



**LIFE11 ENV/IT/004**

**PROGRESS Report**

**Covering the project activities from 31/03/2017 to 30/09/2018**

Reporting Date

**30/09/2018**

**Interventi per il miglioramento delle acque e degli habitat  
nella Valle del Lambro (*Lambro vivo*)**

**Data Project**

<b>Project location</b>	Municipalities of Inverigo, Nibionno, Merone and Veduggio con Colzano
<b>Project start date:</b>	01/06/2012
<b>Project end date:</b>	31/12/2017 <b>Extension date (amendment 3):</b> 31/12/2019
<b>Total budget</b>	€ 3,792,527 (Eligible € 1,422,373)
<b>EC contribution:</b>	€ 566,686
<b>(%) of eligible costs</b>	39.84

**Data Beneficiary**

<b>Name Beneficiary</b>	Parco Regionale della Valle del Lambro
<b>Contact person</b>	Mr Daniele Giuffré
<b>Postal address</b>	Via Vittorio Veneto, 19, Italy, 20844, Triuggio (MB)
<b>Telephone</b>	+ 39-0362-970605
<b>Fax:</b>	+ 39-0362-997045
<b>E-mail</b>	daniele.giuffre@parcovailelambro.it
<b>Project Website</b>	<a href="http://www.lambrovivo.eu">www.lambrovivo.eu</a>

## **TABLE OF CONTENTS:**

<b>1. Table of contents.</b>	
<b>2. List of key-words and abbreviations (when appropriate).</b>	<b>3</b>
<b>3. Executive summary</b>	<b>4</b>
3.1. General progress	4
3.2. Assessment as to whether the project objectives and work plan are still viable	5
3.3. Problems encountered	5
<b>4. Administrative part</b>	<b>6</b>
4.1. Description of the management system	6
4.2. Organization chart of the project team and the project management structure	6
4.3. Previous reports and amendments	7
4.4. Evaluation of the management system	7
<b>5. Technical part</b>	<b>8</b>
5.1. Technical progress, per task	8
5.1.1. Action A1	8
5.1.2. Action B1	9
5.1.3. Action B2	10
5.1.4. Action B3	18
5.1.5. Action B4	20
5.1.6. Action B5	25
5.1.7. Action B6	28
5.1.8. Action B7	32
5.1.9. Action C1	38
5.1.10. Action C2-C3	39
5.1.11. Action D1	41
5.1.12. Action D2	42
5.1.13. Action D3	44
5.1.14. Action D4	45
5.1.15. Action D5	46
5.1.16. Action D6	47
5.1.17. Action D7	48
5.1.18. Action D8	48
5.2. Envisaged progress until next report	49
5.3. Impact	52
5.4. Outside LIFE	53
5.5. LIFE networking	54
<b>6. Financial part</b>	<b>56</b>
6.1. Costs incurred (summary by cost category and relevant comments).	56
6.2. Financial audit	58

## **2. List of key-words and abbreviations (when appropriate).**

- CDG ÷ Consiglio di gestione
- FWS ÷ free water surface
- FB ÷ facebook
- DG RL ÷ Direzioni generali di Regione Lombardia
- SII ÷ Servizio idrico integrato
- AATO ÷ Autorità d'ambito territoriale ottimale
- DRF ÷ Dipartimento di riqualificazione fluviale
- PVL ÷ Parco Valle Lambro
- RUP ÷ Responsabile Unico del Procedimento

### 3. Executive summary

#### 3.1. General progress

During the period described in this report for most of actions the works began and end in areas B4-5-6. In areas B2 in the case of Merone the works proceeded, while in the case of Nibionno and along Cavoalto river (action B7) a premonitoring phase started (control of the vegetation and in some cases of chemical quality of the water).

The specific progress of actions is provided below:

- ACTION A1: since the last report there have been no developments (the action was completed in December 2013).
- ACTION B1: since the last report there have been no developments (the action was completed in April 2015 with the presentation of a final document of the Forum).
- ACTION B2: regarding the system of finishing purifier Merone, the works have begun in March 2016, at present they are in their final phase and the end is expected in the month of October 2018.

About the system of finishing purifier Nibionno, the work began in April 2016, during the month of November 2016 the work was completed and in January 2017 began some complementary works, including the laying of informative panels; these ended in the month of February 2017, so no developments are to be noted except for the complete and luxuriant vegetation of the basins.

- ACTIONS B4-B5-B6: The works began in March 2017 and ended between 2017 and 2018. At the moment all the areas are under maintenance operations.

ACTION B7: The works on the river began in March 2016 and ended in November of the same year. At the beginning of 2017 began the complementary works, including the laying of informative panels; these ended in the month of March 2017 so no developments are to be noted except for the complete and luxuriant vegetation of the river and banks.

- ACTION C1: Since the last report there have been no developments (the action was completed).
- ACTIONS C2-C3: the post operam activities started at the beginning of 2018, after the end of practically the whole works.
- ACTION D1: It's available online the project website [www.lambrovivo.eu](http://www.lambrovivo.eu) that provides all the information and the materials of the project. The website will be soon updated on project news.
- ACTION D2: a first series of temporary panel regarding the project of actions B2, B4-B5-B6, B7 were installed at the end of 2015. At the beginning of 2017 some definitive panels regarding the actions B2 (Nibionno) and B7 have been installed near the works realized. In the 2018 the last definitive panels have been realized illustrating the works and the final results and they are in course of installation.
- ACTION D3: It was produced 1000 copies of brochure containing a summary of Lambrovivo project (see Annex D3\_all01 attached to MIDTERM Report), distributed in various locations. The next report to the layman will directly "Layman's report" of D8 action.

- ACTION D4: since June 2016 no newsletters were produced. The new one will be produced at the end of all the works with a special number that will illustrate the results. The newsletter is distributed to a mailing list that now counts about 300 addresses. It is also publicized on social groups of the project (FB, Twitter and Google+) and published on the site [www.lambrovivo.eu](http://www.lambrovivo.eu)
- ACTION D5: currently we have a profile, a page and a group on FB, a profile and a page on Google+ and a Twitter account. All socials are updated with the news related to the project and synchronized with a dedicated application.
- ACTION D6: until previous report 3 conferences/seminars have been organized. The next conference will be organized after the end of the actions and probably also some public visits on the areas will be considered.
- ACTION D7: not yet started as from timetable.
- ACTION D8: not yet started as from timetable.

### **3.2. Assessment as to whether the project objectives and work plan are still viable**

There are no specific changes regarding the project objectives. The actions planned and planned activities are confirmed as indicated in the 3<sup>rd</sup> Amendment approved in 2017 that authorize a delay of two years for the completion of the works and their monitoring. Actually the works are expected to end in October 2018 and the monitoring phase at the end of 2019. To have more information about these delays see the new timetable and milestones of the project.

### **3.3. Problems encountered**

A consistent delay was accumulated in the works of the action B2 – Merone; these have to be charged to the necessity of a 3<sup>rd</sup> variant of the works that was produced very slowly and to the construction company that accumulated delays complaining about design shortcomings. Actually all these problems should be overcome.

## **4. Administrative part**

### **4.1. Description of the management system**

The Parco Regionale della Valle del Lambro, as project coordinator, is responsible for project management.

To absolve this role, the DRF has followed a common procedure for the development of implementation actions, which consisted of synthesis:

- organize preliminary meetings with the competent authorities either directly or indirectly to the development of a single action to illustrate the original idea and subsequently coordinator obtaining all opinions;
- organize open meetings with associations and communities, in order to promote and share the project idea for the action;
- converge observations received in all the meetings, to prepare a preliminary project already shared with a stakeholders;
- activate the process for the project development and its authorization process;
- supervise the progress of the procedures and encourage all the parties involved to respect the expected timing.

During the realization of the works the DRF supported the role of the Responsible for the Procedure (RUP) monitoring the progress by means of:

- meetings between the contractor, the Site Manager office and the Safety Manager;
- regular and frequent direct inspections on the construction site;
- relationship with the landowners.

### **4.2. Organization chart of the project team and the project management structure**

No changes have been made with respect to what previously indicated in the last Progress report in the project team.

The Project Coordinator coordinates from the top all activities covering the role of Responsible for the Procedure (RUP).

The Head of the Project is responsible for coordinating at a technical-administrative level and arrange all the activities for the correct routing of procedures and compliance with the agreed timeframe.

The Financial Manager:

- Manages all financial aspects of the project, from the cost estimate to their reporting;
- Coordinates the operational aspects of the administrative procedures.

Assistants to the Head of the Project held operational roles related to:

- Technical and administrative control of external projects;
- Direct design;
- Preparation of tender procedures;
- Experiment tender procedures;
- Timing and quality control;
- Operational support to the outermost regions;
- Communication and dissemination;

- Monitoring of the progress of the works.

Administrative personnel play a supporting role in all these activities.

The management team has found a very flexible and efficient organizational mode based on a weekly meeting of about 1-2 hours aimed at coordination of short- and long-term activities, with the participation of the project leader and his assistants and the Financial Manager . In this meeting everyone represents the progress of all individual activities, the difficulties encountered are displayed and set out the next steps and how to perform the same.

### 4.3. Previous reports and amendments

Until now have been sent the following documents:

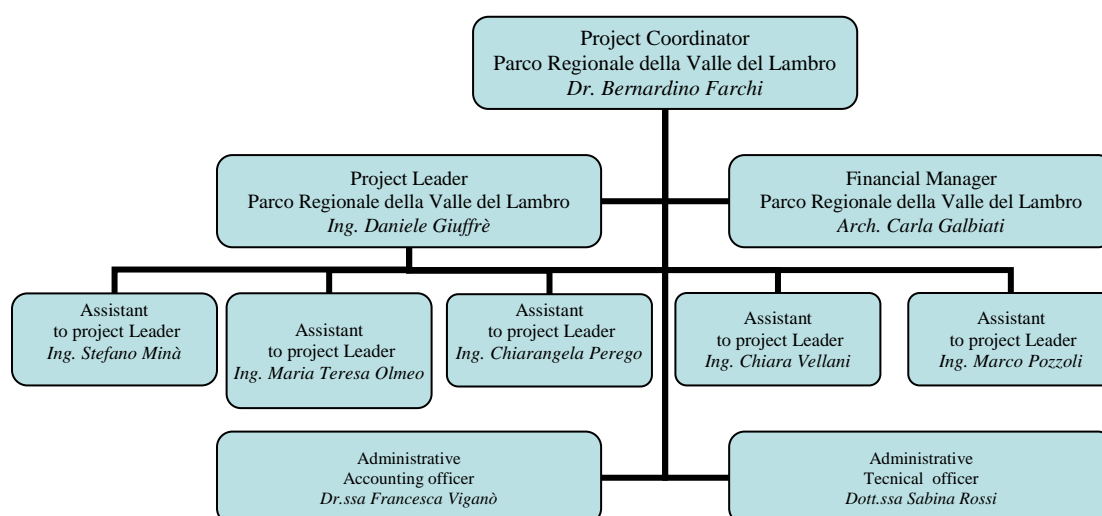
- Inception Report – 30/03/2013;
- Progress Report 1 – 31/03/2014;
- Midterm Report – 31/10/2015;
- Progress Report 2 – 30/03/2017.

