

Our commitment to a sustainable future



VIVERACQUA
GESTORI IDRICI DEL VENETO

SHARED SUSTAINABILITY

FOURTH REPORT | 12 Viveracqua Utilities



*Sinergy
and efficiency,
the Veneto region
public model*



2021[🌱]

VIVERACQUA
GESTORI IDRICI DEL VENETO

SHARED SUSTAINABILITY

FOURTH REPORT | 12 VIVERACQUA UTILITIES



SHARING, SYNERGY, EFFICIENCY

the key factors
of Veneto Region
public model

Viveracqua was founded as a consortium company in June 2011 and progressively expanded to become **the network of public water utilities based in Veneto region**. It was the first one in Italy, followed by others in Lombardia and Piemonte regions.

Viveracqua purpose, thanks to work in synergy, is to put individual potential into play, to **increase the wide heritage of abilities and expertise, leading to economies of scale and scope**.

In these years, Viveracqua worked together with institutions both on National and International level, starting partnerships in various fields. The resources derived from the financing turned out to be a very useful tool for investments in innovation and efficiency of the integrated water service.

Viveracqua serves **580 municipalities in Veneto region and part of Friuli-Venezia Giulia region, 4.7 million inhabitants** and a floating population of **1 million people**.

The 12 water utilities are public companies, driven by an industrial strategy, which annually produce a total value of 826 million Euros.

The consortium brings together **12 public water utilities in Veneto region and part of Friuli-Venezia Giulia region:**

- | | |
|------------------------------|------------------------|
| 1. Acque del Chiampo | 7. Bim Gsp |
| 2. <i>acquevenete</i> | 8. Livenza Tagliamento |
| 3. Acque Veronesi | Acque |
| 4. Azienda Gardesana Servizi | 9. Medio Chiampo |
| 5. Alto Trevigiano Servizi | 10. Piave |
| 6. Etra | 11. Veritas |
| | 12. Viacqua |

The mission is to **improve services offered to citizens** by aggregating and strengthening the utilities competitive capabilities, reducing management costs, promoting research and development, building links with partners and stakeholders.



12
WATER
UTILITIES



580
REPRESENTED
MUNICIPALITIES



100%
PUBLIC
DNA



2 MILLION
AQUEDUCT
DIRECT USERS



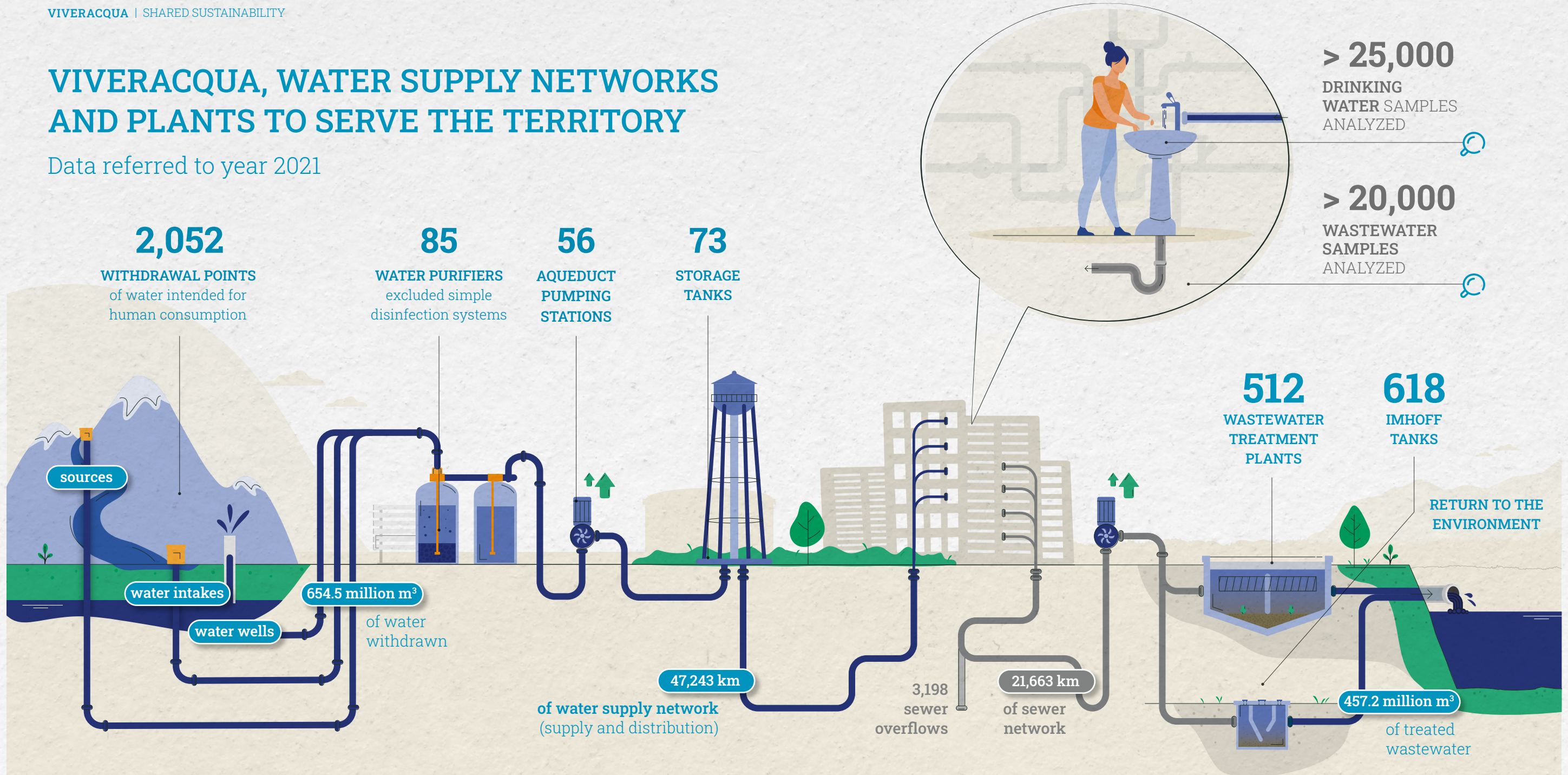
4.7 MILLION
SERVED
INHABITANTS



1 MILLION
FLOATING
POPULATION

VIVERACQUA, WATER SUPPLY NETWORKS AND PLANTS TO SERVE THE TERRITORY

Data referred to year 2021



SOCIAL
RESPONSIBILITY



People, our most important resource

There are **over three thousand people who work for the integrated water service of Viveracqua utilities** (3,107 employees on 31 December 2021).

Efficiency, know-how and dedication are the key objectives of those who put their skills into practice on a daily basis **to offer users a fully satisfactory service.**

