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6.1.4 Guidelines for the management of River Waste, oriented to define and share coordinated procedures among the engaged different bodies

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Guidelines shared among stakeholders for the implementation of integrated solutions (technological and non-technological) for the interception, removal and management of waste that pollute surface watercourses.

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The pollution affecting rivers, lakes, lagoons and seas is no longer negligible. If the current effort is not multiplied, it is estimated that by 2040 around 30 million tons of plastic will end up in the world's waters every year, more than double the current ones.

Over 730 tons of plastic end up in the Mediterranean every day. A value which, according to the United Nations, is destined to double by 2025. 80% of this waste reaches the sea through a preferential lane: rivers which, together with urban waste, constitute the main route travelled by macroplastics.

Italy currently occupies a worrying third place in the ranking of the worst polluters of the Mare Nostrum, right after Turkey and Spain.

The "Salvamare" law was recently definitively approved which allows the recovery of waste present in the waters without committing the crime of illegal transport once recovered. This is an important step that encourages the use of waste collection technologies also in watercourses, encouraging the adoption of the latter by the managing bodies and integrating the interventions in a perspective of monitoring and recovery of material long-term.

"MARine Litter cross-border awareness and innovation actions" (MARLESS) is a territorial cooperation project funded by the INTERREG Italy-Croatia European Programme. Its general objective is to improve the quality of the environmental conditions of the coastal area and the Adriatic Sea.

The general objective of the project is to improve the quality of the environmental conditions of the coastal area and the Adriatic Sea through the use of innovative technologies and approaches.

The specific purpose of the project is to carry out widespread actions that allow the phenomenon of plastic in the sea to be tackled, from different points of view and with different intervention methods.

A particular aspect of the project clearly concerns the theme of the plastic present in the catchment basins and flowing towards the sea: one of the main sources and origins of the problem.

This document intends to represent a sharing of guidelines of regulatory clarifications and good practices to coordinate the action of all the actors, clarifying the role of each one and suggesting ideas and projects to be developed in the various catchment basins.

In the present discussion, after having clarified the main rules governing the production and management of plastic materials from their production to the river mouth, the hypothetical chain of actions aimed at preventing and solving the problem of plastics in surface water bodies could be summarized as follows: 3 macro-sectors:

1 Prevention - Limitation of the source of pollution (the only good waste is the one that is not produced):

- Limitation of the use of single-use plastics (so-called disposable) in various public and social settings;
- An action to raise awareness of the choice of products, in the habits of purchasing community products (longer lasting quality products, favouring environmentally friendly packaging, reuse of containers, etc. ;
- Raising awareness and encouraging companies to develop environmentally friendly, recyclable and returnable products;
- To discourage the abandonment of waste through awareness and information campaigns with respect to regular disposal;
- Create collection points, bins with lids in the most frequented areas;
- Disincentivising abandonment also through monitoring campaigns through the use of technologies such as photo-traps and sensors;
- Activate supply chain controls with respect to the purchase and disposal of products in some production chains;

- Training and education activities with respect to the new generations.

2 Interception and disposal of waste in catchment basins

- through automatic collection systems for floated plastics;
- through the coordination of spraying entities in the maintenance and management of the water body;
- through waste research and collection activities with cleaning campaigns.

3 Governance systems

- River or wetland contracts
- Management agreements between different managers and local actors

1. Prevention - Limitation of the source of pollution (the only good waste is the one that is not produced)

1.1 Restriction of the use of plastics in different public, social and business fields

As useful as it is versatile, plastic is today one of the most controversial materials due to its origin from non-renewable fossil sources and the consequences on the environment. In fact, its ever more frequent use, to which is added a too often incorrect disposal, is a source of considerable land and marine pollution.

Pollution which, among other things, returns to our plates through the food we eat (eg fish). It is therefore necessary to drastically reduce the use of plastic, especially disposable plastic, as recently envisaged by the European Union (Directive 2019/904) which established the total elimination of disposable plastic.

It was published in the Official Gazette last November (G.U. n. 285 of 11-30-2021), but the requirements of the new legislative decree against plastic entered into force on 14 January 2022. The date is important, because the new legislation is an emblem of that new model of circular economy that Europe has chosen to choose in the recovery after the pandemic crisis. But also because plastic is hidden in dozens of our daily habits, and getting into compliance will therefore require some attention.

