MM	Baia Mare	0	35	No	
Maramures	MM	Cavnic	0	4	No	
Maramures	MM	Seini	0	0	No	
Maramures	MM	Sighetu Marmatiei	0	12	No	
Maramures	MM	Somcuta Mare	0	12	No	
Maramures	MM	Tautii Magheraus	0	10	No	
Maramures	MM	Vișeu De Sus	0	0	No	
Mures	MS	Cristuru Secuiesc	365	81	Yes	
Mures	MS	Iernut	365	91	No	Extraneous Water
Mures	MS	Ludus	365	91	Yes	
Mures	MS	Reghin	363	135	Yes	
Mures	MS	Rusii Munti	48	47	No	
Mures	MS	Sighișoara	363	104	Yes	
Mures	MS	Sovata	364	360	Yes	
Mures	MS	Tarnaveni	365	135	Yes	
Mures	MS	Tg Mures	365	134	Yes	
Neamt	NT	Bicaz	365	52	No	No Daily Flows
Neamt	NT	Doljesti	365	13	No	
Neamt	NT	Gheraesti	364	12	No	

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
Neamt	NT	Piatra Neamt	365	352	No	No Daily Flows
Neamt	NT	Podoleni	365	45	No	No Daily Flows
Neamt	NT	Roman	365	240	No	No Daily Flows
Neamt	NT	Tg Neamt	365	205	No	No Daily Flows
Olt	OT	Bals	12	1	No	
Olt	OT	Caracal	37	1	No	
Olt	OT	Corabia	12	3	No	
Olt	OT	Draganesti Olt	12	1	No	
Olt	OT	Piatra Olt	12	2	No	
Olt	OT	Potcoava	12	1	No	
Olt	OT	Scornicesti	12	1	No	
Olt	OT	Slatina	245	187	No	No Daily Flows
Olt	OT	Slatioara	5	1	No	
Prahova	PH	Ploiesti	365	152	Yes	
Prahova	PH	Sinaia	365	365	YES	
Prahova	PH	Breaza	365	361	YES	
Prahova	PH	Valenii de Munte	365	365	Yes	
Prahova	PH	Campania	365	365	No	Non reliable flow data
Prahova	PH	Plopeni	363	363	No	Non reliable flow data
Prahova	PH	Slanic	17	1	No	
Prahova	PH	Urlati	11	0	No	
Prahova	PH	Mizii	47	1	No	
Sibiu	SB	Agnita	50	44	No	No Daily Flows
Sibiu	SB	Avrig	0	0	No	
Sibiu	SB	Cristian	0	0	No	
Sibiu	SB	Dumbraveni	365	45	Yes	
Sibiu	SB	Fagaras	0	0	No	
Sibiu	SB	Medias	364	56	Yes	
Sibiu	SB	Ocna Sibiului	0	0	No	
Sibiu	SB	Saliste	0	0	No	
Sibiu	SB	Sibiu	0	0	No	
Salaj	SJ	Cehu Silvaniei	362	353	Yes	
Salaj	SJ	Crasna	0	0	No	
Salaj	SJ	Jibou	362	362	Yes	
Salaj	SJ	Sarmășag	0	0	No	
Salaj	SJ	Simleu Silvaniei	364	364	Yes	
Salaj	SJ	Zalău	364	361	Yes	
Satu Mare	SM	Carei	365	137	No	Non reliable data
Satu Mare	SM	Gherta Mare	365	8	No	
Satu Mare	SM	Livada	365	25	No	No Daily Flows
Satu Mare	SM	Mediesu Aurit	365	5	No	