3,107
EMPLOYEES
OF WHICH
APPROXIMATELY
24% ARE WOMEN

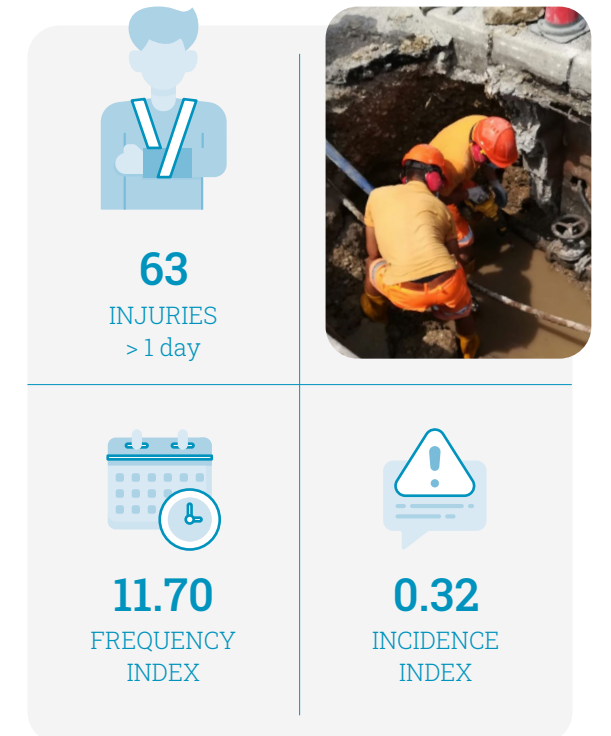
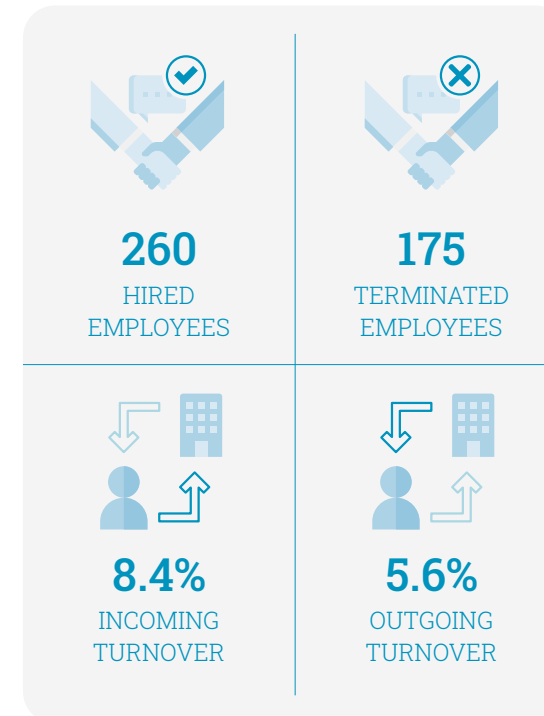
equal to 740 women

Each person is therefore put in a position to do their job as best as possible in a healthy working environment.

Particular attention is paid to **continuous professional training** at all levels, **in particular regarding safety and health issues.**

EMPLOYEE TRAINING

Viveracqua utilities guarantee technical and regulatory updating and professional development of workers through a **careful annual training planning.**



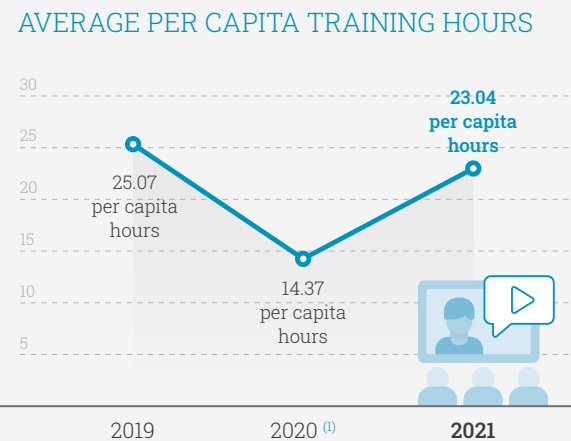
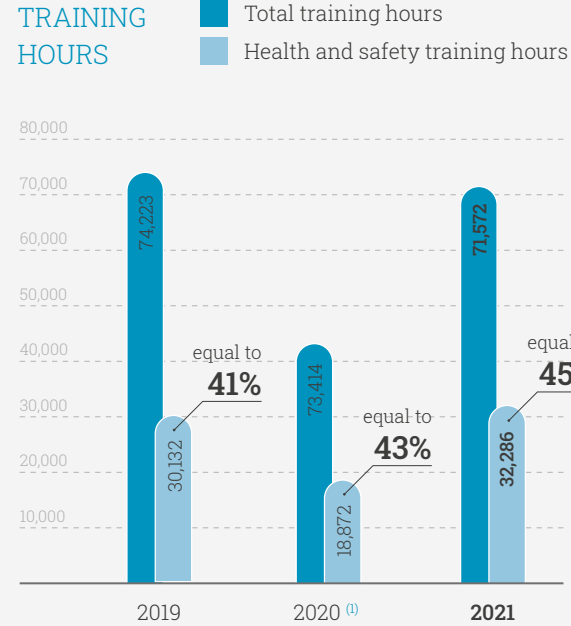
An adequate development of technical and transversal skills, in fact, leads to a **staff enhancement** which has repercussions on the optimization of processes and business development.

During the last year, training data returned to 2019 levels. In fact, **year 2020 suffers from the problems encountered with the lockdown due to Covid-19**, which slowed down, if not even stopped in some cases, the possibility to continue with training events.

The average number of per capita training hours went from an index of 25.07 in 2019, to 14.37 in 2020, up to 23.04 in 2021.

The **training hours dedicated to workers health and safety** maintained the **positive trend of over 40% of the total training hours provided**, a sign of strong sensitivity to this topic.

(1) This data is affected by lockdown period due to Covid-19.



TRAINING IN SCHOOLS

In the name of a policy of raising awareness of new generations about the correct management of water resources, Viveracqua organizes, through the integrated water service utilities, **training activities in schools**.

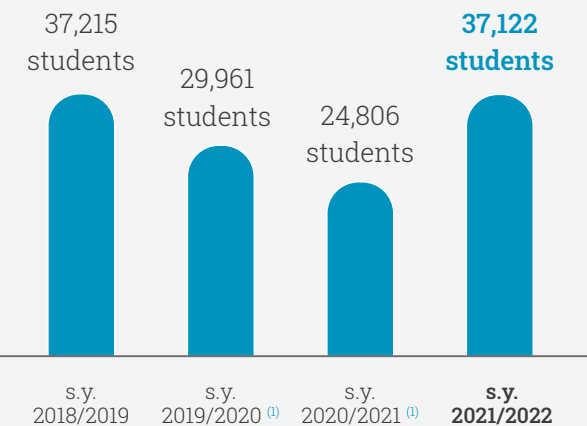
The 2019/2020 and 2020/2021 school years were unfortunately affected by the strong restrictions caused by Covid-19, but already in the following school year **(2021/2022)** data recorded a return to **pre-pandemic levels** (as shown in the graphic).

Educating young people about saving water and respecting the environment means looking to the future and training tomorrow citizens.

For years, **Viveracqua utilities have been promoting educational projects for primary and secondary schools**, raising awareness among children about the conscious use of the resource and explaining to them what is meant by an integrated water cycle.



Interactive educational projects that can be used both online and from home for primary and secondary schools of the territory



FINANCIAL SUPPORT FOR USERS: water bonus, supplementary bonus and other donations

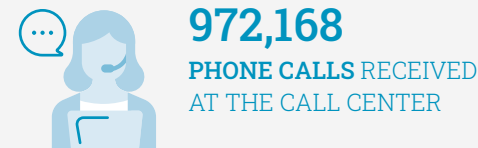
Aware of the difficulties of many users and families, the **12 Viveracqua utilities promptly support the most vulnerable segments of the population.** The support instruments that can be used are the **Social Water Bonus** and the **supplementary bonus.**

Social Water Bonus: The Social Water Bonus is a measure aimed at **reducing spending on the water service of families in conditions of economic and social hardship.** The possibility to benefit from the water bonus depends on the income situation and the type of supply. The **Social Water Bonus guarantees the free supply of 18.25 cubic meters of water on an annual basis** (equal to 50 litres/inhabitant/day) for each member of the user's registered family. The bonus guarantees, for example, a family of 3 people will not have to pay for approximately 55 cubic meters of water per year. The quantity of 18.25 cubic meters of

water was **identified by the decree of the President of the Council of Ministers of 13 October 2016, as the minimum necessary to ensure the satisfaction of the person's fundamental needs.**

The bonus is applied to the variable quotas of all three components of the water service: aqueduct, sewerage and purification.

Supplementary bonus and other benefit: water managers can also recognize users with an **additional or different economic benefit.** It is an improvement benefit established at the local level. For example, the Area Governing Body (EGA) competent for its territory can decide to recognize the end user, under the same conditions of admission, a higher water bonus than that provided for at national level or can modify better admission conditions by raising the maximum ISEE threshold required. The admission requirements and the quantification of the supplementary bonus are therefore decided at a local level and may differ from what is established at a national level.