As required by Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019, the Implementing Decree (Legislative Decree No. 196 of 8 November 2021 - text below) operates simultaneously on several fronts:

1. consumer awareness of responsible consumption;
2. sales restrictions and prohibitions;
3. Producer liability based on the "polluter pays" principle;

4. waste disposal systems.

A fundamental role of indirect education and reduction of possible polluted sources is the organization and management of events, offices and places of the public administration, school canteens, the network of restaurants and bars, festivals, fairs, merchandising corporate etc. through the choice of durable or recyclable plastic products, reusable non-plastic (e.g. glass, aluminum, ceramics) and/or biodegradable.

While on the one hand this concentration of people can have a strong impact on the environment and on the waste of plastic in it, on the other hand proper management can solve the whole problem in one fell swoop.

Surely a good deed could also be to encourage start-ups or companies that want to invest in the research and production of truly alternative products in terms of quality and convenience to potentially polluted ones.

When it comes to choosing, for example, the catering or bar and restaurant service of a public event, you must therefore pay attention to several factors. It is therefore not enough to pay attention to plates, glasses and cutlery, it is also important to find out about the materials used to transport food, as well as those to serve it.

The organization of an event, a canteen, etc. it is not just a choice of appearance, but it is a commitment that must be implemented in all organizational aspects.

In the management, organization and authorization of large public events, the aspect of plastic (and not only) must be seriously taken into consideration: the distribution of promotional gadgets such as a drink or a snack, can literally lead to a diffusion of containers and of plastic (also easily transportable by wind and water) in a widespread way for several km beyond the space dedicated to the event itself.



Figure 1 emblematic image of what often remains on the ground after many sporting and social leisure events

Another example can be the use of balloons which, despite being the symbol par excellence of parties and celebrations, flying and dispersing have a very negative impact on the environment. Once released into the sky (sometimes voluntarily as a scenic effect of demonstrations), they float for kilometres before collapsing on land or in the sea. According to data from the University of Tasmania published by the Ocean Conservancy and disclosed by the ANSA website, flying balloon pieces are the third most dangerous waste for turtles, seabirds and seals. The soft fragments of balloons, when ingested by an animal, have 30 times more chance of causing their death than the rigid microplastics of PET bottles. Researchers at the English University of Wales Swansea have calculated that exhausted balloons are 80% of the waste found in the stomachs of sea turtles that died as a result of sea pollution.

1.2 Municipality Plastic Free

Plastic Free is a voluntary association born on 29 July 2019 with the aim of informing and sensitizing as many people as possible about the dangers of plastic pollution.

Born as a digital reality, in the early years they reached millions of users and today, with more than 1,000 contacts throughout Italy, they are currently the most important and concrete association on this issue.

Plastic Free is also engaged in the field, through various projects, such as: clean up appointments, sea turtle rescue, awareness raising in schools and Plastic Free Municipalities.

The collaboration between a municipality and Plastic Free starts from the stipulation of a memorandum of understanding. A real pact that has the objective of generating benefits for the territory, streamlining bureaucratic procedures, encouraging voluntary activities, and bringing the institution closer to citizens engaged in environmental protection.

It is the award dedicated to the Municipalities that have distinguished themselves by adopting a series of measures aimed at improving their territory for the good of the environment and for the good of future generations.

The evaluation criteria are based on 5 pillars:

- fight against illegal abandonments;
- sensitization of the territory;
- collaboration with the association;
- urban waste management;
- virtuous activities carried out.

At the national level there are currently 296 Memoranda of Understanding signed, of these 80 in Veneto alone.

1.3 Sensitizing the community to the choice of products and customs

Plastic is difficult to recycle and is mostly reusable to make other lower quality plastics, which themselves often cannot be used again.

Green and eco-sustainable policies are certainly necessary, but it is important that they are accompanied by a cultural change and lifestyle change for each of us.

Everything ends downstream, so the simple gesture of throwing a plastic wrapper on the street will ensure that that same package will be found in our seas again in a few months. A non-biodegradable bag can take up to thirty years to decompose, while a bottle can take up to a millennium. Such staggering numbers call for immediate action, so it's vital that every person reduces their plastic consumption as much as possible.

It's not easy, but each of us can immediately start giving a concrete hand to the planet, putting into practice some more or less simple, but very important, daily solutions.

Plastic disposal is a real challenge that will see us all busy over the years. Recycling is essential but it is not enough. It is crucial to educate society to new lifestyles, with virtuous practices that each of us must make our own right away. It is very important to educate children in this sense too, in fact if bad habits are not implemented at all, it will be easier to get rid of them permanently.