At the end of 2013 a 2<sup>nd</sup> Amendment (the 1<sup>st</sup> was a formal one on some contractual details) was presented which provided in great synthesis, the entry of a co-financier (Cariplo Foundation) and 2 additional new actions (B6 and B7). The Amendment was accepted and the Progress Report 1 already contained the 2 new actions provided by the Amendment.

At the end of 2017 a 3<sup>rd</sup> Amendment was presented which provided a delay of two years for the completion of the works and the phase of monitoring post-operam, shifting the end of the project to 31/12/2019. The 3<sup>rd</sup> Amendment was accepted in December 2017 and this is the first report after its approval.

### 4.4. Evaluation of the management system

The current organization of project management is optimal, as regards the efficiency of the working tools, the methods of carrying out the activities and the quality of the work of the people involved.



## 5. Technical part

### 5.1. Technical progress, per task

#### 5.1.1. Action A1

##### Description

The action A1 consisted in the identification and involvement of the stakeholders affected by the proposals by the PVL for the actions.

All municipalities insistent on the river basin of Lambro have been identified, all the over-local authorities (Provinces, Mountain Communities, Region), SII Company operating in the area and any known associations operating in the fields of environmentalism, in ecology, in the local cultural diffusion ("Pro loco") and Civil Defence groups.

The action A1 involved local governments and historically associations connected to the Park through email, Dropbox®, FB Group and printed invitations.

Were also made requests to publish the meetings on institutional sites and on the bright billboards of Commons.

They were also made requests to publish the meetings on institutional sites and on the bright billboards of Municipalities.

This action ended in 2013. Overall they were contacted: 73 Municipalities, 32 Associations, 5 SII Company, DG RL 2, 3 AATO (see Deliverable A1-C1\_Del07 attached to PROGRESS Report\_1)

##### Action status:

Effective start	Effective end	Progress [%]
July 2012	December 2013	100%

##### Problems

The only problems were the involvement of the AATO and of the SII Company, active within the confines of the Park. While it was found an active participation of other stakeholders concerned.

To overcome this problem, during the final meetings of the Forum, it was suggested to focus on the involvement of these institutions through a direct action led by the Region as part of the River Contract.

##### Time schedule

The action began in mid-2012 and ended in late 2013.

##### Objectives

The objectives expected by this action have been successfully achieved, thanks to the high number of stakeholders involved and interested in the proposals by the Park for the action.

##### Deliverables as annexes

-



### 5.1.2. Action B1

#### **Description**

The action B1, begun in 2012 and completed in 2015, has developed mainly with live meetings to share proposals for the actions, suggested by the Park, with the stakeholders and incorporate their requests. The meetings were held initially at the headquarters of the Park and then became itinerant throughout the basin to better foster local participation. All materials and contributions of stakeholders were shared through specific resources such as Dropbox® and FB group. The materials produced during the action consist in 16 presentations (by the Park), 1 external technical input and 9 external contributions from Associations (see Deliverable A1- B1\_Del08 attached to PROGRESS Report\_1).

The final feedback show a total involvement of 24 municipal administrations, 26 associations, 3 Company SII, 2 DG RL. A total of 21 meetings have been held with an average of 21 appearances for each evening for a total of 474 overall attendance.

The action ended with the objective to prepare and share a document which could be signed by as many possible stakeholders. On 7 May 2014 the Park presented a first draft of the final document and in the fall of 2014 organized 4 meetings to which were invited only the most critical associations about the contents of the document, with whom a long and careful work of amendment correction and filing was done.

To complete this step on 15 April 2015 an evening was organized to present and sign the document. This was signed by 25 between organizations and associations including the LR, ATO Lecco, various municipalities, the majority of the involved Associations (see Annex B1\_all08 attached to MIDTERM Report).

#### **Action status:**

Effective start	Effective end	Progress [%]
July 2012	April 2015	100%

#### **Problems**

The main problems encountered in this action were primarily a diffidence on the projects promoted by the Park by the associations present at the Forum probably caused by the Park past policy, which implemented or authorized some project in some way impactful for the river and its habitat. However, this diffidence has been partially overcome by most Associations, which suggested improvements on the projects proposed by the Park or alternatives ideas on specific actions.

In the final step of the action has emerged the blatant duplicity in the behavior of some Associations who initially pretended to give a positive contribution, but in the end refused to sign the final document they had helped to create and included the requests they submitted during the Forum. This behavior has finally shown their exclusive and peaceful intention dilatory and obstructionist.

#### **Time schedule**

The action began in mid-2012 and ended in April 2015.

#### **Objectives**

For this action the objectives expected have been successfully achieved.

#### **Deliverables as annexes**

-

### 5.1.3. Action B2

#### **Description**

The action provide the construction of two filter ecosystems for the finishing of the water discharged from the purification plant of Merone and Nibionno with phytodepuration techniques.

The action included a cognitive phase (investigations and characterization the effluent coming out from the treatment plant or from other sources of pollution to be treated and their persistence), an authorization phase (get permits, concessions and availability of areas) and an operational phase (realization of definitive project and executive project).

As regards the **system of finishing purifier Merone**, in March 2013 has been delivered the preliminary project (see Annex B1\_all20 attached to INCEPTION Report 2013) approved with deliberation of the CDG Park n.16 of 26/04/2013. An information meeting was organized on 03/07/2013, inside the Forum (see Action B1).

On 20/11/2013 the project was presented in Lombardy Region which made some observations and requested to be transposed into the definitive project.

On 03/03/2014 the call of tender was issued for the assignment of the definitive project of the Merone plant, then assigned to the company IRIDRA Srl of Florence. The definitive project was delivered at the end of September 2014 (see Deliverable B2\_Del12 attached to MIDTERM Report).

On the definitive draft were required the expertise views at the Services Conference held on 18/12/2014. There were no prescriptions but it was pointed out very clearly that the system maintenance costs would be debited in the future to the water service rate (see Annexes B2\_all23 attached to MIDTERM Report).

Later the same designers have produced the executive project (see Deliverable B2\_Del15 attached to MIDTERM Report). The executive project was verified and validated in June 2015 (see Annex B2\_all24 attached to MIDTERM Report).

In July 2015 an agreement for the management the structures and the area was signed between ASIL, owner of the areas, and the PVL, realizer of the work, (see Annex B2\_all26 attached to MIDTERM Report).

At the end of July 2015 the tender for the work was issued (see Annex B2\_all25 attached to MIDTERM Report). The call was closed on September 2015 and then the phase of evaluation of tenders was opened.

In January 2016 the works of the Merone purifier have been assigned to the company Di Piazza Vante s.r.l. (Annex B2\_all33 attached to PROGRESS REPORT 2), who signed the contract on 16/03/2016. (Annex B2\_all34 attached to PROGRESS REPORT 2). At the same time in July 2016 the negotiated procedure for the selection of the “Site Manager” was published. The call, to which were invited five engineering companies, was won by Aequa Engineering s.r.l. (Annex B2\_all35 attached to PROGRESS REPORT 2),

On 10/03/2016 the “Site Manager”, Eng. Giuseppe Baldo, proceeded to the partial delivery of work to the company Di Piazza Vante s.r.l., in order to start with the removal operations of the vegetation. (Annex B2\_all36 attached to PROGRESS REPORT 2). The final delivery of the work took place on 13/10/2016. (Annex B2\_all37 attached to PROGRESS REPORT 2).

In the month of June 2016 a 1<sup>st</sup> variation appraisal was authorized by the PVL for the works at Merone purifier (Annex B2\_all38 attached to PROGRESS REPORT 2). The variant has been requested as were necessary some further works for soil consolidation with regard to the

tracks access to the site and an increase of the temporary structures for the support of the digging for the underground civil works.

In February 2017 a 2<sup>nd</sup> variant was required to perfect some details regard to the height and position of the solids separation system and the installation of the civil works (Annex B2\_all39 attached to PROGRESS REPORT 2). This has been authorized by the RUP in late February 2017(Annex B2\_all40 attached to PROGRESS REPORT 2).

In November 2017 a 3<sup>rd</sup> variant was required to update and improve the electrical plant and compensate the operation of laying down the gravel in the basins (Annex B2\_all48). This has been authorized by the RUP in September 2018 (Annex B2\_all49).

At the moment the civil and hydraulic works are all completed and only some finishes remains such as: plantings, electrical plant and remote control system implementation.

Below is reported a comparison between the ortho images of Merone purifier before, during and after the works (roughly dated May 2018) and therefore some images at present.







**Figure 1 - Comparison between the ortho images of Merone purifier before, during and after the works.**



**Figures 2 – The submerged flow basins at the current date**





**Figure 3 – The free surface basin at the current date**



**Figure 4 – The compressors at the current date**



**Figure 5 – The pre-treatment system at the current date**



**Figure 6 – The 1<sup>st</sup> pumping system at the current date**

With regard to the **finishing system of Nibionno purifier**, after the sharing with the manager of the plant, an information meeting with the stakeholders was organized on 18/07/2013, inside the Forum.

The preliminary draft, delivered in May 2014 (see Deliverable B2\_Del10 attached to MIDTERM Report), was approved by the CDG of the PVL on 10 June 2014 (see Annex B2\_all22 attached to MIDTERM Report).

The definitive draft, entrusted by the restricted procedure on 24/07/2014, was delivered at the end of November 2014 (see Deliverable B2\_Del13 attached to MIDTERM Report). This draft follow essentially the preliminary draft with some improvements related to the geometry of the basins.

On the definitive draft were required the expertise views at the Services Conference held on 18/12/2014. At the conference some observations were expressed especially from the WWP managers (see Annex B2\_all27 attached to MIDTERM Report).

Later the same team drew up the executive project (the assignment includes all phases of design from the definitive to the executive, also the Site Management and Safety Coordination) that was delivered in February 2015 (see Deliverable B2\_Del16 attached to MIDTERM Report). In the executive project have been incorporated all the observations made by the operator of the treatment plant. The executive project was then verified and validated during the month of April 2015 (see annex B2\_all28 attached to MIDTERM Report).