USER-CENTRICITY

Effective performance to meet all needs

Providing citizens with a **reliable, efficient and comprehensive service is the goal of water utilities.**

This implies first of all guaranteeing a punctual, precise service which, from an administrative point of view, is easily accessible for the user. In the case of water integrated service, it is essential to have a series of tested procedures to manage emergencies efficiently and quickly, minimizing inconvenience for citizens. All water utilities have invested heavily in recent years to strengthen their "Customer Service" and to digitize it using telematic communication tools. This type of automated service is fast and offers targeted responses that are particularly useful in emergency situations.

Contract quality levels: contract quality indicators are divided into two macro categories:

- **MC1 Start and termination of the contractual relationship,** composed of simple indicators relating to the performance concerning estimates, execution of connections and works, activation and deactivation of the supply.
- **MC2 Management of the contractual relationship and accessibility to the service,** composed of simple indicators relating to the performance concerning appointments, invoicing, checks of meters and pressure levels, responses to written requests, as well as the management of contact points with the users.



ECONOMIC RESPONSIBILITY



Initiatives that enhance the territory

The daily management activity of Viveracqua utilities constantly generates **growth opportunities** for the territory, for citizens, for institutions, for businesses and for the community as a whole.

826,027,651 €

DIRECTLY GENERATED ECONOMIC VALUE IN 2021



751,836,597 €
equal to 91%
economic value distributed to stakeholders

+13.5% COMPARED TO 2020



74,191,054 €
equal to 9%
economic value retained by water managers to support investments

+

ECONOMIC VALUE GENERATED AND SHARED

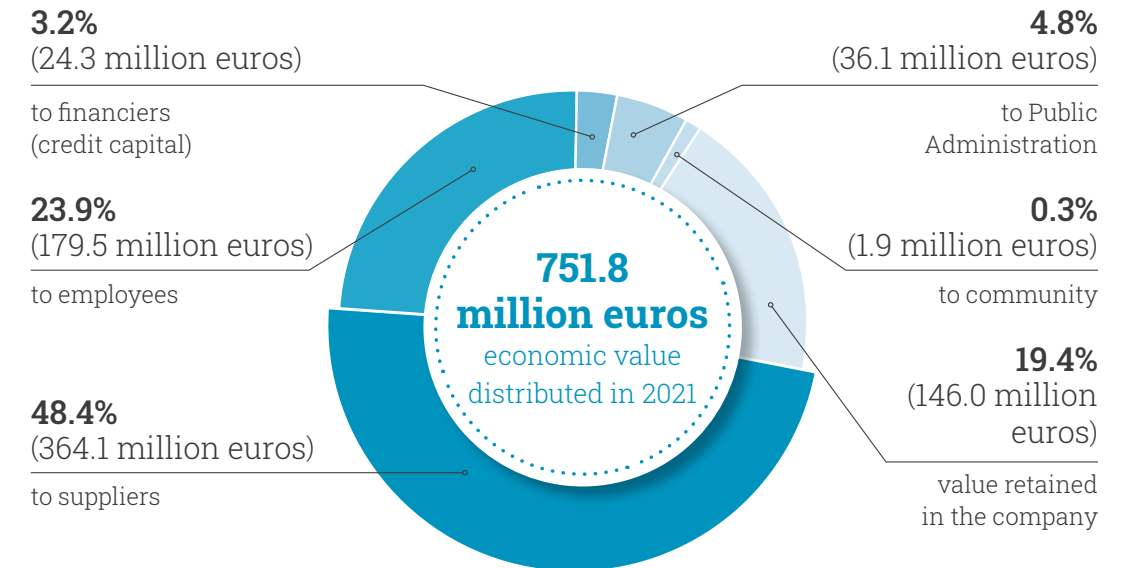
The economic value generated, which in 2021 amounts to € 826,027,651, is distributed to internal and external stakeholders for a total amount of € 751,836,597, according to the classification shown in the following graph.

As can be seen from the graph, the **main stakeholders** to whom Viveracqua Consortium shared its value are **suppliers**

(48%) and **employees** (24%), proving that most of the value generated by water managers contributes directly and indirectly to creation of resources for the local community.

This is undoubtedly a **virtuous dynamic** which, starting from investment projects for the modernization of plants and infrastructures and through the valorisation of human resources, **contributes to the continuous improvement of the service to citizens**, with a view to long-term sustainability.

THE DISTRIBUTION OF VALUE TO STAKEHOLDERS IN 2021



Investments

Viveracqua's primary goal is to proceed with the **implementation of strategic interventions for the integrated water service of Veneto region**, both for the construction of new works and for the improvement and efficiency of existing ones.

In 2021, total investments of **€ 327,820,562 were realized**, divided as follows by aqueduct, sewerage, wastewater treatment and general services sector.

AVERAGE PER CAPITA INVESTMENTS

In 2021, the average per capita investment made by Viveracqua is **€ 70**, significantly **higher than the average per capita investment in the Northern Italian area** in the period 2020-2021, equal to 48 euros/inhabitant (*Staffetta Acqua 2020/2021 data*).

IMPACTS ON THE TERRITORY

Below is a greater detail of the impact on the territory of the investments, divided by sector, towards local suppliers.

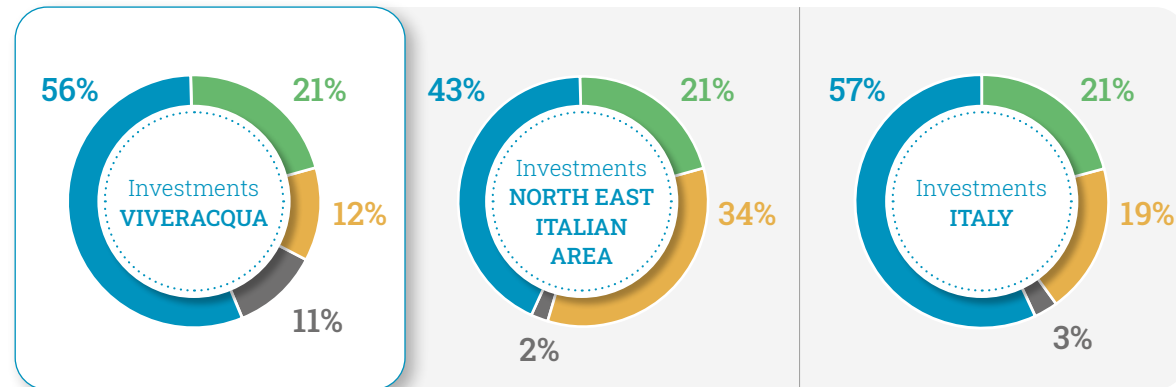


8,089

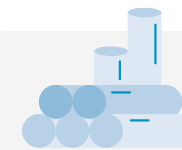
**SUPPLIERS
ACTIVATED IN 2021**

of which **57%** (equal to 4,609) are based in Veneto region

Investments made by sector



■ Aqueduct ■ Sewerage ■ Wastewater treatment ■ General services



452,763,189 €

OF PURCHASES IN 2021

of which **56%** (equal to € 254,069,804) from suppliers within the Viveracqua territory / Veneto region



Rate

The water service rate in Italy is **regulated by Arera** which, with resolution 58/2019, approved MTI-3 rate method for the regulatory period 2020-2023.

The rate is made up of various components and developed by range, so as to take into account all **aspects**:

1. management of water resource
2. environmental aspects
3. management of the service
4. equity in the use of the resource, also including needs of the most disadvantaged social groups and considering the necessity aspect of the good.

The components are:

- **Fixed fee** (€/year), it is independent of actual consumption and must be paid even by those who don't consume water. This component is used to cover the management costs of aqueduct and systems (for example the maintenance costs of the aqueduct). Even those who do not consume water, but are connected to the aqueduct, enjoy the benefit of having a functioning network.