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
Satu Mare	SM	Negresti-Oas	365	95	No	No Daily Flows
Satu Mare	SM	Satu Mare	365	137	No	Bod 5 Not Representative
Satu Mare	SM	Turt	365	7	No	
Suceava	SV	Campulung Moldovenesc	365	365	No	Non reliable data
Suceava	SV	Falticeni	365	365	Yes	
Suceava	SV	Gura Humorului	364	363	Yes	
Suceava	SV	Radauti	365	364	Yes	
Suceava	SV	Siret	365	0	No	
Suceava	SV	Vatra Dornei	364	363	Yes	
Timis	TM	Buziaş	363	5	No	
Timis	TM	Cărpiniş	10	10	No	
Timis	TM	Cenad	5	0	No	
Timis	TM	Ciacova	99	0	No	
Timis	TM	Deta	365	0	No	
Timis	TM	Făget	211	0	No	
Timis	TM	Gătaia	12	5	No	
Timis	TM	Jimbolia	358	0	No	
Timis	TM	Liebling	7	5	No	
Timis	TM	Lovrin	0	0	No	
Timis	TM	Recaş	313	5	No	
Timis	TM	Sânnicolau	363	0	No	
Timis	TM	Timișoara	363	237	Yes	
Teleorman	TR	Alexandria	363	359	Yes	
Teleorman	TR	Rosiorii De Vede	364	364	No	No Reliable Flow
Teleorman	TR	Turnu Magurele	365	45	Yes	
Teleorman	TR	Videle	363	362	Yes	
Teleorman	TR	Zimnicea	365	232	No	No Reliable Flow
Tulcea	TL	Babadag	0	0	No	
Tulcea	TL	Isaccea	6	6	No	
Tulcea	TL	Macin	6	6	No	
Tulcea	TL	Tulcea	362	238	No	No Reliable Flow
Valcea	VL	Babeni	12	97	No	
Valcea	VL	Balcesti	12	12	No	
Valcea	VL	Brezoi	12	11	No	
Valcea	VL	Bunesti	12	12	No	
Valcea	VL	Calimanesti	12	140	No	
Valcea	VL	Daesti Fedeles	12	12	No	
Valcea	VL	Daesti Sanbotin	12	12	No	
Valcea	VL	Dragasani	12	12	No	
Valcea	VL	Govora	12	12	No	

County	Code	WWTP	Daily inlet flow data	Daily inlet BOD ₅ samples	Monitoring data sufficiency	Comment
Valcea	VL	Horezu	12	24	No	
Valcea	VL	Lacusteni	12	12	No	
Valcea	VL	N Balcescu	12	12	No	
Valcea	VL	Olanesti	12	54	No	
Valcea	VL	Pietrari	12	11	No	
Valcea	VL	Ramnicu Valcea	365	353	Yes	
Valcea	VL	Salatrucel	12	12	No	
Valcea	VL	Sirineasa	12	12	No	
Valcea	VL	Stefanesti	12	12	No	
Valcea	VL	Vaideeni	12	12	No	
Valcea	VL	Voineasa	12	12	No	
Vrancea	VN	Adjud	365	51	Yes	
Vrancea	VN	Focsani	363	43	No	Extraneous Water
Vrancea	VN	Gologanu	0	0	No	
Vrancea	VN	Gugesti	0	0	No	
Vrancea	VN	Homocea	363	14	No	
Vrancea	VN	Marasesti	363	50	No	Inconsistant Flow
Vrancea	VN	Odobesti	365	50	No	No Daily Flows
Vrancea	VN	Panciu	365	41	Yes	
Vaslui	VS	Barlada	364	57	Yes	
Vaslui	VS	Husi	362	360	Yes	
Vaslui	VS	Murgeni	365	4	No	
Vaslui	VS	Vaslui	361	360	Yes	

Annex 7: Summary information on settlements with available data about industrial loads