At the beginning of May 2015 the tender for the works was issued (see Annex B2\_all29 attached to MIDTERM Report). The call was closed on 11/06/2015 and immediately opened the evaluation phase of the tenders. In October 2015 the works of the Nibionno purifier have been assigned to DELTAMBIENTE Soc. Coop. Agr (see Annex B2\_all30 attached to MIDTERM Report).

In the month of June 2015 (see Annex B2\_all31 attached to MIDTERM Report) an agreement between Valbe SERVICES SPA, owner of the areas, and the PVL, realizer of the works, for the management the structures and the area was signed.

On 29/03/2016, the Site Manager delivered the works to DELTAMBIENTE Soc. Coop. Agr (Annex B2\_all41 attached to PROGRESS REPORT 2).

In the month of July 2016 PVL authorized a variation for the works (Annex B2\_all42 attached to PROGRESS REPORT 2). The variant was requested to realize some works of accomodation and securing to the maintenance track, some operations in the areas of south basin and the substitution of a pipe in accordance with the plant managers.

In November 2016, the Site Manager declared the end of the work, in the respect of the contractual times.

Later, in January 2017, some completion works were requested and executed in the area of Nibionno purifier. In particular a new fence was posed in place of the older one and were installed two boards for new informative panels. (Annex B2\_all43 attached to PROGRESS REPORT 2). In February 2018 some other completion works concerning the fence and the 2° monitoring cabin were assigned and executed (see Annex B2\_all50).

Below is reported a comparison between the ortho images of Nibionno purifier after the works and today where is evident the vegetation spreading from the banks toward the center of the basins.





**Figure 7 - Comparison between the ortho images of Nibionno purifier after the works and today.**







**Figures 8 –Vegetation of the south basin at Nibionno purifier today.**



**Figures 9 - Vegetation of the north basin at Nibionno purifier today.**



The monitoring phase, for both action, will start after the works will be fully operating. The monitoring will be also needed in order to plan interventions to maintain the efficiency of the systems. The aspects to consider in monitoring will concern:

- silting speed of the submerged flow basin;
- silting speed of free water surface basin;
- engraftment of planted species in submerged flow basin;
- the rate of expansion of the reeds in the free water surface basin;
- engraftment of species planted on the shores and in the area behind;
- resilience of system to ordinary flooding;
- functionality of the electromechanical structures where provided;
- adaptation of system to hydraulic stress.

Action status:

Effective start	Effective end	Progress [%]
July 2012	October 2018	95%

**Problems**

Some unexpected problems arose during the authorization phase of the project of Merone, causing a delay of about a month of the publication of the tender. A second problem was the completion of the procedures and the checks. The first aspect was exacerbated by a significant amount of offers received (44 for Nibionno) and numerous cases to check on the administrative and legal aspects.

As regards the purifier of Merone some problems have occurred connected to execution of the works that led to the request of three variants, with a necessary increase of the realization times. The last variant dealt with the electric and automation plant of the system.

**Time schedule**

The action began in mid-2012 and will end in November 2018. In particular the work of the Nibionno purifier was completed at the beginning of 2017 (also considering some additional works) while for Merone is estimated to finish its work in November 2018.

**Objectives**

In terms of water quality improvement this objective will be appreciated only when the entire system will be realized and the postoperam monitoring phase will be completed. This applies to both finishing treatments.

**Deliverables as annexes**

B2\_all48,49,50

#### 5.1.4. Action B3

##### **Description**

The first phase led to the identification of sources of pollution along the Orrido di Inverigo and Roggia di Villa Romano (see Deliverable B3\_Del04 attached to INCEPTION Report 2013); then the action is passed to the implementation phase.

As regards to Orrido di Inverigo river the "Final report of the phase-finding" showed as the only critical element was represented by the spillway upstream to the hydrographic network. The preliminary draft on action B4 provided for the maintenance of the spillway and the creation of phytodepuration area immediately downstream of this but this met a strong opposition by many Associations, therefore it was decided to revise it and the PVL was able to obtain additional financing by Lombardy Region for the renaturation of the river and the elimination of persistent drains on it. Although this particular project came out from Lambrovivo LIFE project, here we will give anyway a short synthesis of its situation.

The preliminary draft of this action was delivered in July 2015 (see Annex B3\_all07 attached to MIDTERM Report), the definitive-executive draft was ready in November 2015 (see Annex B3\_all08 to the last AMENDMENT) and approved in the same month. At the end of November 2015 was issued the tender for the works (see Annex B3\_all10 to the last AMENDMENT). The call was closed on 01/12/2015 and was immediately open the evaluation phase of the tenders. The award remained provisional for two years waiting for the approval of a 2<sup>nd</sup> lot of the same project necessary to its completion. In January 2018 the works have been assigned to IMPRESA RIGAMONTI SPA, Milano (MI) (see Annex B3\_all14) but the works have not started yet being missing the anti-mafia certification.

This action, which is not covered by financing LIFE11 ENV/IT/004, will allow the complete disposal of the head spillway on Orrido river, provides a continuous intake of good quality water and connects to the sewerage some houses that today delivers directly into the river.

As regards to Villa Romanò river the "Final report of the phase-finding" showed the presence of four spillways, numbered, on the municipal cartography, with progressive 5 to 8. Following further study carried out with the technical of the Municipality pointed out that the main problems are due to spillway 5 and 6, while there are no particular problems on the others two. On the first the Municipality carried out a recent maintenance that temporarily solved the criticality (see Deliverable B3\_Del18 attached to MIDTERM Report).

In 2017 another sewage discharge was found on the south stream of the river. The Municipality convoked the inhabitants involved and asked them to produce their private sewerage to obliged them to connect to the main pipe to WWTP. This work is still ongoing.

Although no Operational Programme of the Maintenance has been undersigned, in the summer 2017 a continuous collaboration started between Inverigo Municipality, current operator of the sewage system, Valbe Services Srl, operator of the main pipe to Nibionno WWTP and the DRF of the Park with the aim to survey the water quality of the river and the behavior of the spillways, keep them in efficiency and solve the remaining situations of pollution affecting the river.

Although many actions have to be undertaken on the river to reach a satisfying chemical and ecological quality, first of all a serious separation of black and white waters upstream the sewerage, the action can be considered ended.

##### **Action status:**

Effective start	Effective end	Progress [%]
October 2012	July 2017	100%

### **Problems**

Many delays occurs in this action: the actors involved (Municipality of Inverigo and Valbe Services SPA) needed to define their limits of competence on the spillway artifacts; there was a turnover in the technical staff of the municipality of Inverigo that deals with sewerage and it was therefore necessary to wait for the settling due to this rotation; a new point of discharge was founded during the works in the summer of 2017 and the Operational Programme of the Maintenance was not accepted by the actors.

In spite of everything it is worth to underline that Municipality of Inverigo and Valbe Services SPA gave all the support they were able to give compatibly with their economic availabilities and with the uncertainty about the Integrated Water System during these years in Como Province.

### **Time schedule**

The ordinary and extraordinary maintenance of the spillways artifacts started in the summer of 2017. Their partial or complete dismission is not at the moment taken into consideration and is not an objective of this action.

### **Objectives**

The objective of identifying the sources of pollution has been achieved.

The objective of removal of polluting sources and consequently of improving water quality and habitat will be quantified after the postoperam monitoring.

### **Deliverables as annexes**

B3\_all14

### 5.1.5. Action B4

#### Description

The B4 action provided the construction of two filter ecosystems on two tributaries of Lambro: the Villa Romano river and Orrido of Inverigo river. The objective of this action was the removal of pollutants in the waters due to the presence of spillway.

The action was in the preliminary draft *“Area di laminazione di Inverigo – Interventi idraulici e di riqualificazione fluviale nei territori di Inverigo, Nibionno e Veduggio con Colzano”* (see Deliverable B4-5-6\_Del06 attached to PROGRESS Report\_1), drawn up at the end of 2012, submitted, in December 2012, to the Lombardy Region and approved by PVL with CDG's Resolution n. 7 in 05.03.2013. It was also presented to Inverigo Mayor and, in the meeting of 05.16.2013, to the community of Inverigo. On 06.05.2013 was presented to the Forum, at which attended the local stakeholders.

On 27.3.2014 the tender for the assignment of the definitive project of *“INTERVENTI AMBIENTALI compresi nei lavori denominati Area di laminazione di Inverigo: interventi di riqualificazione fluviale nei territori di Inverigo, Nibionno e Veduggio con Colzano”* was called and action B4 was included in it. The definitive project (see Deliverable B4-5-6\_Del14 attached to MIDTERM Report), which includes all B4, B5 and B6 action, was delivered in November 2014 and tested for validation in the months of November and December 2014 (see Annex B4-5-6\_all04 attached to MIDTERM Report).

It has been clarified that in the project are present some works that are not included in the project LIFE: these works are well highlighted and the related costs have not been calculated in the costs relating to the LIFE project. In particular the parts that relate to the action B4 insist on the so called “area F” and “G”.

As for the action B4 the definitive project includes some important changes compared to the preliminary and respect the concept shown in the LIFE notice. These changes have been introduced as a result of a comparison with the designers who have decided to prefer some solutions rather than others. The main changes were described in the preceeding reports.

The actions planned in the definitive planning occupy a larger area than those provided in the preliminary design and occupy areas that initially had not been taken into consideration. It should be noted, however, that despite these changes the project pursues the same objectives initially declared and indeed brings some improvements because, compared to an intervention locally milder, it was possible to extend the actions on a larger surface.

The project was then submitted to regulatory approvals during the Services Conference held on 23/12/2014, during which no observations were made (see Annex B4-5-6\_all05 attached to MIDTERM Report). On 31/12/2014 was issued the call of tender (see Annex B4-5-6\_all06 attached to MIDTERM Report) for integrated contract (executive project and work). The call was closed in early April 2015, and was immediately open the evaluation phase of the tenders. In January 2016 (Annex B4-5-6\_all07) the tender has been assigned to the ATI ADRIACOS Srl – Nagostinis Srl – BB Service Srl, who signed the contract on 21/10/2016 (Annex B4-5-6\_all08).

At the same time the contract for the Site Manager and Safety Coordination have been assigned, awarded respectively on 9/02/2016 to Studio Rosso Ingegneri Associati (Torino) (Annex B4-5-6\_all09), and on 1/03/2016 to Ing. Cristian Conti (Annex B4-5-6\_all10).

On 23/12/2016 the designers delivered the executive draft (Del B4-5-6\_Del21). The executive project does not introduce substantial differences compared to the definitive draft as for B4 action.