- **Variable fee** (€/m³) **of aqueduct**, calculated on the basis of consumption and divided into consumption range which progressively penalize increasingly higher consumption. The progressiveness of the variable fee by range takes into account, on the one hand, the fact that water is a necessary good and therefore responds to the needs of social equity, on the other hand that it is a precious and potentially exhaustible resource for which it must be used in parsimonious manner.
- **Variable fee** (€/m³) **of sewerage and water treatment**, calculated on the basis of consumption and divided into a single range for both services (the variable fee may, however, be different between sewerage and wastewater treatment). This component takes into account the costs necessary for the management of sewerage networks and wastewater treatment plants and for restoring the quality of the water purified and returned to the environment.
- Finally, there are **equalizing charges**, introduced starting from 2013 and which must be added to the aqueduct, purification and sewerage fee, as described below:

U11 component: intended to cover the concessions granted to populations affected by seismic events (equal to 0.4 euro cents per cubic meter);

U12 component: intended to promote the contractual quality of aqueduct, sewerage and purification services (equal to 0.9 euro cents per cubic meter);

U13 component: intended to cover the costs of water bonus;

U14 component: intended to cover the management costs of the Guarantee Fund for water works.

- **Administrative burdens** given by municipal and provincial surcharges.

The costs covered by the rate are used to cover all the aspects described previously.

In particular:

- **Resource costs** relating to **supply and purification activities**, for the construction of new collection works or the upgrading of water purification plants (the costs of finding leaks, concession or diversion fees are included);

The bill covers:



WATER SUPPLY AND PURIFICATION



ENVIRONMENTAL COSTS



MANAGEMENT COSTS



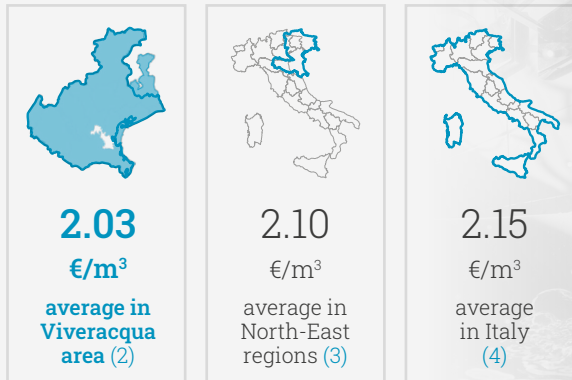
- **Environmental costs** linked to **measures to restore the resource**, reduce or contain the damage produced, relating to the wastewater treatment activity;
- **Management costs** which include the values of fixed assets and operating costs such as electricity, staff, raw materials, disposal of sewage sludge, the laboratory for analysis on drinking water, wastewater and purified water, the management of relationships with users.

The **average annual rate** for a 3 people-family made with a **consumption of 150 cubic meters per year**, in Viveracqua area is equal to: **304.44 euros** (data weighted by the resident population served by the individual managers). This corresponds to 2.03 euros per cubic meter.

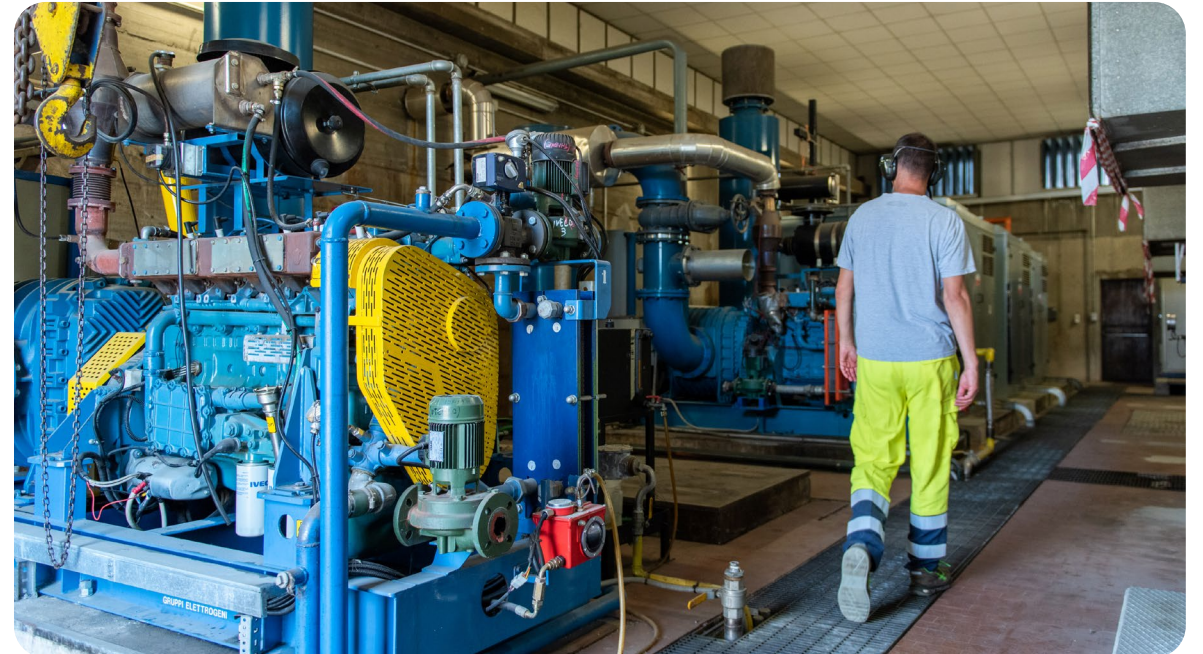


RATES COMPARISON

Rate for a 3-people family consuming 150 m³/year



(2) Average of water managers weighted by residents, including VAT, equalization and additional charges.
 (3) Arera, only VAT included.
 (4) Arera, only VAT included.



ENVIRONMENTAL
RESPONSIBILITY



Rational management and protection of water

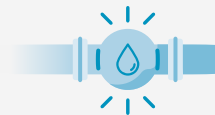
Viveracqua utilities are the **12 managers of the integrated water service in Veneto region**. They deal, each for their own territory of competence, with the management of public services of **collection, supply, purification and distribution of water for civil and industrial uses, and of sewerage and wastewater treatment**.



512
WASTEWATER
TREATMENT
PLANTS excluding
Imhoff tanks



618
IMHOFF
TANKS



47,243 km
SUPPLY AND
DISTRIBUTION
PIPELINES excluding
user connections



21,663 km
MAIN SEWERAGE
NETWORK
excluding
connections

To meet user needs, Viveracqua water operators have withdrawn **685,892,556 m³ of water**:



60%
COMES
FROM THE
AQUIFER



30%
FROM
SOURCES



10%
FROM
SURFACE
WATER

The water withdrawn is subjected to appropriate treatments and then distributed to users. The overall total of **drinking water supplied to users in 2021 is equal to 361,169,758 m³**.

The wastewater collection through the sewerage network and the reduction of its polluting load through treatment are **fundamental activities to reduce the environmental impact** on the territory and to protect the water resource. During 2021, **473,891,514 m³ of wastewater were collected to the various treatment systems**.

LABORATORY



Drinking water, as well as purified water, is constantly monitored by the water operators' internal laboratories and by the relevant bodies (ULSS and ARPAV).

DRINKING WATER

> 25,000
INTERNAL
CONTROLS

542,398
PARAMETERS
ANALYSED

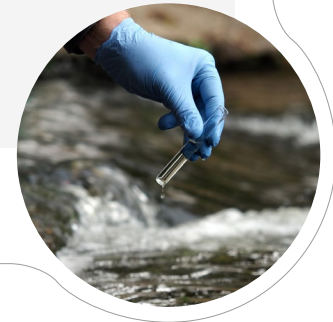
PURIFIED WATER

> 20,000
SAMPLES
PERFORMED

174,064
PARAMETERS
ANALYSED

WATER SAFETY PLAN (WSP)

17.88%
OF USERS LIVE
IN AREAS WITH
WATER SAFETY
PLANS



The technical quality of the integrated water service







RQTI macro-indicators



With resolution 917/2017 Arera introduced the **technical quality of the integrated water service**.