Some good practices that go in this direction are reported below, by way of example:

- Use reusable bags

Since 2011, commercial establishments can no longer sell plastic bags for the transport of products. In their place, bags in biodegradable material have been made available to customers, unfortunately not always resistant and suitable for containing heavy objects. The solution to this problem are reusable canvas bags, easy to wash, not bulky but very resistant.

- Prefer bulk products

As far as detergents are concerned, today it is possible in specific shops and in almost all large supermarkets to stock up on the product directly by reusing the same container. If we are fond of certain brands, among the bulk we can now find more than valid products, so it will not be absolutely necessary to give up on quality.

- Fresh food

Also with regard to food, all pre-packaged products, with plasticized packaging, should be avoided, which in addition often leads to a rise in the price. These solutions are used, for example, to sell fruit that has already been washed and peeled: it is much better to buy fresh fruit, which will be decidedly tastier and more genuine.

- Use glass bottles

Plastic water bottles are a real scourge for the environment, as they have very long decomposition times. Due to the poor recycling properties of the material, less than 7% of the containers on sale are made from recycled plastic. It has been demonstrated that tap water is safe and of excellent quality, therefore, it is decidedly preferable to obtain glass carafes and replenish directly from your own home. Eventually you can think of applying osmosis systems to the hydraulic system, which allow you to always have purified and bacteria-free water.

- Avoid chewing gum.

Many chewing gums are made from synthetic polymers, which take hundreds of years to biodegrade. That's why it's better to give up chewing gum, a behavior that is also not recommended by doctors and nutritionists.

In fact, many studies show frequent use of gum can generate gastrointestinal problems as well as lead to consuming junk food more often. Therefore, why continue to harm our health and the environment?

- Cutlery and glasses

Despite the current legislation, disposable packs are unfortunately still widely used for their ease of use, falling into the category of the classic disposable which is easy to get rid of. However, steel cutlery and glass glasses are really easy to wash, making them much more comfortable to use. If you are forced to buy disposable accessories, always prefer biodegradable materials.

- No to plastic straws

Also in this case, despite the current legislation which has banned them, they are still widespread, but it is good to get used to doing without them.

- Eliminate the use of lighters

Lighters are practical tools, sometimes even with an attractive design, so much so that many collect them. However, they take 100 years to biodegrade, polluting water and land.

They are in fact composed of chemical and synthetic materials which, released into the environment, can cause irreparable damage to the fertility of the soil and to the composition of marine waters.

Your best bet is to stop using them, or choose refillable lighters and matches, to at least plug the damage.

- Bring your own food containers

If we eat out for lunch, we get into the habit of bringing our own container and asking the bar or restaurant where we go to put the food there. Maybe even what's left over we can take home in the same container.

- Washable nappies

It is estimated that every year in America alone, about two hundred thousand trees are cut down and eighty thousand kilos of plastic are used to produce disposable diapers. This environmental impact can be significantly reduced by returning to the use of cloth diapers. Also in this case a small effort will be able to give great benefits to the environment. After all, today we all have a washing machine, so the task is quite easy compared to our grandparents' times.

- Limit the use of frozen foods

Despite their convenience, frozen foods are the "kings" of plastic. By trying to remove, or at least limit, frozen foods from your diet, you would return to a healthier cuisine and with natural and seasonal ingredients, whose origin is known.

- Plastic caps

From 3 July 2024 all plastic bottles must have the cap attached to the container. A novelty already put into practice by some brands, but which in a year and a half will become mandatory.

- Reuse plastic as much as possible

Despite the good practices to avoid their consumption, you will always have plastic containers and bottles at home. In this case, before disposing of them, it is advisable to use these objects several times, so that their life cycle is as long as possible

- Do separate waste collection

We have said how important it is to limit the consumption of plastic, however its production is so widespread that no matter how careful and virtuous practices and behaviours are, we will always have to deal with this material. Therefore, when we are forced to dispose of plastic waste, it is of primary importance to carry out separate collection, which must become automatic.



Figure 2 Even through our choices in daily life we can make a difference

1.4 Facilitations and incentives for the recycling of plastic

Refinanced, in the recent 2023 Budget Law, concessions and incentives, intended for businesses and municipalities, to contribute to the separate collection process, implementing plastic recycling.

