LP PILOT ACTION REPORT

Deliverable D.T3.1.5

Version 1 11 2018







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Pilot Action Title:

Linking remediation strategies to the need for future productive settlements

Place/area of PA implementation

The pilot action was implemented in Venice in the industrial area of Porto Marghera

Duration of PA implementation

The activities started in May 2017 and ended in November 2018 according the following schedule:

	5/17	6/17	7/17	8/17	9/17	10/17	11/17	12/17	1/18	2/18	3/18	4/18	5/18	6/18	7/18	8/18	9/18	10/18	11/18
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Costs related to PA

The followings costs were paid for the implementation of the PA:

- Study on most valuable, sustainable and cost-effective remediation methods for pilot area: awarded to Ambiente SPA through a tender procedure, the total cost amounts to € 50.320 (VAT included);
- 2. Study on the potential use of the pilot area for new productive activities: awarded to SLT Studio Legale Tributario and Avv. Giovannni Sala through two different tender procedures, the total cost amounts to € 49.736,96 (VAT included).

Background and challenges faced

The City of Venice implemented its pilot action in the site of Porto Marghera Industrial area. This area has a total land extension of 1.888 ha of which 1.400 are for industrial activities and 120 for commercial port. The area is heavily contaminated due to former chemical and petrochemical activities. Since 1998 Porto Marghera has been included by law (Law n. 426/1998) on the list of Sites of National Interest ("Siti di





Bonifica di Interesse Nazionale") because of the site's potential impact on the environment given its surface extension and risk posed by contaminants. In particular, the more recent industrial area - the main brownfield - mainly hosting settlements related to the raw chemical industry, needs a deep requalification or a strong reconversion. The site presents specific contamination of soil and ground water as a result from active or dismissed industrial activities. The water body in front of Porto Marghera should be considered in a poor ecological status. The status of contamination is known for the 19% of the area but remediation procedures have not yet started. However, in circa 49% of the total area the remediation projects have been approved by relevant public authorities. Remediation procedures have been completed only in 241 ha (14%). Since 1990 the remediation of the site has required considerable legislative and financial interventions but the rehabilitation of the area necessitates an acceleration and simplification of the procedures.

In March 2017, the Italian Government recognised the industrial zone of Porto Marghera as "a complex industrial crisis area" (Ministerial Decree 8 March, 2017). Because of this specific status the area will benefit from favourable legislation and larger financial investments that will increase and enhance the reconversion of the whole area. In particular, planned actions foresee:

- reviewing and speeding up the remediation procedures of the sites in order to enhance the industrial reuse of selected sites,
- completing some major infrastructural interventions aimed at improving the environmental conditions of the area,
- expanding and enhancing the Porto Marghera Custom Free Zone to increase the competitiveness of the area,
- supporting the industrial recovery of the area,
- planning of fiscal and financial instruments to attract new private investments in the area.

The City of Venice focused its pilot action on remediation measures combining environmental cleaning with the investigation of future economic potential for the area. Indeed, future use of the site has an impact also on the definition of the needed remediation measures. The Porto Marghera area, with its 884 economic activities currently settled for a total of 11.060 employees (according to 2017 statistics), is considered highly strategic for the development of the entire Venice FUA.

PA objectives

The City of Venice's pilot action aims at the integrated rehabilitation of the Porto Marghera site, adopting a twofold objective of environmental remediation and economic revitalization. Innovative and sustainable environmental solutions were identified through the review of some already approved soil remediation projects in the light of the new regulatory approach and the concept of sustainable remediation.

Parallely, site-specific regulatory and tax instruments to facilitate the reconversion of dismissed industrial lots and to attract new investments were identified; specific Guidelines for the drafting of contracts for the sale and purchase of industrial areas within the Venice - Porto Marghera site were also prepared to facilitate the reintegration of the areas on the market.

Activities carried out

Activities consisted in the elaboration of studies and researches to identify innovative and sustainable solutions for the remediation of a specific brownfield within Porto Marghera and to find relevant financial and fiscal measures to be applied to the area to facilitate the reconversion of the dismissed





industrial areas, the attraction of investments and development of Porto Marghera. In particular, four different studies were elaborated. The first two provides a detailed analysis of the environmental and economic status of the area while the second ones propose new solutions both for the environmental rehabilitation and the economic redevelopment of Porto Marghera.