As for the availability of the areas were instructed Studio Mariani Corbetta and Arch. Maria Bossi to undertake contacts with the owners concerned. Overall they were contacted about twenty owners. It has been possible to sign several temporary occupation agreement, not onerous, for almost all of the owners except for an area for which will be signed a decree of servants that will be formalized and notified in March 2017.

On 22/02/2017 the Site Manager delivered partially the works to the company awarded. The works started in October 2017 and ended in May 2018. Actually they are under ordinary maintenance that consists in the removal of the dead plants, their substitution, irrigation, the removal of the invasive plants and of the trash.

Below is reported a comparison between the ortho images of the area before and after the works.



**Figure 10 - Comparison between the ortho images of the wetland before and after the works.**







**Figures 11 – Vegetation of the wetland in B4 area today (the second refers to the secondary marsh)**

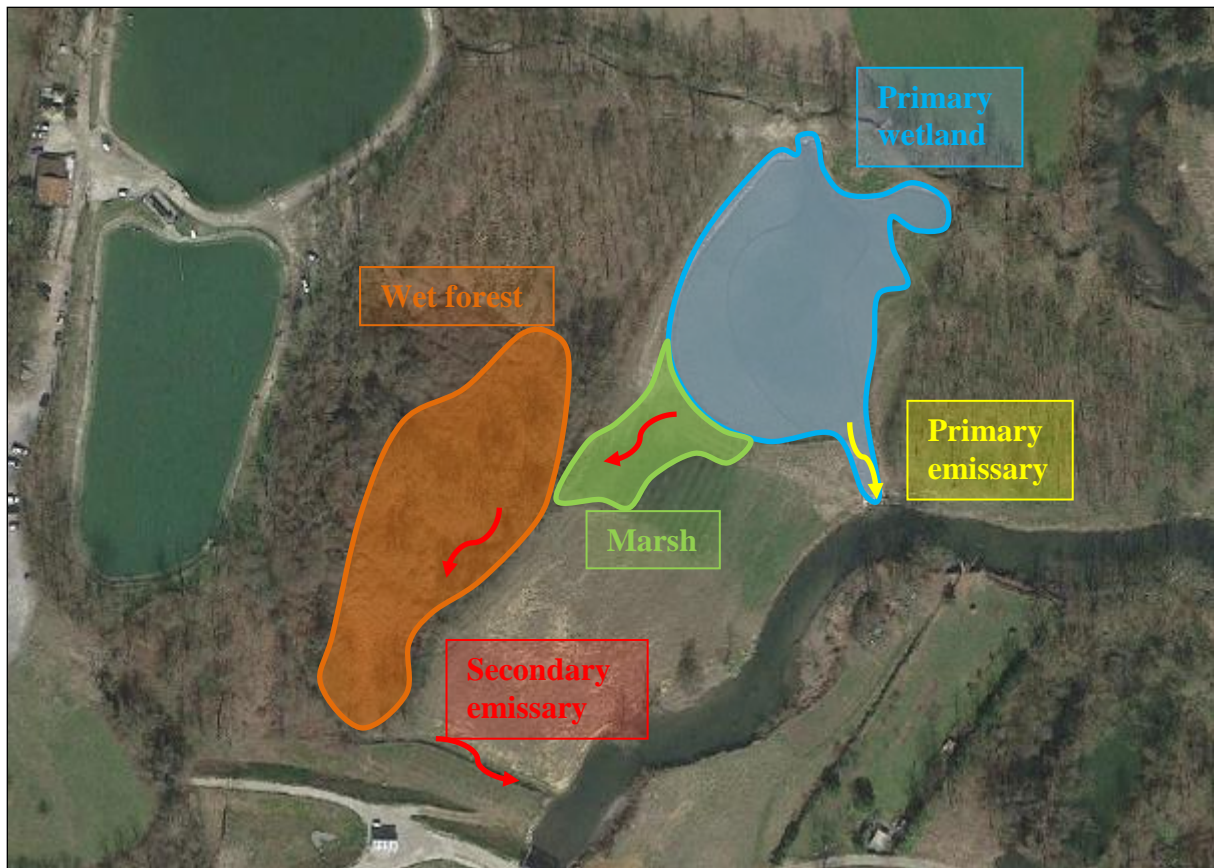


**Figures 12 – Emissaries of the wetland in area B4: main and secondary**

After the works it has been found that the water was not contained in the area previously excavated but overflowed into the near grassland and wood. This situation gave origin to two new wet areas: a marsh and a wet forest. The water in excess in fact take a secondary emissary and comes to Lambro by another way indicated in the next figure. The result is to have 2 new natural extra areas respect to what expected, with a doubling of the wet habitat.

As for the progress of the works is it to notice that 2 variants have been requested and approved, the second involving the B4 area, and 4 additional works, one interesting the B4 area (see Annex B4-5-6\_all17 and B4\_all05).





**Figures 13 – Scheme of the new wet areas not expected at the beginning of the project**

In the next image is represented the situation of the marsh today. The primary wetland is on the right and the wet forest on the left.



**Figures 14 – Vegetation of the marsh in B4 area today. The water goes from the right to the left.**

Actually the marsh, the wet forest and the secondary emissary have been populated by typha latifolia, duckweed and swamp cane.

Also at the end of the works it has been necessary to provide a reinforcement to the right bank downstream the main emissary that was involved into a serious problem of regressive erosion. The additional works consisted in a clogged cliff 20 m long and 3 m high planted with willow cuttings. In the image below the vegetation covered almost completely the rocks.



**Figures 15 – Reinforcement of the right banks downstream the main emissary of the wetland in area B4**

Action status:

Effective start	Effective end	Progress [%]
October 2012	September 2018	100%

**Problems**

The main problems that occurred were the interface with the professionals responsible of the definitive project and the increases due to the tendering procedures. On the first point it must be observed that the design team, chosen by an open procedure with the most economically advantageous tender, was very helpful at the beginning and in appearances, but in the end produced a different project from the preliminary indications more than what had been granted by the Contracting Authority.

It also shown remarkable unwillingness to produce necessary documents for the tender, despite what was clearly indicated in the contract. Finally there was also significant unavailability with the validation team.

As it regards the valuation procedures of tenders is observed that were made a number of observations regarding the professional expertise required for the team for the executive design and have been proposed some complaints by some excluded.

Very much time was lost in dealing with landowners in the definition of the agreements, in particular for the areas interested in action B4 where the only owner, a real estate company, gave very little or no feedback for months. The final solution agreed was the forced temporary occupation of the lands that will be notified by a decree of servants formalized and notified in March 2017.

**Time schedule**

The works had a considerable delay but they are actually ended.

**Objectives**

The objectives of improvement of river habitat quality are already tangible but will be numerically quantified in the postoperam monitoring.

**Deliverables as annexes**

B4\_all05



#### **5.1.6. Action B5**

The B5 action initially provided the construction of a wetland along the Lambro river upstream of the Provincial Como - Bergamo by expanding an area of a noose and creating an oxbow lake on the left bank. The objective of this action was the expansion of wetlands for the settlement of amphibians and fish reproduction.

Since the B5 action is contained in the same process that also contains the B4 and B6 actions, the authorization process is exactly the one already described for the B4 action as well as the check of the availability of the areas.

It has been clarified that in the project are present some works that are not included in the project LIFE: these works are well highlighted and the related costs have not been calculated in the costs relating to the LIFE project. In particular the parts that relate to the action B5 insist on the so called "area A".

As for the action B5 the definitive project includes a number of important changes compared to the preliminary to the concept shown in the LIFE notice. These changes have been introduced as a result of a comparison with the designers who have decided to prefer some solutions rather than others.

The actions planned in the definitive project occupy a larger area than those provided in the preliminary design and occupy areas that initially had not been taken into consideration. It should be noted, however, that these changes continue to pursue the same objectives initially declared and indeed are an improvement because, compared to an intervention locally milder, it was possible to extend the actions on a larger surface.

Also for the B5 action the executive project made no changes compared to the definitive. The works started in March 2017 and ended in May 2017 with some successive additional works. Actually they are under ordinary maintenance that consists in the removal of the dead plants, their substitution, irrigation, the removal of the invasive plants and of the trash.

As for the progress of the works is it to notice that 2 variants have been requested and approved and 4 additional works have been necessary. The 2 variants interested both B5 (also called area A) and B6 areas (also called areas B, C and D). The same thing for the additional works. For further details see Annex B4-5-6\_all13 to B4-5-6\_all18.

In the images below is represented the situation at the current date.







**Figures 16 – Situation of the pools in area B5 (area A)**

At the moment obviously the pools are all dry in consequence of a summer with scarce precipitations. Anyway it is to notice that these pools can be full of water only during the wet seasons, particularly in spring and fall. Their role is in fact connected to the reproduction of some species like amphibians and aquatic insects (dragonfly) and it is also impossible as well as not useful to guarantee water supply during the dry seasons (summer and winter). The past presence of the water is testified by the persistence of typical hygrophile plants.

Action status:

Effective start	Effective end	Progress [%]
October 2012	September 2018	100%

**Problems**

Refer to what is already noted for the B4 action, even for timesteps for the award of work.

**Time schedule**

Refer to what has already been noted for the action B4.

**Objectives**

Refer to what has already been noted for the action B4.

**Deliverables as annexes**

B4-5-6\_all13,14,15,16,17,18

### 5.1.7. Action B6

B6 action was introduced with the Amendment presented in December 2013 and initially provided the construction of a wetland along the Lambro downstream of the Provincial Como - Bergamo by expanding riverbed in the right bank. The objective of this action is also in this case the expansion of wetlands for the settlement of amphibians and fish reproduction.

The action is contained in the preliminary draft “*Area di laminazione di Inverigo – Interventi idraulici e di riqualificazione fluviale nei territori di Inverigo, Nibionno e Veduggio con Colzano*” (see Deliverable B4-5-6\_Del06 attached to PROGRESS Report\_1), drawn up at the end of 2012 and submitted, in December 2012, the Lombardy Region then approved by PVL.

Since the B6 action is contained in the same process that also contains the B4 and B5 actions the authorization process is exactly the one already described for the B4 action as well as the check of the availability of the areas.

It is clarified that in the project are present some works that are not included in the project LIFE: these works are well highlighted and the related costs have not been calculated in the costs relating to the LIFE project. In particular the parts that relate to the action B6 insist on the so called “area B,C and D”.

As for the action B6 the definitive project includes a number of important changes compared to the preliminary and the concept shown in the LIFE notice. These changes have been introduced as a result of a comparison with the designers who have decided to prefer some solutions rather than others and especially as a result of comparison with some owners who are firmly opposed to the proposed solution, requiring a less invasive action.