Among the novelties of the 2023 Budget Law there is not only the deferral of the Plastic Tax: plastic is an active protagonist of the financial manoeuvre, through a series of incentives and concessions intended for businesses, in a more or less direct way.

With the MASE Fund for the purchase of eco-compactors - also known as the Plastic Eaters Experimental Program - and thanks to the tax credit for the purchase of recycled products or compostable or recycled packaging, Italy is moving more and more rapidly towards a green, to comply with environmental obligations within the Community.

The application of tax breaks and incentives to companies that undertake, in a direct and operational way, to reduce the use of plastic and to replace it with innovative and non-polluting materials, would be a substantial step forward for the support of research and of good practices in chemistry, biology and engineering laboratories which, for various reasons, are trying to identify definitive solutions to the plastic problem.

Companies encouraged by this practice could invest in alternative solutions and set up research laboratories for innovative material, easy and cheap to produce, environmentally friendly, capable of replacing plastic, thus eliminating the root problem.

Already in 2016, Europe launched research and development programs through the use of peas, beans and lentils with the Leguval program. Funded by the EU, Leguval aggregates industry and research partners with the aim of producing renewable materials derived from legume by-products in terms of alternatives to plastic.

Applied and published researches have so far found possible alternatives and solutions such that it is foreseeable to replace plastic with a new non-polluting material capable of replacing products with a high environmental impact. An example of this is the plastic of the future from Wisconsin, the American state rich in forests, lakes, agricultural land and farms: a natural solution, made from

sugar and corn cobs, which promises to replace oil as a raw material. But the novelty is above all economic: producing it in large quantities would cost little more than the traditional method, about 3% more. The innovative bioplastics work differently: no petroleum, and the polymer is made of ethylene glycol, a compound called furandicarboxylic acid (FDCA) derived from biomass.

1.5 Establish collection points, bins with lids in heavily frequented areas

If on the one hand the population and river users are encouraged not to abandon waste along the banks and banks, on the other hand it is necessary to make these habits easier, equipping the fruition paths along rivers and lakes and in park areas, of bins with lids for separate waste collection, managing with regular emptying (we specify bins with lids because wildlife is often attracted by food packaging and collects and moves their contents from the bins).

1.6 Disincentivising abandonment also through monitoring campaigns through the use of technologies such as photo-traps and sensors

Camera traps, currently with very affordable prices and with remote control systems, represent a very useful tool for filming incorrect conduct and punishing those responsible for the illegal abandonment of waste along rivers (often these phenomena always occur in the same areas) . It is certainly not the solution to the problem and it is a deterrent that cannot be used extensively along rivers. It is a dissuasion tool, which also intends to support correct behaviour, highlighting conduct that differs from that of many honest citizens, respectful of the rules and who care about the care and decency of rivers and the environment. The uncontrolled abandonment of waste inside the banks and in the river floodplains, in addition to creating a well-known significant environmental damage, also determines a considerable economic commitment for the extraordinary waste removal interventions.

1.7 Activate supply chain controls with respect to the purchase and disposal of products in the production chains

Due to the ease of reaching isolated places through secondary roads, dirt roads or service accesses, rivers are often the site of illegal dumping of large quantities of waste deriving from various production and commercial chains that are not always regular: for example agricultural chains with the abandonment of chemical product packaging or plastic packaging, or construction packaging, with the disposal of waste from renovations or maintenance interventions.

In addition to the aforementioned video traps, a solution to this regrettable phenomenon could be the physical insertion of product traceability codes and references into the products and packaging, through the widespread and difficult to eliminate insertion in the materials of traceable to the last manager / holder of the waste. From this point of view, the new technologies of printing and concealing codes, including through QR codes associated with blockchain technology, would make it possible to limit these phenomena.

1.8 Training and education activities with respect to the new generations.

The Interreg Italy-Croatia Marless project is aimed at the knowledge, enhancement, protection of the sea ecosystem and awareness on the problem of abandonment of waste that accumulates in the environment and in particular in rivers, in our Adriatic Sea and in the basin of the Mediterranean also towards the new generations.

The initiative aims to make people understand the harmful effects of waste and plastic on various ecosystems, also with reference to Objective 14 of the UN Agenda 2030 "Conserve and use the oceans, seas and marine resources", and to promote actions and behaviours towards terrestrial and marine habitats, to preserve their biodiversity.