Six macro-indicators are defined which represent the technical conditions for providing the service. These macro-indicators are monitored annually and, based on the results achieved, **improvement objectives are defined for the following years**. The investments to be made in the sector refer to these objectives.

The six macro-indicators are:

Macro-indicators	Service	Description
 M1	Aqueduct	Water leaks
 M2		Service continuity
 M3		Quality of drinking water
 M4	Sewerage	Adequacy of the sewerage system
 M5	Wastewater treatment	Sludge disposal in landfill
 M6		Quality of purified water

M1 Water leaks

Aqueduct networks are physiologically subject to leaks, which can be divided into three different types:

- physical (real): due to deterioration or breakage of the pipes
- apparent: connected to maintenance activities
- administrative: due to volumes stolen without authorization (e.g. illegal)

M1 macro-indicator allows to measure the difference between the volume collected and the volume not delivered (=loss). Despite having recorded an **improvement in performance between 2020 and 2021**, it was not sufficient to reach the objective of -4% per year requested by Arera.

Viveracqua	2020	2021
M1a Linear water leaks [m ³ /km/days]	14.72	14.21
M1b Percentual water leaks [%]	44.0%	42.7%

Year 2021	Viverac.	North-East	Italy
M1a [m ³ /km/days]	14.21	11.4	17.2
M1b [%]	42.7%	38.0%	40.7%

M2 - Service continuity

Viveracqua water operators are constantly committed to ensuring the continuity of the aqueduct service, trying to limit interruptions as much as possible. The Technical Quality indicator M2 evaluates the average duration of scheduled and unscheduled interruptions (lasting more than an hour) suffered by each end user in the year.

Below is the value of the indicator relating to 2021 for Viveracqua compared with the 2021 values for the entire Italian territory and the North-East:

Year 2021	Viverac.	North-East	Italy
Number of breaks per network km [n./km]	0.38	0.46	0.72
M2 Service interruptions [hours]	0.53	0.64	40.25

M2 macro-indicator trend for Viveracqua water operators is below the national average. The parameter in question is influenced by phenomena that are beyond the responsibility of the manager, such as sudden breakages of pipelines, therefore the trend of this macro-indicator is highly variable.



M3 - Quality of water supplied

The water distributed to users is **subjected to daily checks** carried out in accordance with regulatory requirements, also in collaboration with the local health authorities.

In 2021, **25,745 water samples were analysed**, of which 15,669 samples (for a total of 542,398 parameters) referred to drinking water in distribution.

Arera's M3 indicator helps us understand the percentage of samples and parameters that do not comply with Annex 1 of the Legislative Decree 31/2001 in the water samples analysed during the year by the individual manager. Viveracqua, overall, **fits into class D compared to the Arera classes, in line with the data relating to north-eastern Italy and nationally.**

Year 2021	Viverac.	North-East	Italy
M3a Incidence of non-drinking ordinances	0.011%	0.005%	0.065%
M3b Rate of non-compliant internal control samples	4.05%	2.11%	3.68%
M3c Rate of non-compliant internal control parameters	0.15%	0.13%	0.22%



M4 - Adequacy of the sewerage system

Flood spillways are also part of the mixed sewerage system, i.e. hydraulic structures that allow any excess flow that may occur during particularly violent rains to be discharged into surface water bodies. These systems allow us to avoid overloading in pipes and wastewater treatment plants, safeguarding the water service from extreme storm events.

The M4 macro-indicator allows the adequacy of these systems to be assessed by measuring the frequency of spills and the percentage of products controlled and compliant with the regulations. As for 2021, **Viveracqua fits into class E, in line with the national territory and the North-East area**, even if the individual indicators are worse than the benchmark.

The area served by Viveracqua water operators has a frequency of flooding and/or spills (M4a) slightly higher than the national average. Meteorological events of exceptional intensity cause inconvenience to the population for a limited period of time and in well-defined areas.

Therefore, the value of the indicator is of little significance to the efficiency of the sewerage system which, due to its design

characteristics, cannot adequately respond to the effects produced by increasingly acute and frequent meteorological phenomena.

The **M4b macro-indicator**, which detects the regulatory adequacy of flood dischargers, and the **M4c macro-indicator**, which detects the control of flood discharges, **present average values higher than the national average for Viveracqua managers.**

Year 2021	Viverac.	North-East	Italy
M4a Frequency of sewerage flooding and/or spills [n./100 km]	5.18	1.7	4.0
M4b Regulatory adequacy of flood [%]	77%	25%	20%
M4c Control of flood spillways [%]	25%	14%	14%



M5 - Sludge disposal in landfill

The majority of waste produced by the integrated water service operators is certainly represented by the **sludge produced by urban wastewater treatment (EER 190805)**, which for Viveracqua territory amounted to a total of **217,490 t in 2021**. All Viveracqua water operators are committed to recovering the waste produced. In particular, **76.29% of the sludge produced by urban wastewater treatment was sent for recovery**, while the remaining 23.71% was sent to landfill.

The area served by Viveracqua presents **lower performance in terms of sludge disposal compared to the national average.**

The M5 macro-indicator allows you to calculate the percentage of sludge detected in dry matter sent to landfill. Compared to the two benchmarks (North-East area and Italy) Viveracqua places itself in the same class as the North-East, but in a worse class than the national figure.

Year 2021	Viverac.	North-East	Italy
M5 Sludge disposal in landfill [%]	23.71%	14.20%	8.50%



M6 - Quality of purified water

Even the water returned to the environment after the wastewater treatment process is subjected to constant monitoring through the analysis of chemical-physical parameters. During 2021, **a total of 20,240 samples of water returned to the environment were analysed**, for a total of 174,064 parameters.

Arera's M6 macro-indicator aims to calculate the percentage rate of non-compliant samples with respect to the Legislative Decree 152/06. Viveracqua places itself in class C for the year 2021, **in line with the data relating to the North-East area and Italy.**

Year 2021	Viverac.	North-East	Italy
M6 Exceeding limits in discharged wastewater samples [%]	6.30%	6.70%	7.50%

M6 macro-indicator national average trend shows **better performances in terms of the quality of purified water** over the four years of the survey. In particular, Viveracqua water operators recorded data below the national average.



First analysis of the Technical Quality of the water service in Italy

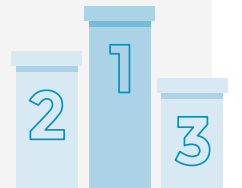
For the first time in Italy, the water service was measured and judged, attributing bonuses and penalties to managers, for results achieved and consolidated in 2018 and 2019. The ranking was published by Arera with resolution 183/2022/R/IDR which concludes the first two years of application of the incentive mechanism.

By analysing the data received, **the Authority was able to assign a prize to those who achieved, maintained and improved the set objectives and a penalty to the others.** The amount of resources dedicated to rewards is established year by year by the collection in the bill of the UI2 component (equalization component intended for promoting the quality of aqueduct, sewerage and wastewater treatment services). The publication of **technical quality data**, in addition to **aligning our Country with the highest standards set by the European directives on water**, represents a boost to investments (highlighting and rewarding the actual implementation of the declared projects) and aims to compare performances between the different operators.

Overall, Viveracqua operators received bonuses of over 10.2 million euros and penalties of 0.7 million euros, and 6 Viveracqua operators were classified among the top 20 in the national ranking which highlights the best operators, evaluated overall at all stages of the service.