The actions planned in the definitive planning occupy a larger area than those provided in the preliminary design and occupy areas that initially had not been taken into consideration. It should be noted, however, that these changes continue to pursue the same objectives initially declared and indeed are an improvement because, compared to an intervention locally milder, it was possible to extend the actions on a larger surface.

The executive project, as regards to the action B6, brought changes only in the area D. In particular, it is planned a forest improvement on a narrower area compared to the definitive project, but with a greater extension and there are improvements on both banks of the Lambro; it is also no longer planned the amphibians area. All these changes were due to the unavailability of the owner to take action on major portions of the property. On the contrary others new owners showed a certain willingness to accommodate further processing on their land. Below two ortho images explain the state of the art.



Figure 17 - Comparison between the ortho images of the wetland before and after the works



The works started in March 2017 and ended in September 2017 with some successive additional works. Actually they are under ordinary maintenance that consists in the removal of the dead plants, their substitution, irrigation, the removal of the invasive plants and of the trash.



**Figures 18 – Wetland in area B6 and tree-lined track**





**Figures 19 – Tree-lined track in area B6 and banks vegetated with hygrophile plants**



It is no notice that during the works one additional wetland on the right bank was implemented blocking a little stream few metres downstream the main one fed by a wellspring. The results of this occasional action is presented in the image below.



**Figures 20 – New wetland on the right bank of Lambro river**

As for the progress of the works is it to notice that 2 variants have been requested and approved and 4 additional works have been necessary. The 2 variants interested both B5 (also called area A) and B6 areas (also called areas B, C and D). The same thing for the additional works. For further details see Annex B4-5-6\_all13 to B4-5-6\_all18.

Action status:

Effective start	Effective end	Progress [%]
October 2012	September 2017	100%

**Problems**

Refer to what is already noted for the B4 action, even for timesteps for the award of work.

**Time schedule**

Refer to what has already been noted for the action B4.

**Objectives**

Refer to what has already been noted for the action B4.

**Deliverables as annexes**

B4-5-6\_all13,14,15,16,17,18

### **5.1.8. Action B7**

#### **Description**

The B7 action was introduced with the Amendment presented in December 2013 and provides for river restoration actions in the final section of Roggia Cavolto, between the Lake of Baggero and the bridge of Battisti road in the City of Merone. Specifically were planned actions for river habitat improvement, renaturation of the river, creation of alternative routes of river and actions for the phytoremediation of water.

A first proposal for action B7 was submitted on 11.09.2013, inside the Forum (see Deliverable B1\_Del08 attached to PROGRESS Report\_1).

The preliminary draft was presented in October 2014 (see Deliverable B7\_Del11 attached to MIDTERM Report) and approved by the CDG of PVL on November 12, 2014 (see Annex B7\_all01 attached to MIDTERM Report). This included, in short, the restoration of the banks with bioengineering elements, the reprofiling of the river bottom with creation of fish ladders and path.

There have been changes between the first proposal and the preliminary draft that mitigated the intervention maintain its objectives. In particular the original proposal provided for the complete removal of all artificializations on river banks and the bottom, but the designers, both in the preliminary and in the definitive-executive phase, have considered this unsafe for the stability of the banks and preferred the hiding of them.

The definitive-executive project, entrusted on 12/12/2014, was delivered in March 2015 (see Deliverable B7\_Del17 attached to MIDTERM Report) and did not foresee any major changes compared to the preliminary draft.

The project has been validated on 4/05/2015 (see Annex B7\_all02 attached to MIDTERM Report), approved by the Board of the Park on 5/05/2015 (see Annex B7\_all03 attached to MIDTERM Report). It was submitted to the Services Conference on 3/06/2015 (see Annex B7\_all04 attached to MIDTERM Report) and, after the hydraulic authorization received by the City of Merone (see Annex B7\_all05 attached to MIDTERM Report), it was issued the call of tender on 3/07/2015 (see Annex B7\_all06 attached to MIDTERM Report). The call was closed on 3/08/2015, and was immediately open the evaluation phase of the tenders. In January 2016 the tender has been assigned to Costruzioni Cerri srl (Sondrio) (Annex B7\_all07 attached to PROGRESS Report\_2), who signed the contract on 16/03/2016 (Annex B7\_all08 attached to PROGRESS Report\_2).

In April 2015 it was also assigned the contract for the Safety Coordination to the surveyor Gianmario Mauri (Monza). (Annex B7\_all09 attached to PROGRESS Report\_2).

On 29/03/2016, the Site Manager proceeded to the delivery of the work at Costruzioni Cerri srl (Annex B7\_all10 attached to PROGRESS Report\_2) and on November 2016 it was declared the end of the work, respecting the contractual times.

Later, in January 2017, a completion works on Cavolto river started; in particular several aquatic plants were planted for the improvement of water quality, some boards for new informative panels were laid and some parts of a fence have been replaced. (annex B7\_all11 attached to PROGRESS Report\_2)

Below some images of Cavolto river and Baggero lakes (where some additional works have been made) in the current date.





**Figures 21 – Niphea and swamp cane in the first Baggero lake, upstream Cavolto river (addictional works)**





**Figure 22 – Actual images of beginning of Cavolto river. On the background the 2<sup>nd</sup> Baggero lake.**





**Figure 23 - Actual images of the middle part of Cavolto river**





**Figure 24 - Actual images of the final part of Cavolto river**

It is evident that all the habitat interested in the works are fully vegetated and also in the central part of the river some spontaneous hygrophile plants are growing.

Action status:

Effective start	Effective end	Progress [%]
September 2013	March 2017	100%

**Problems**

The design process was very fast. The only reason to slow down, resolved in two weeks, was the hydraulic authorization request to the municipality of Merone.

Even the works had no particular problems.

**Time schedule**

The action B7 had a certain delay respect to the TIMETABLE contained in the MIDTERM Report (the end of the action was fixed for mid-2016).

**Objectives**

The actions of renaturation of the river and the creation of fish ladders will entail a substantial improvement of river habitat quality, in particular as regards the fish populations and amphibians. In addition, the hidden of the artificially modeled banks increased the landscape value of Cavolto.

**Deliverables as annexes**

-

### 5.1.9. Action C1

#### **Description**

Action already completed.

The action of monitoring the stakeholders has developed partly in parallel with the action B1 and concerned:

- checking of the presences at the forum through the participation signature sheets;
- annotation of the contributions from the participants through drafting of minutes;
- presentations made by participants at the forum.

Beyond that access to the website were also monitored while no further contributions on the blog arrived.

This action, being closely linked to the action B1, can be considered completed in 2013 and one only final report of involvement of stakeholders was produced (see Deliverable A1\_C1\_Del07 attached to PROGRESS Report 1).

#### **Action status:**

Effective start	Effective end	Progress [%]
October 2012	December 2013	100%

#### **Problems**

The main problems were seen in the involvement and monitoring of the virtual forum on the blog; this obstacle was overcome when started the weekly meetings of the Forum.

#### **Time schedule**

The action began late 2012 and ended in the end of 2013.

#### **Objectives**

For this action it is believed that the objectives have all been achieved.

#### **Deliverables as annexes**

-

### 5.1.10. Action C2-C3

#### **Description**

The monitoring phase called "ante operam" ended in accordance with the monitoring plan presented in deliverable C2-3\_Del02.

The monitoring was organized by identifying for each area of intervention the survey stations, located in strategic points considered for the study and knowledge of the current status of the aquatic ecosystem and the subsequent assessment of the effects of the works. The surveys have been observed during the year 2013. The number of points, their location and the measured parameters are included in the document "Relazione monitoraggio acque ed habitat 2013" (see Deliverable C2-3\_Del05 attached to PROGRESS Report 1).

The monitoring confirmed data collected in recent years that describe a quality of the water in slow improvement in time and however at a sufficient level. The analysis confirmed the spatial deterioration of water quality caused by purifier discharges, while for secondary tributaries has been confirmed the presence of substances introduced by spillways of the sewage system.

Because of the delays of the works it has been decided to extend some surveys even in 2015, in particular those relating to water quality. The monitoring of 2014 showed a considerable improvement of the physico-chemical state of the water, but this fast change is probably due to the considerable rainfall occurred during the year and to the consequent dilution effects and run-off. This led to an improvement of the chemical quality of the water, but not necessarily to an improvement in organic quality that lingered at previous levels, although disappeared some effects related to anaerobic conditions and the granulometry of the bottom and banks became more varied. Confirmed the worsening of the water quality at the discharge of purifier: the upstream station of Merone purifier increased the level of quality while the downstream station is at the same level as in 2013. More details are provided in the document "Relazione monitoraggio acque ed habitat 2014" (see Deliverable C2-3\_Del09 attached to MIDTERM Report).

The monitoring of 2014 show an improvement for three of the monitored stations. In particular there has been an improvement in the quality of water at Nibionno purifier that went from sufficient level sufficient to good level, while at Merone purifier and the Cavolto water quality remained at the same level as in 2014. Finally, there have been improvements with regard the water of Orrido di Inverigo that in 2015 reached a high level of water quality. More details are provided in the document "Relazione monitoraggio acque ed habitat 2015" (Deliverable C2-3\_Del19 attached to PROGRESS Report 2).

The habitat quality monitoring was developed with similar methodology to that of water quality. The investigations were conducted for each area of actions, localized in strategic points for the study and for the knowledge of the current state of the habitat and the subsequent assessment of the effects of the works.

For the year 2014 the surveys showed in the area of Merone purifier the presence of indicator species of good quality of forest and perfluvial habitats. Among all surveyed areas this has the best ecological value.

Even the Area 2 (loop upstream of SP 32, so called "area A", involved in action B5) hosts a good number of species; also in this case the species are indicators of good quality of habitats. To signal the presence of *Ardea alba* and *Ardea cinerea* that found in this area a great area to feed.

Area 4 (Cavolto, action B7) was one of the best in the breeding season, but in the winter does not have the optimal characteristics for wintering species not linked to urban areas.

In addition all three areas are significant for bats; in these areas the species surveyed are able to find food and to hunt. Species connected to forest environments find also shelters for use in various biological stages of their lives and especially in the period of migration.

More details are provided in the document “Relazione monitoraggio acque ed habitat 2014” (see Deliverable C2-3\_Del09 attached to MIDTERM Report).

In 2015 only bats were surveyed. The results confirm the situation of 2014 with a greater number of registered individuals. More details are provided in the document “Relazione monitoraggio acque ed habitat 2015”.

In 2018 the postoperam monitoring started. The first survey occurred in the spring of 2018, the second will be in the fall of 2018 and the results will be presented at the end of the year.

Action status:

Effective start	Effective end	Progress [%]
October 2012	In progress	90%

**Problems**

The only problems were due to the delay of the realization of the works that brought to the consequent delay of the phase of monitoring.