1. Report on the state of art of environmental management and particularly remediation in pilot area

This report, elaborated by internal staff from the City of Venice Remediation Office, is an analysis of the state of the art of the environmental situation of the disused areas of Porto Marghera for which the situation of soil and groundwater contamination has been investigated. In particular, the report provides the state of remediation procedures carried out so far in the area identifying the critical issues that influence and obstacle the implementation of the remediation process.

The objective of the Venice Administration can be summarised as follows: "The re-launch of the Porto Marghera area starting from the application of the protocols already signed with the creation of the SIN (Site of National Interest of Venice - Porto Marghera) and guaranteeing definite deadlines, costs and procedures for the remediation".

Within the vast area of Porto Marghera, a Site of National Interest, some lots have been identified whose total area is equivalent to 108 hectares, for which the Municipal Administration has recognized excellent redevelopment potentialities. For these lots the potential for redevelopment is given by the fact that:

- 1. The areas are part of a disused industrial site, which already has all the necessary infrastructures for immediate industrial/commercial use; in particular, service networks (high voltage line, fire protection line, power line, telephone line, optical fibre, water line, sewage wastewater line, rainwater runoff line, etc.) buildings and structures.
- 2. All lots are the property of a single entity with whom to deal.
- 3. From an environmental point of view, investigations have already been carried out and therefore the state and degree of contamination is known.
- 4. The environmental clean-up process is under way and in some cases approved projects already exist.
- 5. The difficulties preventing requalification can be summarised as follows:
- 6. In some areas, only emergency safety measures for workers and the environment have been carried out.
- 7. The reclamation of the area has only been partially carried out due to the high costs expected and therefore deemed unsustainable from an economic point of view.
- 8. The long period of time required for clean-up is no longer compatible with the functional recovery of the area.
- 9. The reclamation is no longer suitable for the uses required by the market.
- 10. The solutions proposed so far are obsolete compared to the current regulatory framework.

Hence the need to review the remediation projects in the light of the new use requirements, also taking into consideration the new regulatory orientation which calls for greater attention to the environmental and economic sustainability of the interventions to be done.

This analysis constitutes the basis for the following study which is a research for better and more sustainable remediation solutions to be applied in the area.

2. Study on most valuable, sustainable and cost-effective remediation methods for pilot area

The work was carried out by Società Ambiente S.p.A. and Desam Ingegneria e Ambiente S.r.l. together with the City of Venice. Moving from the results of the above mentioned document, the study identifies ground-breaking, sustainable technical solutions for environmental rehabilitation through a general review of the already approved soil remediation projects. In particular, the work consisted in





the review the sustainability aspects of two remediation projects, dating back to 2005 (therefore pursuant to Ministerial Decree 471/99) and up until now (2019) not implemented, relating to the treatment of contaminated soils at a petrochemical site located within the Venice-Porto Marghera Site of National Interest. The objectives of the revision were to define certain sustainability indicators and the method of assessing them, making use of the technical simplifications introduced by the Programme Agreement dated 16/04/2012 and the related implementation protocols. The study also identified possible technological alternatives which enable the same results to be achieved, reducing their impacts. However, the basic choice of opting for in situ technologies (i.e. technologies that can be implemented within the site area) was maintained, limiting top-soil removal jobs and excavation and earth moving activities.

3. Research on the economic activities currently settled in Porto Marghera

The document is a census of all the economic activities - and related employees - currently settled in the area of Porto Marghera. The research was carried out by the City of Venice - Economic Development Office with the involvement of relevant stakeholders such as the Regional Employment Agency (VENETO LAVORO) and the Chamber of Commerce.

The research reports relevant statistics according to the ATECO 2007, the national classification of economic activities corresponding to the European NACERev.2.