6 water operators

CLASSIFIED AMONG THE TOP 20 IN NATIONAL RANKING



> 10.2 million euros
OF RECEIVED BONUSES

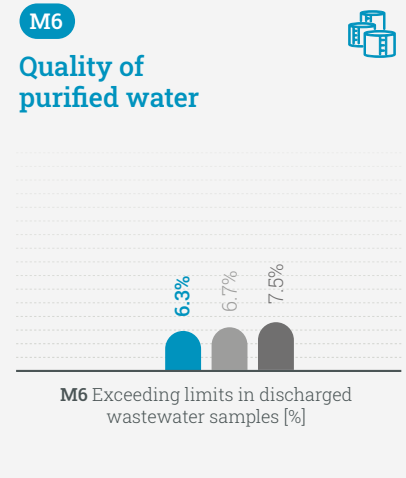
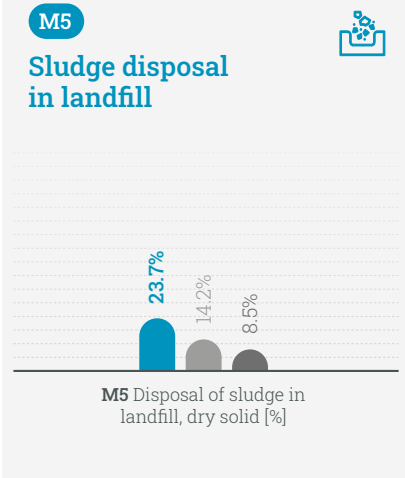
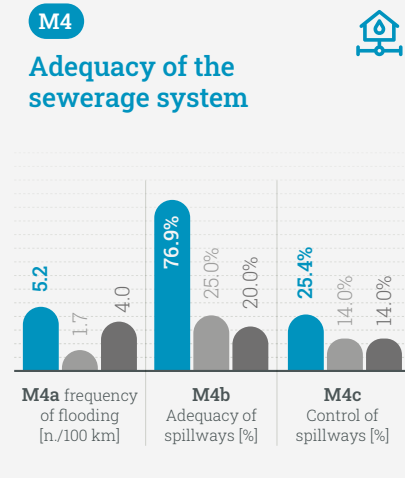
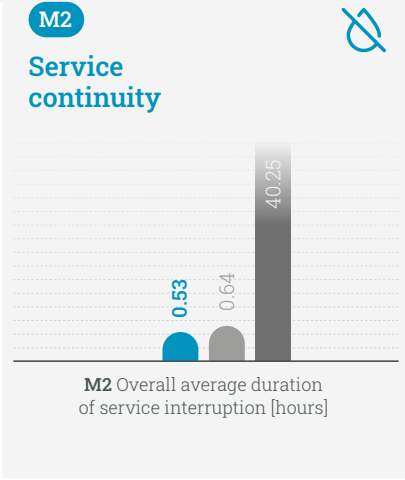
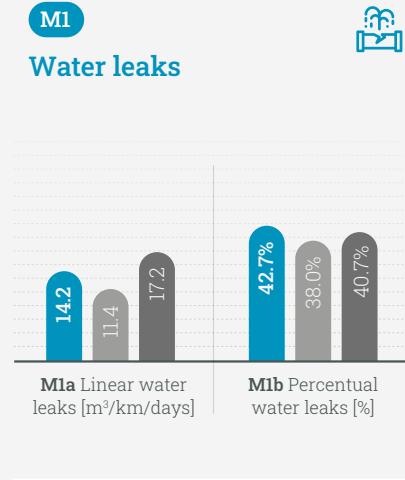


0.7 million euros
OF RECEIVED PENALTIES



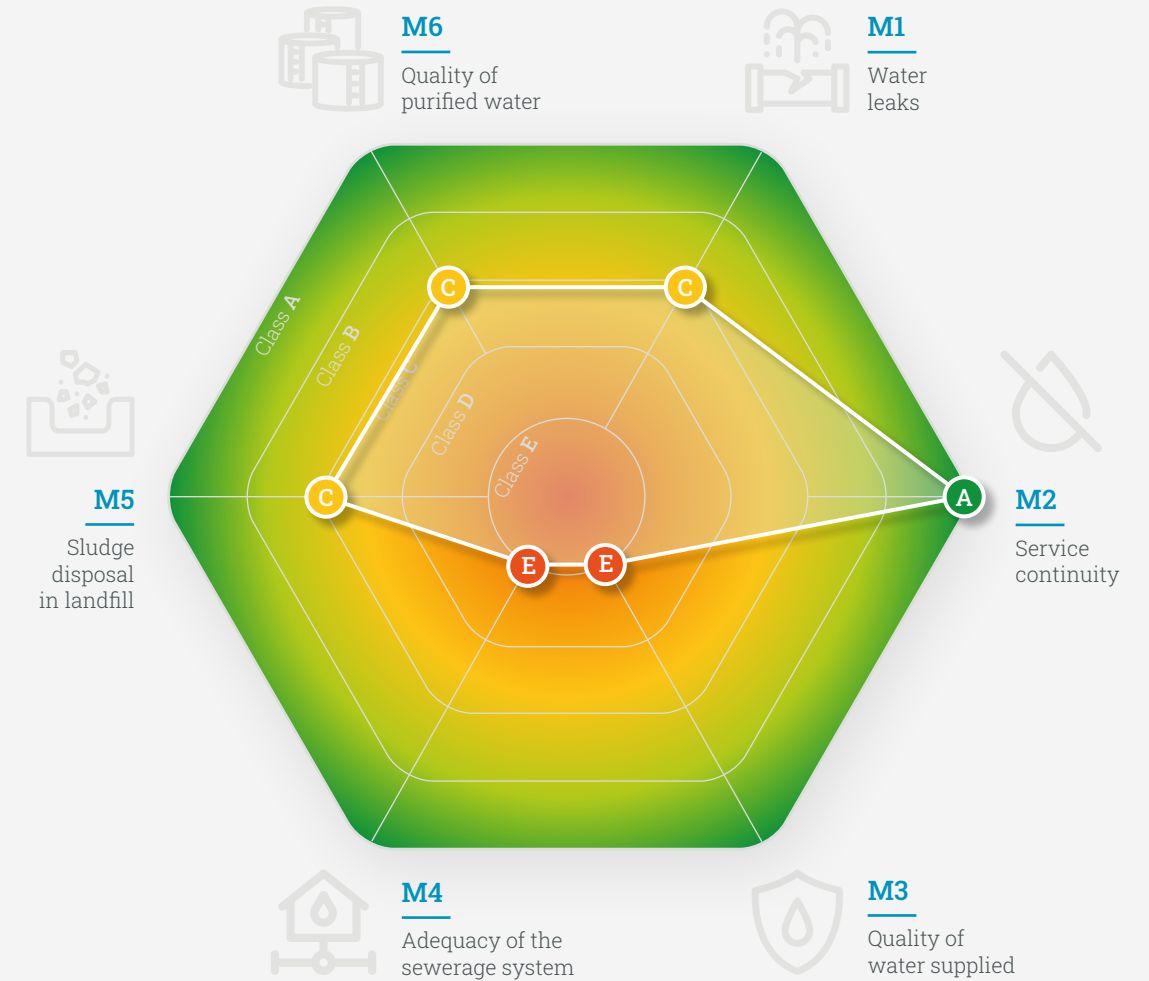
All macro-indicators were analysed as required by the technical quality regulation (RQT). The results obtained were compared with those reported by Arera at a national and North-East Italy level.

Viveracqua Scarl North-East Italy regions Italy



VIVERACQUA TECHNICAL QUALITY CLASSES

YEAR 2021



Investments for PFAS-free water

Change the sources of supply in the area contaminated by PFAS, to provide all citizens with clean water.

The construction sites of *acquevenete*, Acque Veronesi, Acque del Chiampo and Viacqua are underway for the works necessary for the definitive resolution of the problem: 96 million euros invested in works already completed and started.

An important commitment on the part of the water managers, which began as soon as the PFAS pollution emerged: many measures were promptly implemented, starting with the installation of activated carbon filters on the affected aqueducts to remove the pollutants and guarantee safe water for users.

The final objective is to **guarantee a replacement water supply to the territories most affected by contamination**, creating interconnections between the territorial aqueduct systems.