**Time schedule**

The timing of the "ante operam" phase had a delay linked to the realization of the work. It was decided to continue with the "ante operam" phase even in the year 2015, while in 2016 there was a pause of the monitoring because all areas were affected by the construction sites.

Post-operam monitoring started at the beginning of 2018 and will continue in 2018 and 2019.

**Objectives**

The objectives will be achieved at the end of the monitoring program.

**Deliverables as annexes**

-



### 5.1.11. Action D1

#### **Description**

The D1 action provide the creation of a website dedicated to the LIFE11 ENV/IT/004 project. Up to May 2014, we used an existing domain ([www.progettolambro.it](http://www.progettolambro.it)) on which some pages were devoted to the publication of LIFE documents.

Since May 2014 all contents of Lambrovivo project have been reported on a new website [www.lambrovivo.eu](http://www.lambrovivo.eu) created specifically for the project.

The website is regularly updated with the main design steps, technical publications, newsletters, news on events and other useful content. On the site shows the logo of the project and the LIFE logo.

It's shows an image of the homepage.

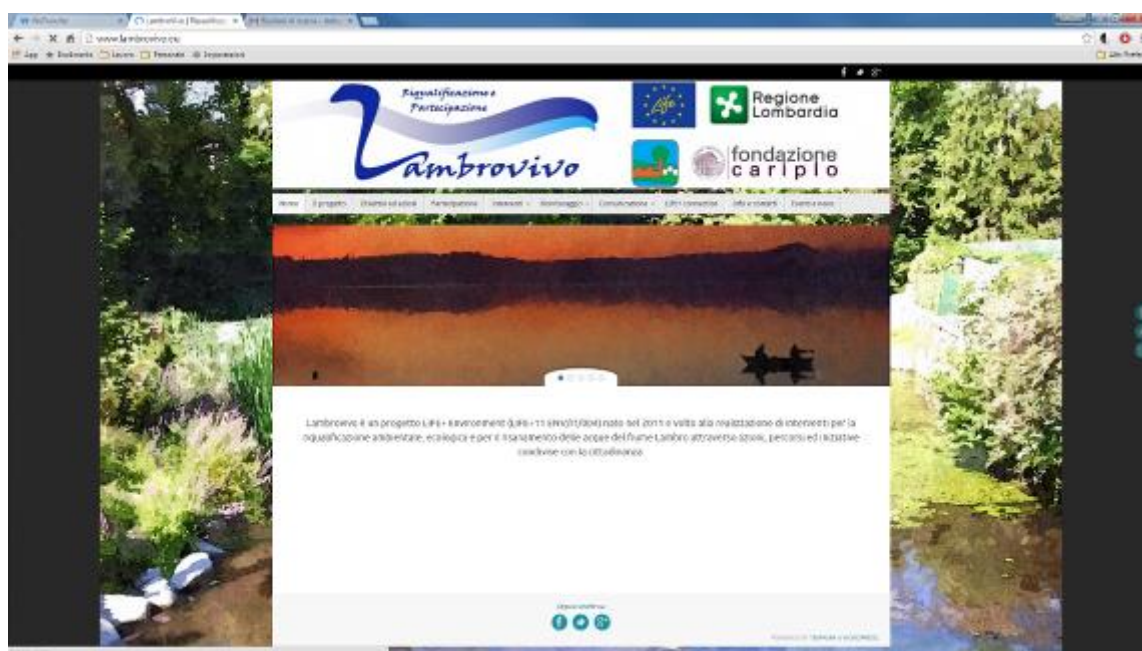


Figure 25 –Homepage of website “Lambrovivo”

#### **Action status:**

Effective start	Effective end	Progress [%]
April 2012	In progress	90%

#### **Problems**

There were no particular problems for D1 action.

#### **Time schedule**

The development of the D1 respects TIMETABLE shown on Amendment 2013 LIFE11 ENV / IT / 004.

#### **Objectives**

The website [www.progettolambro.it](http://www.progettolambro.it) counted more than 3.000 visitors. Up to now the website [www.lambrovivo.eu](http://www.lambrovivo.eu) has counted 3.956 visitors.

#### **Deliverables as annexes**

-

### 5.1.12. Action D2

#### **Description**

The D2 action provides the construction of informative panels to illustrate the project and the expected results.

Some panels of all action implemented have been made, some for outdoor laying and some for indoor laying.

In particular were made:

- ACTION B2: n.2 outside panels e 4 indoor panels;
- ACTION B4: n.2 outside panels e 2 indoor panels;
- ACTION B5: n.1 outside panels e 2 indoor panels
- ACTION B6: n.1 outside panels e 3 indoor panels;
- ACTION B7: n.1 outside panels e 1 indoor panels.

Some temporary panels were installed in the month of October 2015 near the areas of action to illustrate the project; the indoor panels will be placed in spaces made available by the PVL and the Municipalities concerned. It has requested the landscape authorization for laying the boards (see Deliverable D2\_all03 attached to MIDTERM Report). The authorization was received on 16/04/2015 (see Deliverable D2\_all04 attached to MIDTERM Report).

All the panels were already exposed temporarily to Agrinatura Exhibition at Lariofiere (Erba) from 1 to 3 May 2015 (see Annex D2\_all05 attached to MIDTERM Report).

At the beginning of 2017 some definitive panels regarding the actions B2 (Nibionno) and B7 have been installed near the works realized. In the 2018 the last definitive panels have been realized illustrating the works and the final results and they are in course of installation.

Below are shown some pictures of the panels.



**Figure 26 – Temporary panels to illustrate works in progress**





**Figure 27 – Definitive panels to illustrate the works after their end**

Action status:

Effective start	Effective end	Progress [%]
October 2013	In progress	95%

**Problems**

There were no particular problems for D2 action.

**Time schedule**

The D2 action is delayed respect to the TIMETABLE shown on Amendment 2013 LIFE11 ENV/IT/004.

Others supports for some new panels were laid in the areas B7 and B2 Nibionno, in areas B4-B5-B6 and B2 Merone. The panels are in course of installation and the action will finish at the end of 2018.

**Objectives**

The aim of attracting the attention of citizens on current projects to be realized was reached; to demonstrate this are reported some vandalism on the installed panels expressed in protest sentences overwritten regarding the illustrated works, especially in the points more crowded.

**Deliverables and annexes**

-



### 5.1.13. Action D3

#### **Description**

It was produced 1000 copies of brochure containing a summary of Lambrovivo project (see Annex D3\_all01 attached to MIDTERM Report), distributed in the following location:

#### **Inverigo:**

City hall – Via Enrico Fermi, 1

Library - Via Carlo Bianchi

#### **Nibionno:**

City hall – Piazza Caduti, 2

Library – Via Fiume, 2

Swimming pool – Via Gaggio, 1

#### **Merone:**

City hall – Via Appiani, 22

Library – Via Isacco, 1

#### **Triuggio:**

City hall – Via Vittorio Veneto, 15

Field office of PVL– Viale Susani, 52

The brochures were also distributed at the stand of the PVL to "Agrinatura" Exhibition which was held at Lariofiere (Erba) from 1 to 3 May 2015. (see Annex D3\_all02 attached to MIDTERM Report)

The distribution went on until exhaustion of copies.

The next report to the layman will directly “Layman's report” of D8 action.

The brochures have been printed on recycled paper and showed the project logo and the LIFE logo.

#### **Action status:**

Effective start	Effective end	Progress [%]
February 2015	October 2017	100%

#### **Problems**

There were no problems for D3 action.

#### **Time schedule**

The D3 action is delayed respect to the TIMETABLE shown on Amendment 2013 LIFE11 ENV/IT/004. It was decided to make a single brochure to be distributed at the location indicated and that the next publication will be the Layman's report.

#### **Objectives**

The objectives will be achieved at the end of the action.

#### **Deliverables as annexes**

-

#### 5.1.14. Action D4

##### **Description**

The D4 action provides the creation of a newsletter to be distributed to a mailing list.

The mailing list has already been created through the A1 and B1 actions and today has nearly 300 addresses: the contacts of the Municipalities involved by the projects, the Associations, Civil Defence Associations, some Water Services Companies, the ATO involved and many other followers.

The mailing list is managed with a Google Group (Forum Lambro Settentrionale) that allows to send to the same addresses both direct messages and email.

Since 2012 were published 14 newsletters that from 2015 have semi-annual frequency. All newsletter published from 2015 are attached. (Annexes D4\_all03 attached to PROGRESS Report\_2)

The newsletters show the project logo and the LIFE logo.

Since June 2016 no newsletter were produced. The new one will be produced at the end of all the works with a special number that will illustrate the results. The newsletter is distributed to a mailing list that now counts about 300 addresses. It is also publicized on social groups of the project (FB, Twitter and Google+) and published on the site [www.lambrovivo.eu](http://www.lambrovivo.eu)

##### **Action status:**

Effective start	Effective end	Progress [%]
October 2012	In progress	80%

##### **Problems**

There were no problems for D4 action.

##### **Time schedule**

Publishing had a stop during the last period. The next number will be a special one about the works and their progress.

##### **Objectives**

The mailing list has about 300 contacts.

##### **Deliverables as annexes**

-

### 5.1.15. Action D5

#### **Description**

The D5 action provides the creation of a blog to have direct contact with the stakeholders. Initially it had been activated a traditional blog at [www.progettolambro.it](http://www.progettolambro.it) domain. This blog has been abandoned due to hacker attacks and low attendance.

Subsequently, the following channels have been activated

On Facebook:

- a page on Lambrovivo project (<https://www.facebook.com/lambrovivo>) with 237 like;
- a group on Lambrovivo (<https://www.facebook.com/groups/forumlambro/>) with 147 members.

On Google+:

- a profile on Lambrovivo project (<https://plus.google.com/u/1/115962849021387044760/posts>) with 34 followers (views no more available);
- a page on Lambrovivo project (<https://plus.google.com/u/1/b/105048334229606485379/105048334229606485379/posts>) with 9 followers (views no more available);

On Twitter is active a Lambrovivo profile (@Lambrovivo) with 36 follower and 47 tweet.

All pages on FB, Google+ and Twitter are synchronized with the Hootsuite® that lets post messages on multiple platforms.

All pages show the project logo and the LIFE logo.

*Action status:*

Effective start	Effective end	Progress [%]
October 2012	In progress	80%

#### **Problems**

The publication on the social network has encouraged greater participation and involvement.

#### **Time schedule**

The development of the D5 respects TIMETABLE shown in the 3<sup>rd</sup> Amendment to the original agreement.