The action, aimed at primary schools (classes IV and V) and lower secondary schools in the Veneto region, is divided into a series of meetings, partly in the classroom and partly outside the school walls, organized as follows:

- three classroom workshops lasting two hours
- an awareness day with beach cleaning activities.

The educational activities carried out in Veneto in the 2021/22 school year calculated for 23 classes of the following schools:

- Zanibon Primary School of Padua
- G. Marconi Primary School of Loreo (RO)
- Mons. S. Tiozzo Primary School of Porto Viro (RO)
- PRIMARY SCHOOL MAY FIRST of Treviso
- Primary School G. Rodari- I.C. Calvin of Jesolo (VE)
- Mameli Secondary School in Padua
- Lower secondary school I.C. Farmhouse on the Sile (TV)
- Leonardo da Vinci Secondary School - IC De Amicis of Eraclea (VE)
- G. Pascoli Secondary School of Chioggia I.C. Chioggia 2 (VE)
- IC Daniele Manin Secondary School in Cavallino Tre Porti (VE)



Figura 3 Activities with the G. Pascoli Secondary School of Chioggia I.C. Chioggia 2 (VE)

2 Interception and disposal of waste in catchment basins

In this chapter we deal with the issue of intercepting waste. Anything that we cannot prevent from ending up in our watersheds by applying the previous chapters must somehow be intercepted as soon as possible, before it reaches the mouths and ends up in the sea.

An important aspect to underline before tackling the issue of recovering dispersed plastics is to prevent them from being shredded and crushed.

Unfortunately, too often we see waste shredded by machinery used for the maintenance of the greenery of the banks and banks. These operations greatly aggravate the problem by breaking up the waste, making it difficult (if not impossible) to collect it and exponentially extending the possibility of dispersion through the wind or by floating.

As we will see in the next chapters, the problem is easily solved through the willingness of the various actors involved to coordinate with each other.

2.1 Material intercepted by artificial artefacts in rivers

The rivers of Veneto, from Alpine streams to placid resurgence rivers, are affected by various artificial infrastructures which allow a part of the floating solid material to be intercepted.

These are both fixed infrastructures exposed to the current (think, for example, of bridge piers or physical barriers such as locks), and filtering barriers (think of weirs or catchment grids of hydroelectric plants or reclamation consortia).

It goes without saying that the recovery and disposal of this material is essential to help reduce the amount of plastic that could reach the mouth of rivers.

The competence for collection and disposal is well clarified in the regulatory framework illustrated in the introduction, but precisely due to the filtering effect of material that comes from a large portion of the territory upstream of the infrastructure, the costs must be distributed in part share among the territorial entities belonging to the underlying basin.

As we will see with concrete cases in chapter 4, this problem has already been tackled in some cases in the Veneto region effectively through the collection of agreements.

2.2 Through systems and barriers for the collection of floated plastics

There are many Italian entities that are adhering to public or private initiatives to exploit the "plastic catcher" barriers in rivers.

The technology used for these water cleaning activities consists of a series of floating barriers that use various technologies to intercept floating plastic in rivers, lakes and lagoons.

These solutions work like large fixed nets anchored to the river banks, whose work is often associated with that of shallow-draught boats, which do not have the risk of running aground on the riverbed.

These structures are able to intercept waste that is transported by waterways and find itself floating on the surface, to then recover it and eventually insert it into a recycling system. It is therefore a real filter prepared for cleaning placed in some areas of the river. When the nets are full, their contents are simply emptied and sorted on the basis of the necessary recycling of the materials.

Several initiatives have been launched in various areas of Italy for some years now which have envisaged the adoption of plastic catcher barriers.

In some pilot experiences, the association of plastic interception barriers with renewable electricity production systems is interesting.

Chapter 5 gives some examples.

The limit of these solutions is the applicability of the system which is not always simple due to the torrential nature of some rivers (we are talking about both the technical impossibility of installation

and problems in the event of floods). A second limiting factor is the cost, not so much of purchase and installation, but of subsequent management of the collected waste.



Figura 4 Example of a "plastic capture barrier positioned on a river

2.3 Use of new technologies for monitoring and reporting

Currently there are many new technologies that we can use to be able to monitor our rivers and report the possible presence of waste.

However, starting from the use of satellite images or drones capable of navigating our rivers, the use of a tool that is now in the hands and available to everyone is simpler and more direct: our mobile phone i Smartphone.

Our phones are now full-fledged computers equipped with high-definition cameras and very precise geolocation systems, they send messages, emails and even certified e-mails.

