

ACTION PLAN FOR ARAGON

PP1 GOVERNMENT OF ARAGON



LINDANET: EUROPEAN NETWORK OF REGIONS AFFECTED BY LINDANE RESIDUES WORKING TOGETHER TOWARDS A GREENER ENVIRONMENT

I. CONTACT INFORMATION

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*The world is a dangerous place, not because of those who do evil,
But because of those who look on and do nothing.
Albert Einstein*



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II. POLITICAL CONTEXT

Lindane was a pesticide widely produced during the second half of the 20th century in Europe and worldwide. Its production generated enormous amounts of organochlorine pollutant residues (HCH compounds and others) that have high persistence and toxicity. Several HCH isomers are included in the Stockholm Convention's list of persistent organic pollutants (POPs).

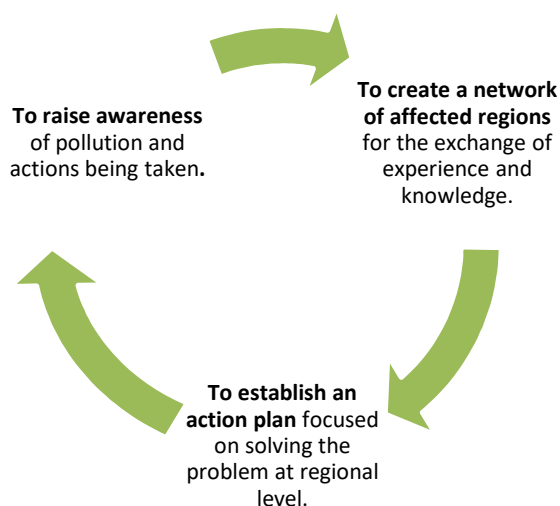
Lindane production and use has been banned in EU legislation since 2007, but the related contamination still represents a major risk to human health and the European environment and remains a problem little known to the public and political representatives.

Consequently, the intention of the LINDANET project is to move in the direction of improving knowledge and finding the solution to this problem, starting from a regional point of view and reaching the European level.

A. THE LINDANET PROJECT

LINDANET is a European project funded by the Interreg Europe programme, with a duration of 3.5 years (July 2020-January 2023). It has the ambitious objective of unifying efforts between European regions in order to work together towards the improvement of areas contaminated by lindane and its residues (HCH).

This project has a triple objective:

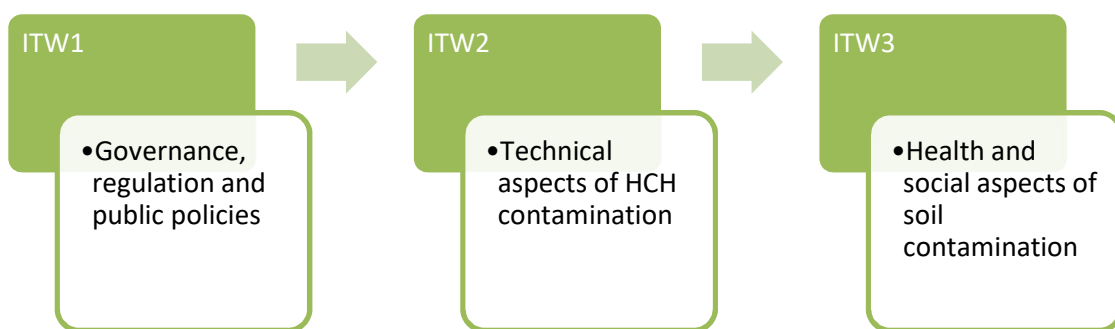


The Government of Aragon, through the Department of Agriculture, Livestock and Environment, coordinates this project, in which it participates together with five European partners from other areas affected by the same problem: Galicia, South Bohemia (Czech Republic), Sachsen-Anhalt (Germany), Silesia (Poland) and Lazio (Italy).

The project has developed a learning process that facilitates the exchange of approaches, tools and methods to achieve the objectives stated above. More specifically, the work plan is designed to allow for a logically planned regional and inter-regional learning process organised around conferences, workshops and visits to explore and exchange best practices. The planning of these activities has favoured the progressive integration of the acquired knowledge.