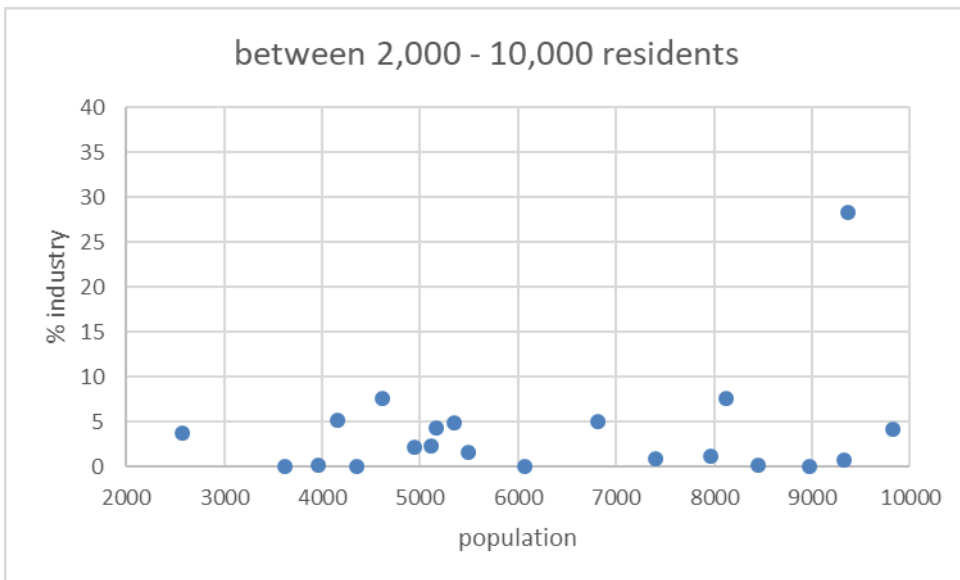
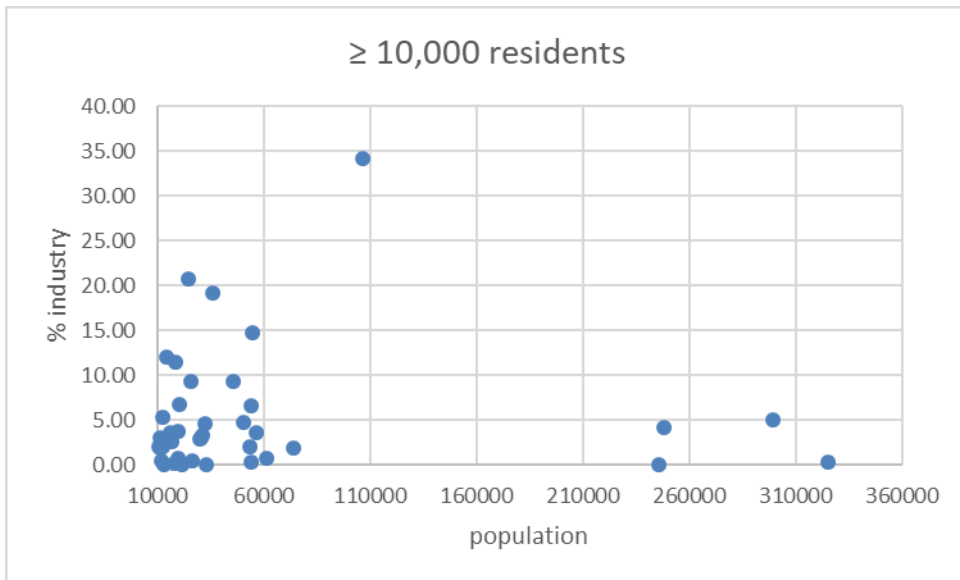
County	Settlement	Major	Non-major	Total	Population	Total
		p.e.	p.e.	p.e.		%
Alba	Aiud	452	0	452	16,130	2.80
Alba	Alba Iulia	3,337	236	3573	53,959	6.62
Alba	Blaj	337	10	347	11,528	3.01
Alba	Cugir	2,099	0	2099	18,272	11.49
Arad	Ineu	473	150	623	8,119	7.67
Arad	Pancota	263	0	263	5,355	4.91
Arad	Santana	418	0	418	9,821	4.26
Arad	Nadab	2,000	0	2000	1,738	115.07
Bistrita Nasaud	Beclean	2,649	0	2649	9,365	28.29
Bistrita Nasaud	Lechinta	97	0	97	2,571	3.77
Bistrita Nasaud	Lunca Ilvei	3,683	0	3683	2,937	125.40
Bistrita Nasaud	Teaca	487	0	487	1,727	28.20
Brasov	Brasov	7,227	3182	10409	248,176	4.19
Brasov	Sacele	875	0	875	30,233	2.89
Brasov	Harman	106	3	109	4,942	2.21
Brasov	Sanpetru	119	0	119	5,112	2.33
Brasov	Ghimbav	355	0	355	4,612	7.70
Brasov	Poiana Brasov	1,011	0	1011	5,550 (incl. tourists)	18.22
Buzau	Ramnicu Sarat	0	1053	1053	31,296	3.36
Buzau	Buzau	34,179	2349	36528	106,802	34.20
Calarasi	Calarasi	0	451	451	61,100	0.74
Cluj	Cluj-Napoca	0	1356	1356	325,187	0.42
Cluj	Dej	0	922	922	30,379	3.03
Cluj	Floresti	0	7	7	21,369	0.03
Cluj	Gilau	341	0	341	6,819	5.00
Cluj	Gherla	921	451	1372	20,130	6.82
Dolj	Craiova	0	100	100	246,015	0.04
Dolj	Calafat	0	14	14	12,839	0.11
Harghita	Miercurea Ciuc	6,908	0	6908	36,047	19.16
Harghita	<i>Odorheiu Secuiesc</i>	0	32	32	33,216	0.10
Harghita	<i>Gheorgheni</i>	38	0	38	17,704	0.21
Hunedoara	Deva	0	221	221	54,280	0.41
Hunedoara	Hunedoara	907	173	1080	53,380	2.02
Hunedoara	Brad	0	220	220	11,463	1.92
Hunedoara	Hateg	76	16	92	7,971	1.15
Hunedoara	Orastie	270	173	443	16,809	2.64
Hunedoara	Simeria	0	76	76	9,330	0.81
Hunedoara	Geoagiu	940	0	940	3,208 (incl. tourists)	29.30
Ialomita	Urziceni	1,719	36	1755	14,604	12.02
Iasi	Iasi	0	15123	15123	299,543	5.05
Iasi	Pascani	2,348	102	2450	26,023	9.41
Ilfov	Balotesti	67.8	0	67.8	7,398	0.92