The experimental project financed by the Veneto Region to the Belluno Fishermen's Federation as part of the Piave river contract called "Sentinelle della Piave" is an example of the first experimental application of this technology. The project is mainly composed of two components:

1. An App to be used with Mobile tools such as Smartphones or Tablets that allows sentries to report anomalies that are found in the area quickly and easily.
2. An administration/viewing tool via the web that allows administrators and bodies involved to view the reports for which they are responsible on the cartography and to carry out some analyses.

The user who travels the river is thus able, with a simple, very intuitive gesture, to report the presence of waste along the rivers to the proper authorities, the system, based on the position and type of report, already knows who sends the report and it is also able to prevent the same report from being sent several times by different users.

The experimental project is aimed at associations that gravitate with their activities to the territory of the entire Piave basin who sign a special agreement with the Federation of Fishing Basins of the Belluno Dolomites. Members of these associations who decide to subscribe to the code of conduct can become "Sentinels" and receive access credentials to the App.

From now on, the Sentinel will be able to make reports which will be automatically sent via PEC to the competent body. The Bodies involved will also have access to the administration/viewing tool

to see the reports under their responsibility directly on the map and activate the appropriate actions.

These systems are able to significantly implement the widespread monitoring of the territory, establishing an active collaboration between organizations and associations with a simple and effective tool.

apkcombo.com 



Sentinelle della
Piave APK

2.4 Collection initiatives

One of the most important actions for the collection of waste in rivers are the collection campaigns promoted by various associations through the contribution of numerous volunteers. These initiatives are particularly successful as a problematic feature of plastic waste in rivers is its widespread dispersion into the environment, requiring large numbers of people capable of inspecting a large area of levees and floodplains.

Unfortunately, this solution is not free from critical issues:

- lack of coordination between different initiatives promoted by different associations;
- fewer and fewer volunteers willing to donate their time to these initiatives;

- assumption of risks by the organizers for the risks to which the volunteers are exposed in environments and with materials that are not always safe;
- portion of the river affected by these partial initiatives;
- some areas are not accessible to volunteers in safety.

2.5 Use of small rafting boats, canoes etc

Collaboration between public bodies, basin councils, reclamation consortia, waste management and disposal companies, environmental associations, etc. (above all resurgence rivers) as with these boats it is possible to reach some inaccessible points of the banks and also collect the dispersed waste water more punctually and capillary.



Figure 5 Profitable collaboration between the Canoe Open Mind association and Contarina SPA for the collection of waste in the Sile river

3 Coordination actions of the various bodies

Although the responsibility for waste collection along rivers is very clear at the regulatory level thanks also to a specific regional resolution, it is often necessary to coordinate and define operational protocols between the various subjects to facilitate and coordinate cleaning operations, also trying to limit recovery costs.

3.1 The Venetian case of Canalbianco.

An example of these agreements is the pact signed to ensure constant cleaning of the waters of the Canalbianco. In the specific case, the waste carried by the current accumulated in two basins, creating a large accumulation that had raised protests not only from the residents, but also from the environmental association "Greenpeace Italy".

The agreement seeks to immediately guarantee the cleaning of the waterway from the piles of waste which inevitably cover the water for several meters in front of the bulkheads of the basin which allows the navigation of barges, barges and small pleasure boats. The waste material is the result of the abandonment of material that is carried out in the territories bordering the Canalbianco and its tributaries.

Clearly, the service of collection and disposal of floating waste along the Canalbianco, generated along its entire course, could not be supported exclusively by the Municipalities of Legnago and Adria in whose territory the navigation locks are located where there is an accumulation of waste.

On 9 July 2019, the Po River Basin District Authority therefore convened a meeting between all the subjects interested in the problem of floating waste along the Canalbianco, from which positive collaboration emerged to formalize a protocol for the distribution of the charges for the interception, collection and disposal of waste deposited along the Canalbianco.

The breakdown of the costs actually incurred will be carried out by applying the allocation coefficients calculated on the basis of the extension of the drainage area of each Municipality

belonging to the basin of the secondary hydrographic network of Canalbianco, in addition to the extension of the area watered by the Canalbianco itself.

The collection of floating waste, near the basins of Torretta in the Municipality of Legnago (VR) and Baricetta in the Municipality of Adria (RO), and storage in adjoining areas specifically identified will be carried out by Infrastrutture Venete s.r.l. , Manager of navigation along the river (and consequently of the locks).