The thematic workshops, which are the main exchange activities, are the main focus of the project work plan. The knowledge exchanges on good practices and the discussion around regional challenges and possible solutions are based on the experiences and background knowledge of each actor and group of local actors. The themes of the exchange activities follow a clear line and interrelated trajectory starting with the needs of the regions, followed by tools and methodologies and ending with policy impacts.

This shared learning process has focused on the following themes:



Each partner, in turn, has organised meetings with stakeholders from each region in which an active exchange has taken place through cooperation and where the results of the interregional workshops have been transferred.

III. STRATEGIC CONTEXT

THE ACTION PLAN AIMS TO ACHIEVE AN IMPACT ON

Investment Programme for Growth and Employment
X European Territorial Cooperation Programme (Interreg)
 Another regional development policy instrument

The Operational Programme European Rural Development Fund Aragon 2014-2020 (CCI 2014 ES16RFOP004) whose motto is "Building Europe from Aragon" is the document that determines the strategy and thematic objectives of intervention in the Autonomous Community of Aragon regarding the actions co-financed by the European Regional Development Fund (FEDER in Spanish), for the programming period 2014-2020, as well as the financial allocations programmed for these objectives.

"Preserving and protecting the environment and promoting resource efficiency" is one of the 7 priorities of the Operational Programme 2014-2020 and is closely related to the specific objective 6.5.1 "Improving the urban environment, rehabilitation of old industrial sites and reduction of soil and air pollution", whose planned actions are aimed at the environmental improvement of the urban environment through the rehabilitation of old industrial sites and the

reduction of pollution mainly of soil, with indirect effects on water and air. The expected results focus on the rehabilitation of areas affected by waste from the industrial production of lindane and other industrial waste and/or processes, so as to prevent and avoid the risks to the environment and people associated with exposure to these substances.

In turn, specific objective 6.5.1 is aligned with the objectives and the roadmap of the Strategic Plan for the integrated fight against the contamination of waste generated by the manufacture of lindane in Aragon (***Lindane Challenge in Aragon***).



Priority Axis 6 is also synergistic with the other objectives, incorporating the environment as a cross-cutting and decisive element contributing to well-being, job creation and the development of a strong and future-oriented economy, e.g. by promoting nature-based employment opportunities, developing nature-friendly transport corridors, creating tourist destinations or for educational visits to improve knowledge about the natural environment, etc.

More details on the policy context and how the action plan should contribute to improving the policy instrument

The Sustainable Development Goals (SDGs) and their targets are integrated and indivisible, global in scope and universally applicable, taking into account the different realities, capacities and levels of development of each country and respecting their national policies and priorities. The outcome document is available at: <https://www.un.org/sustainabledevelopment/es/objetivos-de-desarrollo-sostenible/>



The objectives that are linked to the Action Plan in Aragon are based on Goal 3: *Ensure healthy lives and promote well-being for all at all ages* and Goal 15: *Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss*.

In turn, in Aragon there is the **ARAGONESE STRATEGY FOR SUSTAINABLE DEVELOPMENT** (<https://www.aragon.es/-/estrategia-aragonesa-de-desarrollo-sostenible-1>), approved by the Aragonese Government Agreement of 4 September 2018. This is framed within the Sustainable Development Goals of the 2030 Agenda promoted by the United Nations, which were formulated to respond to the important challenges and priorities of eradicating poverty in all its forms and dimensions, the fight against inequality, the preservation of the planet, sustained, inclusive and sustainable economic growth and the promotion of social inclusion. While the targets express global aspirations, each government will set its own targets.

The 2030 Agenda is a unique opportunity to consolidate the foundations for a global transformation towards sustainable development models. It is a unique opportunity to lay the foundations for a global transformation towards sustainable development models.

To this end, in September 2017, the High Level Group for the 2030 Agenda was set up, with the double objective of coordinating the Spanish position and the actions necessary for the fulfilment of the Agenda's objectives and preparing Spain's reviews before the United Nations High Level Political Forum. The High Level Group agreed on the formulation of an "Action Plan for the Implementation of the 2030 Agenda". This Plan presents an analysis of the distribution of powers and public policies already in place that will serve as a guide for the actions to be defined in the Autonomous Communities. It will also point out the need to align the policies to be carried out with the different Sustainable Development Goals, pointing out the need to integrate the social, economic and environmental dimensions in all domestic and international policy cycles.