As far as the geographical location, Porto Marghera as a whole was split into 8 areas corresponding to the zones defined by the Master Plan for the clean-up of polluted sites of Porto Marghera (2004). Based on the available data for the year 2016, a total number of 841 companies still operate in the industrial area, with a total workforce of 10,498 thus confirming a persistent industrial and port vocation of Porto Marghera. The manufacturing sector counts114 companies, (14% of the total) and 3,976 employees (39% of the total). The logistics and transport sector counts 184 companies (22% of the total) and 1,773 employees (17% of the total).

4. Study on the potential use of the pilot area for new productive activities

The strategy of the Municipality City of Venice for Porto Marghera envisages its environmental requalification and functional reconversion, aimed at attracting new investments and economic initiatives. In line with this objective, GreenerSites project has allowed to carry on an in-depth study to investigate on the potential use of the pilot area of Porto Marghera for new productive activities and to look into which fiscal, legislative and financial instruments can favour its establishment. The study carried out is articulated in two sections:

- the definition of Guidelines for the drafting of contracts for the purchase and sale of industrial areas included in the Venice Porto Marghera site;
- the preparation of a study of the regulatory and fiscal instruments that can enable the attraction of investments and the development of the Porto Marghera area.

Additionally, a promotional booklet to enhance the marketability of the Porto Marghera area was produced.

The Guidelines represent a strategic tool capable of guiding potential investors with respect to complex legal, fiscal and legislative issues which inevitably interfere with the activities of buying and selling areas in industrial contexts. They also include four contractual framework models:

- preliminary draft contract of sale;
- final draft contract of sale;





outline of the preliminary contract for the constitution of the right of superficies;

final draft contract for the establishment of the right of superficies.

The study on the regulatory and fiscal instruments provides an analysis of the financial instruments currently in force in Italy and Europe, in order to verify their applicability to Porto Marghera. In particular, the study is focused on the most recent legislative provisions on Special Economic Areas and Simplified Logistic Zones and the innovations introduced by them with respect to the regulation of free zones in force for some time in our legal system. In the light of current legislation, the study shows how two specific strategies can be identified to promote the development and enhancement of the Porto Marghera area, namely:

- expansion of the existing free zone;
- establishment of a Simplified Logistics Area.

Technical specifications and solutions tested

The objective of the work carried out by Società Ambiente S.p.A. and Desam Ingegneria e Ambiente S.r.l. together with the City of Venice within the framework of the GreenerSites Project, was the definition of a method which makes possible a qualitative-quantitative evaluation of the environmental, social and economic sustainability aspects of the environmental remediation projects; a more sustainable and alternative design strategy to the real case was also defined. This methodology has been applied to the revision of two environmental clean-up projects, submitted under Ministerial Decree 471/99, for contaminated areas previously occupied by petrochemical plants. The general criteria on which the design of the remediation works of the area in question was based and the choice of the remediation technologies proposed were in compliance with the current regulations (MD 471/99) in the year of presentation of the project and with the guidelines laid down by the Master Plan for the remediation of Porto Marghera (June 2004). Since then the need has emerged to evaluate the design of site remediation on a larger scale, evaluating economic and social effects as well as environmental ones. The global trend is to promote good practices that reduce possible undesirable side effects of rehabilitation jobs. The environmental, social and economic impacts generated by rehabilitation activities have an influence that extends beyond the boundaries of a site and must be assessed in order to understand and minimize the potential negative impacts that may arise. The method applied at international level provides three possible approaches to sustainability assessment distinguished by degree of detail. In the case study in question, a second level analysis was applied, i.e. a semi-quantitative evaluation using simple mathematical approaches (spreadsheets or other) or IT tools. The output of this evaluation was expressed in terms of weights or rankings of the various strategies and approaches to sustainable reclamation.

Considering that the review of the site remediation projects has been developed taking into account both the contents of the "Programme Agreement for the remediation and environmental requalification of the Venice-Porto Marghera Site of National Interest and surrounding areas" (2012) and the related implementation protocols and a logic of sustainability, thus assessing the environmental, social and economic costs and benefits of the land reclamation solutions, each evaluation has been made up of two consecutive phases.