154 million euros
OF WORK TO BRING CLEAN WATER




Energy consumption of the integrated water service

The high energy intensity of the water service requires increasing energy efficiency and the use of energy from renewable sources. It is essential to combat climate change.

Energy consumption is one of the most impactful items on the management costs of the integrated water service. Aqueduct is the sector in which consumption is significant, in particular for the use of pumps for water supply, which is very expensive in terms of energy consumption.

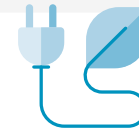
Below is the data referring to electricity consumption in aggregate form:



567,682 MWh

TOTAL ELECTRICITY CONSUMED

(including office consumption and general tipping)



84,699 MWh

ENERGY CONSUMED FROM RENEWABLE SOURCES

15% OF THE TOTAL



24,116 MWh

SELF-PRODUCED ENERGY

4% OF THE TOTAL



The projects and activities of year 2021

The 12 water operators, together, are on the front line every day to satisfy user needs, improve the service offered and environmental protection standards, invest to modernize networks and systems, promote research and development of innovative solutions, reduce costs and achieve significant savings for the benefit of the territories.

SMART.MET

Smart meters for remote reading and remote management

Viveracqua was the leader of SMART.MET, short for **Water Smart Metering, a European project aimed at researching innovative technological solutions for the creation of smart meters.**

The project, **started in 2017 and concluded in the first months of 2022**, saw the participation, in addition to Viveracqua, of **six European public companies** that manage aqueduct systems: the French Eau de Paris and SDEA, the Belgian Vivaqua and CILE, the Spanish Promedio and the Hungarian Budapest Waterworks.

The program of activities was based on a new process of collaboration between public and private, which envisaged, on the part of Viveracqua and the companies involved, the purchase of the market research service through a Pre Commercial Procurement divided into 3 phases:

- **Phase 1 (2018-2019)** Preparation of projects for new smart meters
- **Phase 2 (2019-2020)** Construction of prototypes starting from the best projects
- **Phase 3 (2020-2021)** Field tests of the best prototypes identified among those built in the previous phase

The **smart meters** that were created thanks to this project **allow water consumption to be measured, recorded and transmitted in real time and are based on open technological platforms** that are not tied to proprietary systems.

Their use will allow us to improve the management of water resources by **reducing water and energy wastefulness**. The overall expenditure for this research project was approximately 3.6 million euros, 90% of which was financed by the European Union under the Horizon 2020 programme.

smart,met 



VIVERACQUALAB

Together to guarantee safe water

ViveracquaLab is a network that joins laboratories and technicians and brings together skills and technologies available to different companies, to analyse the **quality of drinking water and wastewater, guarantee the protection of water resources, prevent the risks of environmental contamination to ensure the health of citizens.**

A synergy that allows **150,000 analysis** to be carried out and **1.5 million parameters to be analysed every year.** The analysis are constantly in step with the continuous regulatory developments that affect the entire supply chain, from the withdrawal point to the tap, from the discharge into the sewerage to the exit of the wastewater treatment plants before returning to nature, thanks to the highly specialized skills of the staff and technological equipment already present in the network.

Thanks to the synergy created by ViveracquaLab project, water managers



obtain **scale optimizations**, share the diffusion of **technological innovation**, **develop common methodologies for the research of emerging contaminants.**

Born in 2018, ViveracquaLab currently has **five laboratories accredited** in accordance with UNI EN ISO 17025: Veritas, *acquevenete*, Acque Veronesi, Medio Chiampo and Viacqua laboratories.

The analysis conducted over the three-year period 2019-2021 sees an **overall requirement of 1.8 million parameters** subject to analysis of which Viveracqua Lab was able to meet over 80%.

Over the next four years Viveracqua Lab Network will be able to extend its services.

This project will lead to fundamental economies of scale to contain the unit costs of the service, also raising, if possible, the current quality level.

VIVERACQUALAB CARRIES OUT EVERY YEAR:

150,000	1.5 million
ANALYSIS	PARAMETERS



Covid-19 screening

ViveracquaLab is the **Region's interlocutor for issues concerning the health aspects of the water service.** This role was also carried out in 2021 **during the systematic surveillance of SARS-COV-2 and its variants in wastewater**, in which some water managers participated. On that occasion, a mass screening was carried out in a non-invasive manner to search for traces of Covid-19 in the wastewater arriving at the treatment plants. A monitoring system that provided valuable additional information to follow the evolution of the epidemic.

The snapshots that emerge from biological analysis in fact represent an **early warning system tool**, as they can highlight any critical issues in the spread of the virus and potential outbreaks and allow preventive interventions in the area.

The initiative developed at a national level under the **coordination of the Higher Institute of Health with the direct involvement of Veneto Region** and water managers, an expression of synergy between bodies and institutions.

SINGLE PROCUREMENT CENTER

Joint and centralized purchasing

Since 2013, the 12 Viveracqua managers have also worked in synergy in the purchasing field. Through the **Single Procurement Centre, companies centralize their needs, tender procedures and supplier selection methods.**

The main objectives that the consortium companies pursue are:

- achieve economies of scale
- optimize general management costs
- improve technical performance
- increase competitive capacity.



A collaboration which, over the years, has brought significant savings due to **greater bargaining power.**

Viveracqua managers also have a **regional Supplier Register**, which they can use for any type of tender procedure.

IN 2021, PURCHASE PROCEDURES FOR

198 million euros

WERE PROCESSED



RAINFALL

13 monographs for the benefit of water operators



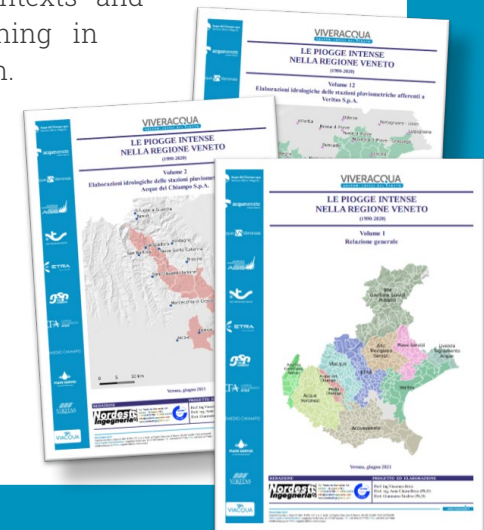
The hydraulic safety of Veneto territory in recent years has been endangered by high intensity rainfall and a high frequency of exceptional rainfall events with consequent flooding even in urban centres. For this reason, it was necessary to gather a timely knowledge on the distribution of rain in Veneto Region, in order to have updated data for the sizing of mixed sewers and hydraulic safety works.

Viveracqua considered it appropriate to produce the study entitled **"Intense rains in Veneto Region" with which the parameters of the curves of rainfall possibilities of Veneto are updated.** A precise hydrological picture of the region's heavy rainfall distribution is provided.

The research examined the **rainfall data collected from 1990 to 2020 from the network of 142 ARPAV rainfall meters**

distributed in the region: one of the most modern and advanced monitoring systems at European level.

Divided into monographs, one for each manager, this publication has proved to be of great value and a benefit for all managers, the Municipalities, their members, the Region, the technicians operating in the territory in the design of hydraulic works, both in services and in urban contexts and spatial planning in Veneto region.



WATER SAFETY PLANS

Learning from the emergency

Guarantee the safety of the water supplied, starting from the analysis and prevention of risk factors.

This is the objective of the Water Safety Plans (WSP), which the 12 water managers of Viveracqua are called upon to develop **by 2025**, for the entire territory served. A precise mapping that identifies the **risk matrices for all sources of withdrawal, more than 2,000 including springs, aquifers and surface waters**, and along the entire aqueduct network, over 47,000 km. **More than 450 WSPs are already being developed** for Viveracqua managers: they must be completed by 2025. A complex and articulated project, which began with **the first Venetian WSP** (and one of the first to be completed in Italy), that **for the Lonigo aqueduct system** (26 municipalities with over 108,000 inhabitants between Vicenza, Verona and Padua), affected by PFAS contamination, now a reference model for the 12 Viveracqua utilities. A work

that lasted a total of two years, in which national authorities (National Institute of Health) and regional authorities (Regional Directorate of Health) participated and which made it possible to analyse the entire water distribution chain, identifying the potential dangers present in each segment and activating the necessary measures to prevent contamination risks. A synergy, for the 12 Venetian water managers, is also in the **training of skills**: Viveracqua, in fact, organized the **training of the Team Leaders, the technicians called upon to take care of the development, implementation, maintenance, verification and revision of the WSPs** which must be prepared for all aqueduct systems in Veneto.