County	Settlement	Major	Non-major	Total	Population	Total
Ilfov	Bufttea	4,995	83	5078	24,429	20.79
Ilfov	Bragadiru	149	0	148.9	19,502	0.76
Ilfov	Mogosoia	0	2	2	8,974	0.02
Ilfov	Otopeni	343	243	586	15,954	3.67
Ilfov	Pantelimon	1,492	3	1494.81	32,564	4.59
Ilfov	Voluntari	6,240	1869	8109	54,635	14.84
Sibiu	Dumbraveni	225	0	225	5,164	4.36
Sibiu	Medias	2,412	1864	4276	45,592	9.38
Timis	Buzias	1	3	4	5,778 (incl. tourists)	0.07
Timis	Deta	81	8	89	5,497	1.62
Timis	Jimbolia	197	31	228	10,699	2.13
Timis	Sannicolau Mare	55	1	56	12,187	0.46
Timis	Faget	1	0	1	3,621	0.03
Timis	Gataia	0	6	6	3,958	0.15
Teleorman	Turnu Magurele	576	84	660	12,279	5.38
Teleorman	Alexandria	709	33	742	19,525	3.80
Teleorman	Rosiori De Vede	249	36	285	11,811	2.41
Teleorman	Videle	118	96	214	4,159	5.15
Teleorman	Zimnicea	0	6	6	6,070	0.10
Vrancea	Focsani	218	1189	1407	73,827	1.91
Vrancea	Adjud	251	6	257	12,752	2.02
Vrancea	Marasesti	0	12	12	8,445	0.14
Vrancea	Panciu	0	3	3	4,358	0.07
Vaslui	Barlad	1,946	107	2053	56,688	3.62
Vaslui	Husi	0	141	141	26,666	0.53
Vaslui	Vaslui	2,364	86	2450	50,551	4.85

To sum up, sufficient information concerning the industrial emitters has been received only for:

- 41 settlements above 10,000 residents;
- 25 settlements between 2,000-10,000 residents, of which 9 settlements between 2,000-5,000 residents and 3 tourist settlements (Poiana Brasov, Buzias and Geoagiu)

This information is based on the regular monitoring program of the individual industrial discharges into the urban collecting system, executed by the WSS Operators. The results are summarized in the following graphs, presenting the calculated % of industrial load based on number of population.



* Lunca Ilvei in Bistrita Nasaud is not presented on the graph. The industrial contribution in this settlement is over 125 %, as the reported, by the Operator, industry is ELIEZER (dairy products).

** The tourist settlements are not included in the graph.

The following conclusions can be made, based on the received information:

- For settlements between 2,000-10,000 p.e. the industrial load is predominantly below 10% of the population;
- For settlements between 10,000 and 60,000 residents the percentage contribution of the industrial load differs significantly with maximum value up to 20%;
- For biggest settlements, above 100,000 people the percentage contribution of the industrial load is predominantly below 5% of the population load, but there are data only for 5 settlements.

It should be emphasized that these results should be regarded only as **indicative**, since: the data base is too scarce, for the biggest towns the operators have provided information only on the most significant industrial emitters, the industrial monitoring programs exists but there are significant sampling intervals (e.g. once in every 3/4 months) and probably does not fully reflect peak industrial discharges.

Nevertheless, the calculated percentages are compatible with the percentage used by the team (see section 3.2 from this report) for estimation of the industrial contribution when no information has been received or there is no existing UWWTP, or the inlet monitoring data at the UWWTP are not sufficient to determine the incoming load according to the requirements of Art. 4(4) of the UWWTD.

Annex 8: Summary tables of newly defined agglomerations and respective loads for each county

Attached to the current report as a separate MS Word file (A3 format).

Competence makes a difference!

Project selected under the Administrative Capacity Operational Program, co-financed by European Union from the European Social Fund