• During the first phase, the effectiveness and applicability of the rehabilitation strategies were verified using the ISPRA (Italian Institute for Environmental protection) screening matrix, to which a system of scores was applied. A workbook was then drawn up which makes possible, on the basis of the ISPRA matrix, a qualitative and quantitative assessment of the applicability of a technology





to a given contaminant, taking into account the effectiveness, timing, need for long-term maintenance/monitoring and short and long-term impacts on natural resources.

• In the second phase, the sustainability of the original rehabilitation Projects and the design alternatives proposed in the study were assessed. This assessment was carried out using spreadsheets obtained by implementing the spreadsheet attached to the March 2014 document "Sustainable Management Practices for Management of Land Contamination" SURF-UK. The proposed methodology gives a score to each sustainability indicator (as defined by SURF-UK) associated with a sustainable management practice (SMP), i.e. the measures which can be implemented within a project in the various phases to make it more sustainable.

The output of the analysis, expressed in terms of weights or ranking of the various strategies and approaches to sustainable remediation, finally allowed evaluating the original project in terms of sustainability, comparing it to an alternative hypothesis proposed by identifying the most critical areas and which can be upgraded. It was therefore possible to identify technological alternatives which enable the same results to be achieved, reducing their impacts. However, the basic choice of opting for in situ technologies (i.e. technologies that can be implemented within the site area) is maintained, limiting top-soil removal jobs and excavation and earth moving activities.

The proposed technologies are as follows:

SMART-STRIPPING® - POSSIBLE ALTERNATIVE TO TWO PHASE EXTRACTION (TPE) which makes possible the reclamation of the subsoil avoiding emissions into the atmosphere, consumption of natural resources and waste of groundwater delivered to the sewer.

The technology consists of a remediation well, a closed-cycle air circulation system and an air purification system placed in the gaseous flow (activated carbon filter). The remediation of groundwater therefore takes place through the introduction of clean air into the aquifer (stripping) and the recovery of the same, enriched with contaminants, from the unsaturated area. The contaminants extracted from the groundwater are conveyed into activated carbon filters, after which the purified air is re-introduced into the subsoil generating a closed cycle that minimizes the impact of the technology on the environment.

RemOx® SR - POSSIBLE ALTERNATIVE TO IN SITU CHEMICAL OXIDATION (ISCO): This is a long-term passive treatment of organic compounds. The RemOx® SR - Sustained Release - ISCO Reagent candles are about half a metre long and have a diameter of about 3 cm (1.3") or 6 cm (2.5"). Candles, when placed in the saturated portion of the subsoil, progressively release permanganate into groundwater. The paraffin matrix, itself stable, non-toxic and biodegradable, does not react with the oxidant and prevents the reagent from dissolving too quickly in groundwater, facilitating instead a slow release of the reagent. The presence of a protective barrier also prevents the oxidant from reacting with natural organic matter, inorganic soil constituents and other reduced compounds, improving the efficiency of ISCO and allowing long-term low-cost treatment of chlorinated solvents.

THERMAL DESORPTION (ISTD) POSSIBLE ALTERNATIVE TO ELECTRO-CHEMICAL REHABILITATION: the system represents a valid alternative and has proved to be valid in similar cases recently concluded for the removal of Mercury, in any form, from the ground. The same technology is also effective for the removal of other contaminants present in situ such as hydrocarbons, dioxins and many other organic compounds.

ISTD (IN SITU THERMAL DESORPTION) technology uses conductive thermal heating. Heating is carried out by appropriately positioning several pipes over the entire ground. The high temperature gases produced by the burners circulate through the heating pipes and the heat exchanger pipes before being discharged into the atmosphere. During treatment, there is no direct contact between the hot gases and the contaminated soil which, by conduction, will be heated to the predetermined





temperature for the desorption of the contaminants. The steam treatment network will recover the pollutants and convey them to a treatment system.

The approach and methodology followed in this study may also be applicable in similar situations, becoming in the future a decision-making tool for the City of Venice.