In 2021, the activities for the definition of a unitary Water Safety Plan model at the Veneto level led to the **involvement of the National Institute of Health, the Region, ARPAV and all the managers operating in the Region**. The activity concerns the

PSA PIANO DI SICUREZZA DELL'ACQUA

adoption of a common glossary and a shared risk matrix, with the standardization of dangerous events, the probability that they will occur and the impact that could result. The adoption of common WSP also concerns the **potential management of emerging contaminants** and involves, among others, the IT departments of the managers, for the creation of specific software to be used for the development of the WSPs.

More than 450 WSPs are being developed for Viveracqua managers: they must be completed by 2025.

PARTICIPATION IN NATIONAL AND INTERNATIONAL ASSOCIATIONS

Viveracqua continues to actively participate in **Aqua Publica Europea, the European association of public operators in the integrated water service, which aims to bring the problems and needs of public operators in this sector to the attention of EU offices**, and which intends to be a tool at the service of companies to access European Community funding more effectively. Viveracqua has also followed and actively contributed to the activities of REF Ricerche Laboratory, an independent company that supports companies, institutions and government bodies by carrying out analysis, research and dissemination on the issues of regulation, national and community discipline for the water and sanitation sectors environment.

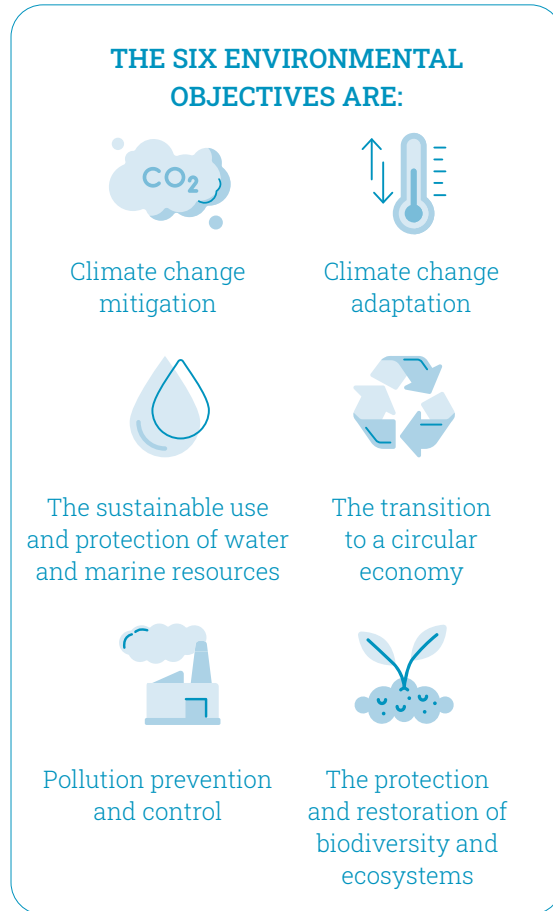


EUROPEAN TAXONOMY ON ECO-SUSTAINABLE ACTIVITIES

In 2021 the **European Commission** developed an **Action Plan for Sustainable Finance** which outlines a series of measures to be adopted to **direct capital flows towards sustainable and responsible investments**, manage financial risks related to climate change and promote the transparency of economic and financial activities.

Within this community strategy, the **European Taxonomy**, approved with EU Regulation 2020/852, aims to become **the first international classification system for the identification of eco-sustainable economic activities**, with the aim of facilitating investors in choosing of effective and informed investments.

The Regulation identifies a list of economic activities that can contribute to the six environmental objectives established by the European Commission:



In particular, according to the Regulation, an activity can be considered sustainable if:

- complies with the **technical screening criteria** that define the conditions under which an activity contributes substantially to the achievement of at least one of the six environmental objectives
- **does not cause any significant harm** ("Do no significant harm", DNSH) to the other five environmental objectives
- **respects a series of minimum social safeguard clauses**, i.e. they adopt corporate policies and procedures that guarantee compliance with the OECD guidelines for multinational enterprises and with the United Nations Guiding Principles on Business and Human Rights.

At the date of publication of this document, the European Commission has defined the **technical screening criteria and DNSH requirements for activities** that can substantially contribute to the achievement of the first two climate objectives: **mitigation and adaptation to climate change**.

In 2021 all Viveracqua managers started the classification.

Most of the activities were eligible for the first two environmental objectives in terms of Revenues, Opex and Capex.

EUROPEAN H2020 B-WATERSMART PROJECT



The European Project H2020 B-WaterSmart intends to encourage the **transition towards "water-smart" economies and societies** in the coastal areas of Europe and is coordinated by the German research institute "IWW Water Centre". 36 partners distributed across 7 European countries are participating. In addition to Venice (2.3 million euros out of a total of 15 financed), the case studies at the forefront in the implementation of the solutions developed are: Alicante (Spain), Bodø (Norway), Flanders (Belgium), Lisbon (Portugal) and the East Frisia (Germany). Started in September 2020, the Project is expected to end in August 2024.

Viveracqua's role is to **represent the entire Veneto sector** and offers the **possibility of extensive and now consolidated dialogue with Europe, national and regional institutions, control bodies and sector representatives**. The consortium company

is included in the database which sees the various territorial actors involved, from the authorities to the economic sectors involved, industry and agriculture first and foremost, to research institutes, suppliers of services and technologies, and so on. **Viveracqua has joined the Community of Practice (CoP) created as part of the project** and which sees the active participation of the various stakeholders. **The project primarily involves Veritas and Etra.** The objective is to **demonstrate the opportunity and sustainability of the resource recovery logics connected to the sewerage purification processes**, while identifying potential management models to overcome the barriers that hinder the closure of the cycles and to create the conditions for a stable and objective knowledge that favours the transition towards the **valorisation of resources and the creation of a circular economy**.

More specifically, the project aims to:

- demonstrate the opportunity to reuse the purified effluent from the Fusina treatment plant (with particular focus on nitrogen recovery)
- support the valorisation of sewage sludge in the entire Veneto sector, with the definition of rules and processes that (also) guarantee safe and controlled reuse of sludge in agriculture.

The project primarily
involves operators:



REPORT ON THE FINAL TREATMENT OF SEWAGE SLUDGE

In 2021 Viveracqua, through a working group, drew up a **report which constituted the reference for the definition of the strategic lines for the treatment of sewage sludge** in the near future. On the basis of the assessments contained, the **observations of the system of in-house water integrated service managers of Veneto region were presented to the Regional Waste Management Plan** so that the needs of the service were made clear to the legislator. The **envisaged scenarios** are all based on some criteria:

- **the elimination of landfill disposal**, without prejudice to the transitional period which precludes the stable structuring of the solutions that will be adopted;
- **the maximum possible recovery in agriculture and in the green supply chain**, also including the possibility of using sludge as soil improvers for the environmental recomposition of exhausted regional landfills;
- **the waste-to-energy of the residual part** using existing and mono-incineration plants to be built from scratch.



**WATER IS A PRIMARY
GOOD THAT KNOWS
NO BOUNDARIES**

Contest #ACQUAPROTAGONISTA 2021
Angelo Schena

A balance that each of us can unintentionally alter,
but which no one can protect alone.

Viveracqua was born and grew with the awareness
that only collaboration between all the subjects
involved can truly guarantee citizens better
management of such a precious asset.



VIVERACQUA SCARL

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