#### **Objectives**

The objectives will be achieved at the end of the project. the results are satisfactory:

#### **Deliverables as annexes**

-



### 5.1.16. Action D6

#### **Description**

The D6 action provides the organization of workshops and informational meetings for the LIFE project by the coordination staff.

On 3/07/2013 was organized an evening on the subject of constructed wetlands. During the event Mr. Conte of IRIDRA Company Srl explained a presentation entitled “Presentazione e discussione sulle tecniche e le possibili applicazioni della fitodepurazione per il miglioramento della qualità delle acque e dell’habitat dei fiumi” (see Deliverable B1\_Del08 attached to PROGRESS Report 1).

On 15/11/2014 was held a conference at the library of Sovico (Viale Brianza 4), organized by PVL and the Association “Amici del Lambro di Sovico” entitled “*Lambro 2.0: recuperare acque di buona qualità ripartendo dal sistema fognario*”. Participated as speakers: Eleonora Bettenzoli (AEEGSI), Elena Arena (UATO Lecco), Marta Giavarini (UATO Como), Marco Lacalamita (UATO Monza), Viviane Iacone (Lombardy Region), Stefano Minà (PVL) and other parties involved in the management of water services (see Annex D6\_all01 attached to MIDTERM Report).

On 7/03/2015 was held a conference at the Urban Center of Monza organized by the PVL and Legambiente (Monza) entitled “*Lambro pulito Lambro sicuro: sicurezza idraulica e qualità delle acque del fiume*”. The topic of the conference was the hydraulic safety and environmental quality of the Lambro river. Participated as speakers Mario Clerici (Lombardy Region), Stefano Minà (PVL), Marco Lacalamita (UATO Monza), Valeria Marchesi (ARPA), Dario Fossati (Lombardy Region), Gaetano Lamontagna (AIPO), Francesco Nicolodi (AIPIN), Damiano di Simine (Legambiente Lombardia), Atos Scandellari (Legambiente Monza) (see Annex D6\_all02 attached to MIDTERM Report).

The next conference will be organized after the end of the actions and probably also some public visits on the areas will be considered.

#### **Stato azione:**

Effective start	Effective end	Progress [%]
January 2013	In progress	65%

#### **Problems**

There were no particular problems in developing the action D6.

#### **Time schedule**

The development of action D6 meets the timelines stated in TIMETABLE shown in the 3<sup>rd</sup> Amendment to the original agreement.

#### **Objectives**

The objective of dissemination has been successfully achieved.

#### **Deliverables as annexes**

-

### 5.1.17. Action D7

The D7 action hasn't started yet as shown in the TIMETABLE shown in the 3<sup>rd</sup> Amendment to the original agreement.

Action status:

Proposed start	Effective end	Progress [%]
October 2019	-	0%

### 5.1.18. Action D8

The D8 action hasn't started yet as shown in the TIMETABLE shown in the 3<sup>rd</sup> Amendment to the original agreement.

Action status:

Proposed start	Effective end	Progress [%]
October 2019	-	0%

## **5.2. Envisaged progress until next report**

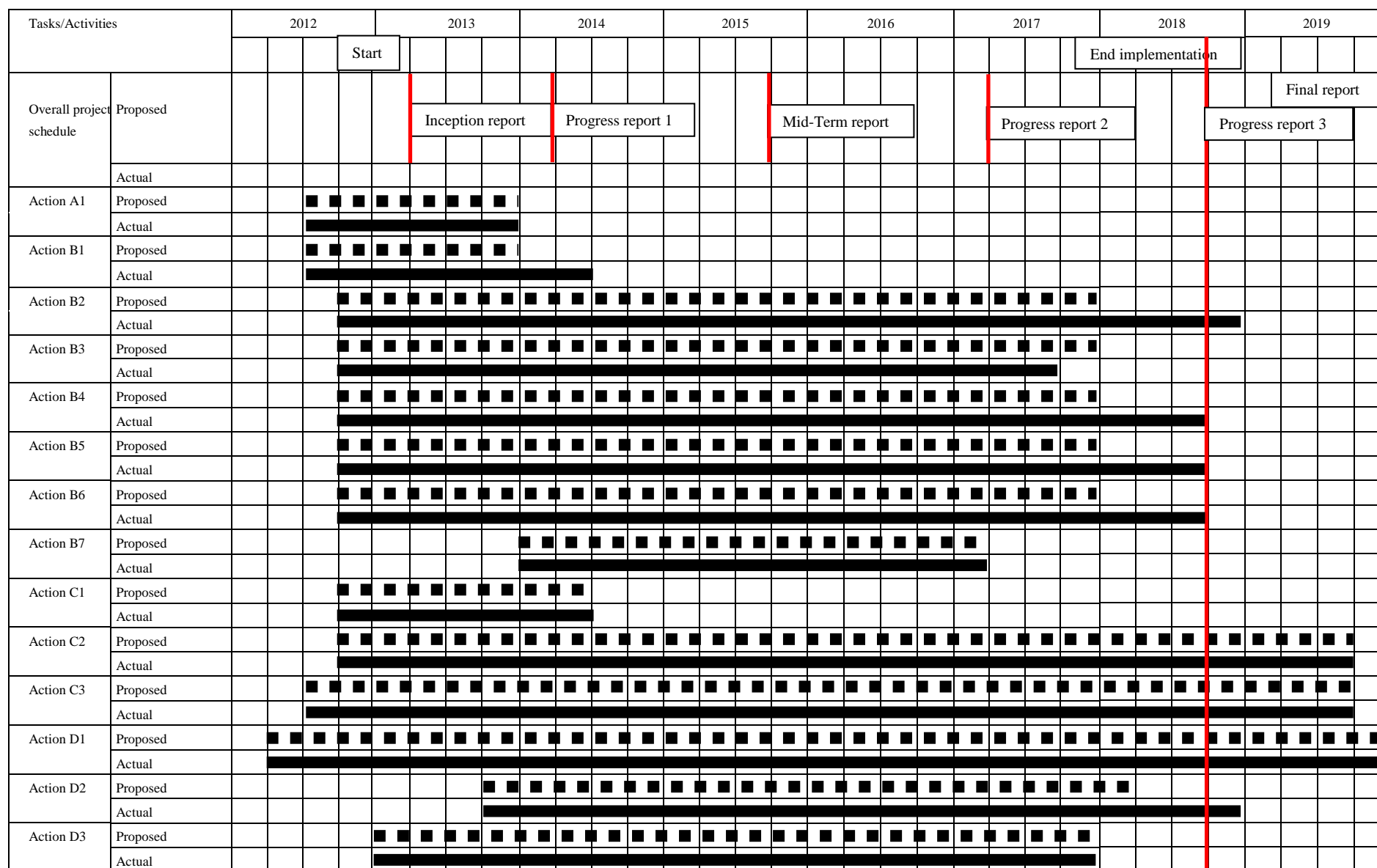
The next report will be the “Final report” that will be presented after the end of the project, at the beginning of 2020.

In the next few month will be achieved the following steps (actions not included means already completed):

- action B2: for Merone the completion of the works within the month of November 2018 and then any possible complementary works;
- actions B4-B5-B6: end of ordinary maintenance that will last in the next months until the end of the project;
- actions C2-C3: spread of the “post operam” phase of monitoring
- action D1: update of the website with information and photos of the construction sites after the works;
- action D2: laying of the last panels near the areas of B2 and B7 action in the next months;
- actions D4-D5: publication of at least one newsletter and administration and maintenance of blogs;
- action D6: organization of a new conference within the end of 2018 and eventually some visits during spring/summer 2019.

Below is shown the new timetable updated to the current progress, including updating of deliverables, of expected reports and timing of actions.





Tasks/ Activities		2012				2013				2014				2015				2016				2017				2018				2019			
Action D4	Proposed					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
	Actual					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Action D5	Proposed					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
	Actual					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Action D6	Proposed					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
	Actual					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Action D7	Proposed																																
	Actual																																
Action D8	Proposed																																
	Actual																																
Action E1	Proposed					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
	Actual					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				

**Notes:**

**Proposed:** as proposed by the last Amendment

**Actual:** as indicated in this document

### 5.3. Impact

As regards to the action B2 for Nibionno treatment system it is to note that the basins are fully vegetated and populated by some species of birds (ducks and coots), dragonflies and also nutrias. The monitoring system (one sampler for each basin) are collecting data and a series of at least 2 years will be available at the end of the monitoring period allowing to compare the quality of the effluent from the WWP and the quality of the water after the natural treatment. So from the environmental point of view surely the impact is very positive, as to the water quality only the results from the monitoring will allow to give certain informations.

Also a certain impact on the technology will be adopted in the future of water treatment is noticeable: Nibionno WWP manager decided that, after the empowering of the plant that will be executed probably in 2019, the part of the rain water coming from 2<sup>nd</sup> flow will be treated into a new natural basin very similar to the ones realized in this project.

As regard to Merone treatment system it is out of doubt that the implementation of the works caused a negative impact on the habitat that is not completely recovered by the planting of the submerged flow basins. A positive impact can be appreciated in the final part of the system, the free surface flow basin, although it is not constantly fed with water.

Of course at the moment the final impact on the habitat will be appreciated only after the full vegetation of the basins, as well as the improvement of the downstream water quality will be appreciated only after the startup of the plant after a certain period of time.



Figure 28: ortho images of the natural system of Cermenate WWP, from 10/3/2017 to 23/3/2018



In the images above is represented the natural system implemented downstream Cermenate WWP in Como Province subsequent to the works at Merone WWP. The technology is a little simpler but very similar and the designer are the same of Merone plant. It is a further demonstration that Lambrovivo project was an example and a pilot for other similar system in Lombardy region.

As for B3 action the collaboration between Inverigo municipality, the Park and Valbe servizi, the manager of the WWP of Nibionno, led to a more frequent maintenance of the spillways that brought to a more regular functioning although their activation during storm events leads to significant temporary decrease of the water quality. Also the habitat quality, thanks to the works that were not part of LIFE project, improve significantly.

The action B4 (filter ecosystems on the Villa Romano) brought a visible improving of quality and quantity of the habitat in the area interested by the works. As underlined above 3 new habitat have been constructed that were not present in the neighborhood: a wetland, a marsh and a wet forest, in addition to the naturalization of the boundary woods in which the undergrowth have been planted. The new wetland is now populated by fishes, presence witnessed by the frequentation of some individuals of gray heron. As for the water quality it is necessary to wait for the results from the postoperam monitoring.