Impact/ results/ experience (how many target groups/ stakeholders were reached, pilot events)

The redevelopment of the Porto Marghera is a priority for the City and receives deep attention from the Municipal Administration and from other local authorities. The issue has also a strong national relevance. The status of "complex industrial crisis area" conferred to the site by the Government has recently brought the Ministry of Economic Development and the Veneto Region to sign an Agreement (Programme Agreement of 23 October 2018) to allocate euro 26,7 M to finance different reconversion projects and plans to attract new investments. Referring to this context, the pilot activities carried out by the City of Venice acquire even a greater relevance. The Guidelines for drawing up contracts for the purchase and sale of industrial areas is a functional instrument both for public local authorities and economic operators to refer to. The methodological approach followed in the *Study on the potential use of the pilot area* aimed at establishing a qualitative-quantitative evaluation of the environmental, social and economic sustainability aspects of the environmental remediation projects may also be applicable in similar situations, becoming in the future a decision-making tool both for the City of Venice and other entities.

In all the stages of the project relevant stakeholders were involved jointly with the GreenerSites local partners, the Veneto Region and the Port of Venice. In particular, 3 meetings were held in Venice to support PA activities and share ideas and views about the management of the area. The meetings addressed local administrators, technicians from private and public companies settled in Porto Marghera, Venice Universities, Professional orders and trade unions. Throughout the pilot implementation the City of Venice closely collaborated with Syndial, one of the largest enterprise settled in the area and owner of the pilot site. Furthermore, pilot actions results were presented in different occasions, mostly in connection of thematic-related events held in Venice: 21 September, in the framework of the URBANPromo Green annual conference hosted by the IUAV University; 14 January with the pilot event called by the Veneto Region. A pilot event is expected to be held on January 29, 2019 in the framework of the technical meetings for the presentation of the National Call for the reconversion of Porto Marghera site launched by the Ministry of Economic development and the National Development Agency. Main target groups involved were Large and medium enterprises settled in the area, site owners, Universities, public local Health Agency, ARPAV - Regional Environmental Agency, business organisations and trade unions, local, regional and national authorities.

Contribution to project objectives

The City of Venice Pilot action positively contributed to the general attainment of the project objectives and in particular to the specific objective of ensuring valuable solutions to brownfield rehabilitation by identifying more appropriate financial, regulatory and environmental instruments for the rehabilitation and redevelopment of the industrial area of Porto Marghera. The solutions proposed can have a positive effect on the environment of the Venice area and can contribute to more effective management of the site according the principle of economic, environmental, social sustainability.





Transnational added value - how PA contributed to other activities implemented by the project & added value for partners

The City of Venice benefitted from the joint implementation of project activities acquiring useful knowledge and know on brownfield management during the different training opportunity provided within the project: training seminars, study visits and pilot site visits. At the same time the City of Venice offered the partners different occasions for knowledge and good practices' exchange. Results from the pilot action can be useful to partners which have similar aims and context. Lessons learnt and solutions stemming from the pilot action will contribute to the elaboration of the booklets on sustainability measures and will be included in the Catalogue of lessons learnt.

Compliance with the sustainability principles

The Study on most valuable, sustainable and cost-effective remediation methods for pilot area consisted in reviewing the remediation interventions of the pilot site elaborated in 1999 (in compliance with an outdated regulation) in the light of the most recent sustainability principles elaborated by Sustainable Remediation Forum (SuRF) and promoted by ISPRA (National Environment Agency). The work consisted in definition of a method which makes possible a qualitative-quantitative evaluation of the environmental, social and economic sustainability aspects of the environmental remediation projects; a more sustainable and alternative design strategy to the real case was also defined. The proposed methodology gives a score to each sustainability indicator (as defined by SuRF-UK) associated with a sustainable management practice (SMP), i.e. the measures which can be implemented within a project in the various phases to make it more sustainable. It was therefore possible to identify technological alternatives which enable the same results to be achieved, reducing their impacts. The new remediation technologies proposed are more compliant with the principle of environmental, economic and social sustainability.