The agreement finalized involves the Veneto Region, the Po River District Authority, Infrastrutture Venete s.r.l. and 53 Municipalities.

3.2 The proposal of a regional agreement for the development of waste prevention and collection strategies in Veneto rivers

One of the expected results of the MARLESS project is the preparation of a proposal for a framework agreement between the Veneto Region, Basin Councils and other subjects competent in the field of surface water bodies or in any case involved in waste management pursuant to Regional Law 52/2012 aimed at regulate the interception and initiation of recovery and/or disposal of waste accidentally fished or voluntarily collected.

From a survey conducted through questionnaires within the MARLESS project, it emerged that it is necessary, in addition to the legislation already issued in detail by the Veneto Region, to create agreements that provide for coordination and greater synergy between the various local actors public and private in order to:

- optimize and coordinate efforts already in place;
- increase activities where some territorial ambitions have not yet been taken;
- technically and economically support the subjects who have to manage the waste transported and deriving from areas outside their institutional competence;
- define a single and unitary strategy for each river stretch to tackle the problem of plastic waste together with all the public and private bodies along the river;
- carry out regional awareness and information policies in a coordinated way;
- collaborate for the installation in strategic points of "plastic capture" systems;
- coordinate and organize all the various collection initiatives and events by associations and volunteers

Clearly this regional level agreement has the objective of committing the parties to the subsequent development of targeted strategies focused on each individual Veneto river, calibrated on the effective characteristics of the water body, on the specific criticalities and shared with the local

actors through the development of a participatory governance on the model similar to that of river contracts (see paragraph 4.4 below).

By signing this regional framework agreement, the various signatories will recognize:

- the urgency and need to intervene in a coordinated and strategic way in the prevention, collection and recovery and monitoring of the problem of plastic waste in surface water bodies of the Veneto Region
- the need to create a regional coordination table for the prevention and collection of waste in Veneto rivers coordinated by ARPAV
- the need to prepare negotiated programming agreements for each catchment area between all public and private subjects able to work in a synergistic and coordinated way to achieve the common objective of improving the conditions of rivers and lagoons in the Veneto
- define and share an information and communication strategy capable of sensitizing citizens and businesses;
- activate campaigns and initiatives of regional value, discover with the previous point and aimed at informing and sensitizing citizens, businesses and administrations with reference to good practices for preventing the problem of plastic waste dispersion in rivers.

3.3 River and wetland contracts

The River and Wetland or Lagoon Contracts are an agreement between subjects who have responsibilities in the management and use of water, in territorial planning and in environmental protection. It is a "voluntary instrument of strategic and negotiated planning which pursues the protection, correct management of water resources and enhancement of river territories together with protection from hydraulic risk, contributing to local development".

The River Contract contributes to achieving the objectives of the European Directives on Water (2000/60/EC) and on Floods (2007/60/EC) by supporting and promoting policies and initiatives aimed at consolidating resilient river communities, repairing and mitigating, at least in part, the pressures due to decades of unregulated urbanization.

For a long time, watercourses, in particular those that cross metropolitan areas, have been in critical situations: pollution, growing urbanization and artificialisation of the banks are just some of the causes of degradation of the river environment and poor water quality.

They are territories, therefore, fragile and increasingly vulnerable to extreme weather events caused by climate change; heavily modified rivers and territories that have lost much of their natural ability to respond to pressure.

Insertion of article 68 bis into the Consolidated Environmental Act Legislative Decree 152/2006. The recognition of the River Contract on a national scale as a useful tool for the definition and implementation of district planning at the level of the river basin and sub-basin is ratified.

The Action Programs represent the implementation tool of the River Contracts. These are documents that form an integral part of the CdF Agreement and contribute to the realization of the long-term scenario through the implementation of multidisciplinary projects and actions that can be implemented in the short to medium term. The measures within the PdA registered therefore be designed to have progress over three years (otherwise recorded be divided into functional lots), have a referent subject, provide a rough cost estimate, also for the purpose of allowing a effective monitoring of effects.

The measures contained within the PdA are both structural (the interventions) and non-structural, i.e. all the initiatives that you do not plan to carry out a work but are connected to the improvement of the regulatory apparatus, to the creation of training and information moments, to the organization of risk prevention practices etc.

River, lake and wetland contracts represent an excellent governance tool capable of reaching the definition of agreements and agreements between various subjects also for the management of the problem of waste in surface waters and in their vicinity.