The interventions on B5 and B6 areas (wetlands along the river Lambro) had certain positive effects on the ecosystem and in particular showed an improvement in the quality of habitat and an increase in biodiversity. The pools created in B5 area need a more accurate investigation about their involvement during the reproductive season of amphibians and insects. The lake created in B6 area instead is yet populated by fishes not present before in the river that feeds it, and by some species of dragonflies and insects. For further results it is necessary to wait for the results from the postoperam monitoring.

Cavolto river (action B7) received a strong improvement from the works although it was necessary to strongly stabilize the upper part of the main stream. The entrance and the final part of the river is fully vegetated and also in the central part, where the turbulence is very low, a hydrophilic vegetation is growing spontaneously. The possibility of ascent the river for the fishes to go from Lambro to Baggero lakes is in course of verification and will be , totally or partially confirmed at the end of the postoperam monitoring.

#### **5.4. Outside LIFE**

There are some ongoing projects, external to LIFE financing, which interact and implement the activities provided for. In particular:

- ACTION B2: as above mentioned Merone WWTP ended an upgrade that allows to treat a greater part of the wastewater, especially the first flush during the storms, and to produce an higher quality effluent. At Nibionno WWTP the upgrade will probably start in 2019 and this will allow to send to the ecosystem filters a better wastewater, both in terms of flow and concentration. Valbe servizi is furthermore evaluating a new project to move some wastewater from their WWTP to Merone one, with the aim to relieve a pipeline that often go in pressure pouring its content in the neighbourhood. This operation will allow to eliminate the colour from the effluent in Nibionno WWTP, colour that finish without treatment directly into the 2 basins affecting their efficiency.

This coupled effects will bring to an objective increase in the quality water of Lambro river.

- ACTION B4: the elimination of the discharge is expected on the Orrido of Inverigo river in conjunction with some interventions of the sewerage network arrangement. This intervention, eliminating the major source of pollution of the river, will improve water quality. Actually the works on the sewerage system (a 3<sup>rd</sup> lot of a multipurpose action) are beginning, while the 1<sup>st</sup> and the 2<sup>nd</sup>, directly conducted by Parco Valle Lambro, are waiting to start but a certificate on the construction company is missing.
- ACTION B5-B6: the relieving of the pipeline indicated above will allow to eliminate the salutary provision of wastewater on these areas.

## **5.5. LIFE networking**

The first networking activity has been undertaken at the project with a visit to two wetland systems implemented under the Trebbia project Integrated project - LIFE00 NAT/IT/007166 5/07/2012.

It was subsequently decided to include in the newsletter provided between the activities of this project a section dedicated to LIFE related projects, called its "LIFE CONNECTION". In each issue of the newsletter it was reported the synthesis of a related project. the following related projects have been identified:

ARTWET - Mitigation of agricultural nonpoint-source pesticide pollution and phytoremediation in artificial wetland ecosystems - LIFE06 ENV/F/000133

TREASURE - Treatment and re-use of urban stormwater runoff by innovative technologies for removal of pollutants - LIFE06 ENV/DK/000229

RII - Redevelopment Integrated Hydraulic - environment of the rivers belong to the foothills of Emilia Romagna band - LIFE11 ENV/IT/243

REWETLAND - Widespread introduction of constructed wetlands for wastewater treatment of a Pontine Marshes - LIFE08 ENV/IT/406

LOTWATER - Innovative demonstration project for local treatment of combined sewer overflows enabling the implementation of the Water Framework Directive - LIFE03 ENV/DK/000053

TRELAGHI - eutrophic reduction through natural technics of three little italian lakes waters - LIFE02 ENV/IT/000079

REBORN - Redevelopment Naturalistic for hydraulic-Integrated Environmental Sustainability Channel Emiliani - LIFE13 ENV/IT/000169

In July 2014 LIFE + RII and REBORN projects organized a conference which LAMBROVIVO participated as an auditor in relation to the compensation issue of flooding.

On 21/05/2015 in Collecchio (PR) starting from the initiative of LIFE CONFLUPO and BARBIE an operational networking meeting was organized which involved, in addition to the promoters, LIFE CSMON, LAMBROVIVO, MAKING GOOD NATURA, MERMAINDS, RII, RINASCE and TROTA. The meeting has laid some foundations for broader cooperation between all parties involved. LAMBROVIVO on that occasion brought a second time for networking to take to the National Conference on River Restoration, which took place in Reggio Calabria between 27 and 30 October 2015 (see the website dedicated to the event). The event was attended by representatives of the LIFE + projects RII, TROTA, RINASCE,

BARBIE, AQUALIFE, RINASCE, SOS TUSCAN WETLANDS, as well as representatives of LAMBROVIVO project.

A subsequent meeting was organized by the Life CONFLUPO in collaboration with the Life BARBIE in Boretto Po on 29/02/2016. Here AdbPo and 4 regions involved in the management of the river Po (Piedmont, Lombardy, Emilia Romagna, Veneto) signed a memorandum of understanding "for a sustainable and unified management of fisheries and the protection of fish stocks in the river Po". At this LAMBROVIVO the project did not take part.

However, from the results of this meeting ensued one else at the headquarters of the Lombardy Region in Milan on 19/09/2016. Partners of the following projects have attended or participated remotely: ACQUALIFE, BARBIE, CONFLUPO, CSMON LIFE, GESTIRE, IP GESTIRE 2020, LAMBROVIVO, MAKING GOOD NATURA, RII, RINASCE, TROTA.

Negotiations are under way to start ad additional networking with SILIFFE project (LIFE14 NAT/IT/00809) and other similar projects to start before the end of 2018.



## 6. Financial part

### 6.1. Costs incurred (summary by cost category and relevant comments).

Below is shown general overview of the costs incurred until 30/09/2018:

Budget breakdown categories	Total cost in €	Costs incurred from the start date to 30/09,2018 in €	% of total costs
1. Personnel	86.912	76.655	88,20%
2. Travel and subsistence	0	0	
3. External assistance	500.159	531.310	106,23%
4. Durable goods			
Infrastructure	3.081.206	2.838.237	92,11%
Equipment	22.500	19.180	85,25%
Prototype	0	0	
5. Land purchase / long-term lease	0	0	
6. Consumables	8.750	7.255	82,92%
7. Other Costs	0	3.651	
8. Overheads	93.000	85.245	91,66%
<b>TOTAL</b>	<b>3.792.527</b>	<b>3.561.534</b>	<b>93,91%</b>

It is noted a very important increase of the infrastructure costs compared to last Progress report dated 30/03/2017.

This is due to the progress of the part of B2 action “*Realizzazione di ecosistemi filtro per il finissaggio delle acque in uscita dai depuratori di Merone e Nibionno con tecniche di fitodepurazione*” regarding Merone purifier and of the works on B4 B5 and B6 actions.

About B2 action, while the works of Nibionno purifier were completed on 25/11/2016, the works of Merone purifier are built about 94% and was paid the first four SAL (work progress status) of around EUR 1.250.000 plus VAT.

About Actions B4, B5 and B6, work is proceeding swiftly and was paid some SAL (work progress status) of around EUR 600.000 plus VAT. Although the works finished some marginal payments are still to come.

We also might notice a difference between expected costs and the real ones, in fact the 2<sup>nd</sup> Variant determines different amounts, for each action, but they total up roughly to foreseen values. It is also to note that the final deviation from the foreseen values for single expense item will be anyhow confined into a 10% (in addition or decrease) of the initial value.

Below is shown the detail of the costs incurred until 30/09/2018:

Action number and name	Foreseen costs	Spent so far	Remaining	Projected final cost (estimated)
Action A1 - Avvio del progetto e coinvolgimento degli stakeholders.	5.976	5.590	386	€ 5'590

<b>Action B1</b> - Creazione e sviluppo di un modello decisionale e di progettazione partecipato.	15.610	15.972	-362	€ 15'972
<b>Action B2</b> - Realizzazione di ecosistemi filtro per il finissaggio delle acque in uscita dai depuratori di Merone e Nibionno con tecniche di fitodepurazione.	1.908.219	2.016.375	-108.156	€ 2.016.375
<b>Action B3</b> - Individuazione e riduzione delle fonti inquinanti lungo alcuni affluenti minori del Lambro critici per la qualità delle acque in comune di Inverigo.	8.896	5.825	3.071	€ 5.825
<b>Action B4</b> - Realizzazione di ecosistemi filtro lungo alcuni affluenti minori del Lambro critici per la qualità delle acque in comune di Inverigo.	594.294	395.560	198.734	€ 594'294
<b>Action B5</b> - Creazione di un'area umida permanente lungo l'asta del Lambro nei comuni di Nibionno ed Inverigo (1/2)	240.816	114.087	126.729	€ 240'816
<b>Action B6</b> - Creazione di un'area umida permanente lungo l'asta del Lambro nei comuni di Nibionno ed Inverigo (2/2)	313.250	427.895	-114.645	€ 427.895
<b>Action B7</b> - Rinaturazione del tratto finale della Roggia Cavolto	291.640	253.290	38.350	€ 253.290
<b>Action C1</b> - Monitoraggio della partecipazione degli stakeholders.	2.010	725	1.285	€ 725
<b>Action C2</b> - Monitoraggio della qualità delle acque.	40.910	41.506	-596	€ 41.506
<b>Action C3</b> - Monitoraggio della qualità dell'habitat.	68.880	15.331	53.549	€ 68'880
<b>Action D1</b> - Implementazione sito web del progetto.	3.230	3.080	150	€ 3'230
<b>Action D2</b> - Realizzazione pannelli informativi LIFE+.	8.030	8.469	-439	€ 8.469
<b>Action D3</b> - Realizzazione relazione per i non addetti ai lavori.	6.672	6.626	46	€ 6'672
<b>Action D4</b> - Realizzazione mailing list e newsletter.	5.484	6.361	-877	€ 6.361
<b>Action D5</b> - Realizzazione blog.	1.750	900	850	€ 1'750
<b>Action D6</b> - Realizzazione convegni e seminari informativi	6.000	4.495	1.505	€ 6'000

<b>Action D7</b> - After LIFE+ Communication	1.720	0	1.720	€	1'720
<b>Action D8</b> - Layman's report	5.720	0	5.720	€	5'720
<b>Action E1</b> - Gestione del progetto e monitoraggio avanzamento lavori.	170.420	154.202	16.218	€	170'420
<b>OVERHEADS</b>	93.000	85.245		€	93'000
<b>TOTAL</b>	<b>3.792.527</b>	<b>3.561.533</b>	<b>223.239</b>	<b>€</b>	<b>3'974'510</b>

## 6.2. Financial audit

On 02/05/2016 the audit was instructed in the person of Dr. Michele Pozzoli (Monza). Since last Progress Report, two meetings with the Financial Manager and the audit were organized respectively on 25/10/2017 and 20/02/2018.