Media coverage

The redevelopment of the Industrial area of Porto Marghera is a crucial topic in the life of the City and receives great attention by the media. Many articles appeared in the local press during the pilot implementation phase tackling the issue. GreenerSites was dedicated some articles in the local press following the meeting with the stakeholder held 24 May, 2018 to discuss the pilot actions and the strategic action plan:

Il Gazzettino - 19 May 2018

Ferpress (on line magazine), 25 May 2018







Sezione:SOCIETA' PARTECIPATE

VENEZIAMESTRE

Dir. Resp.:Roberto Papetti Tiratura: 49.473 Diffusione: 67.401 Lettori: 575.000 Edizione del:19/05/18 Estratto da pag.:41 Foglio:1/1

MESTRE Lo avevano convocato il 24 ottobre del 2016, dopo sei anni di silenzio, e tornano a riunirlo giovedì 24 maggio, solo che questa volta la Regione ha convocato un vero esercito. Si tratta del Tavolo permanente per Por-to Marghera che era stato costituito per affrontare la crisi della grande area produttiva e trovare delle alternative di sviluppo salvando la vocazione industriale. Ha avuto alterne vicende e fino ad oggi non ha portato grandi risultati, nel frattempo sono stati convocati tavoli sul riconoscimento dello stato di Area di crisi industriale complessa per Venezia, sul destino della por-tualità, sulle bonifiche... Ora, dunque, il tavolo originario vie-ne riconvocato per parlare del progetto europeo GreenerSites: è un'iniziativa che coinvolge autorità e località italiane, tedesche, slovene, croate e polacche interessate a migliorare la gestione ambientale integrata del-

Riapre il "Tavolo" di Porto Marghera per le aree dismesse

le aree industriali sottoutilizzate vicine alle aree urbane (le cosiddette brownfield) per renderle più sicure, pulite, vivibili e funzionali; ha una durata di 36 mesi, dal primo giugno 2016 fino al 31 maggio 2019.

LA CONSULTAZIONE

L'incontro di giovedì prossimo, che si terrà alle 15 nel palazzo della Regione in Fondamenta Santa Lucia a Venezia, servirà per consultare tutti i portatori d'interesse e arrivare alla definizione di un Piano di azione strategico e condividere un Protocollo di sviluppo dell'area di Porto Marghera. Oltre a Regione, Comune, Autorità di sistema portuale, Provveditorato interregionale alle opere pubbliche, Confindustria, Sindacati, Ente zona di Porto Marghera, sono state invitate le altre categorie economiche e professionali, le Università, la Commissione italiana per l'Unesco, le associazioni ambientaliste. Il Piano di azione strategica (Sap), come quelli degli altri paesi partecipanti al progetto, dovrà essere completato entro il prossimo dicembre e dovrà individuare quali siano gli interventi necessari, le priorità, gli obiettivi, gli indicatori (tra cui quelli di sostenibilità ambientale ed economica), il cronoprogramma e le risorse necessarie per passare dal progetto ai fatti.

Per questo, dunque, la Regione ha convocato i rappresentanti di tante diverse entità dato che gli argomenti toccati sono moltissimi. Alla fine del percorso si dovrà arrivare a un Protocollo d'intesa tra le nazioni coinvolte che dovrà essere adattato a tutte le arce industriali semi abbandonate del centro Europa e da rilanciare. Entro maggio del 2019 a Venezia dovrà essere organizzato un incontro pubblico per coinvolgere i responsabili delle decisioni e tutte le parti interessate a sostegno dei risultati del progetto e della promozione del Protocollo d'intesa. (e.t.)

> PROGETTO EUROPEO DI RIQUALIFICAZIONE DOPO SEI ANNI ENTI LOCALI E PARTI SOCIALI SI RITROVANO







Lo ha spiegato l'assessore regionale allo sviluppo economico e alla riconversione del polo industriale di Porto Marghera aprendo i lavori del Tavolo Permanente che ha convocato a Venezia, con la partecipazione di tutti i soggetti interessati. E' stata l'occasione per una panoramica sulle azioni e i progetti che vedono coinvolta l'area di Porto Marghera.

"GreenerSites" (già Resites) - finanziato con circa 3,8 milioni di euro, di cui 389.380 euro alla Regione del