In the 2030 agenda whose Objective 3/ 3.9 is to substantially reduce the number of deaths and illnesses caused by hazardous chemicals and air, water and soil pollution. To this end, the action plan for Aragon contributes to improving this policy instrument through the visibility and implementation of certain actions aimed at achieving the objectives described.

A. RECOVERY, TRANSFORMATION AND RESILIENCE PLAN

The Government of Spain has drawn up the *Recovery, Transformation and Resilience Plan, España Puede*, (<https://planderecuperacion.gob.es/>) on four cross-cutting axes: ecological transition, digital transformation, territorial and social cohesion, and gender equality, which was presented on 30 April 2021 and the decision for its approval, with an outstanding assessment, was adopted by the College of Commissioners on 16 June 2021 and has been approved by the EU Economic and Financial Affairs Council (ECOFIN) on 13 July 2021, at which point Spain will begin to receive disbursements in the form agreed with the European Commission.

It is a clear roadmap that includes investments and a broad set of structural reforms that respond to the specific recommendations of the European institutions and to the own diagnoses made by our institutions and social and civil society agents, collected, among other ways, through Sectoral Conferences, social dialogue groups and expressions of interest.

In addition to the four cross-cutting axes that articulate the plan, it is structured around ten lever policies that in turn integrate 30 components or lines of action, both regulatory and investment-driven. Thus, component 4 of the resilient infrastructures and ecosystems policy aims to achieve a good state of conservation of ecosystems through their ecological restoration when necessary, and to reverse the loss of biodiversity, guaranteeing the sustainable use of natural resources and the preservation and improvement of their ecosystem services. Component 5 of the same policy focuses on improving water resources management.

Each of the components will explicitly contribute to the overall objectives of the Plan and to the four cross-cutting axes. Similarly, each component will focus on a specific challenge or objective, and includes reforms and investments that contribute to achieving these objectives or overcoming the challenges. For all of them, intermediate targets and milestones, the expected results, the number of beneficiaries, as well as the detailed cost of each element will be identified.

The objective of the Recovery, Transformation and Resilience Plan for Spain is to accelerate the economic and social recovery after the COVID-19 crisis and to increase growth capacity in the medium and long term. Therefore, together with substantial investments, a series of structural reforms are envisaged to address the country's remaining challenges and to create the right conditions for these funds to be invested in the most efficient way and to have the greatest possible impact.

B. THE PROBLEM OF LINDANE IN ARAGON

In Aragon, the problem dates back to the 1970s, a decade in which the company INQUINOSA was located in the municipality of Sabiñánigo (Huesca) and synthesised lindane from 1975 to May 1989, ceasing its commercialisation activity definitively in 1992. During this period, it is estimated that it produced more than 150,000 tons of waste. The waste from lindane production, in powder and liquid form, was initially dumped at the Sardas landfill and later at the Bailín landfill. Both landfills lacked adequate conditioning, which caused a major environmental problem in the area.

The Contaminated Soil Service of the Department of Agriculture, Livestock and Environment manages the environmental challenge of lindane manufacturing waste in Aragon.

STRATEGIC PLAN FOR THE INTEGRATED CONTROL OF WASTE FROM LINDANE MANUFACTURE IN ARAGON

This Strategic Plan is a description of the challenge presented by the management of lindane manufacturing waste in Aragon. Its mission is the integral decontamination of the sites affected by **its** manufacture, the destruction of the waste generated and the transformation of this challenge into an opportunity, through the dissemination of the research, development and innovation (R&D&I) implemented.

The Plan establishes the main objectives to be achieved in the short and long term, materialising them in a roadmap that includes the actions to be developed over a 25-year period.

The driving ideas of the Strategic Plan are based on the following points:

- Implementing low-energy remediation actions that enable risk reduction and sustainable solutions to be achieved
- Developing actions preferably in situ that lead to a reduction of environmental risks.
- Obtaining less hazardous, shorter-lived and less mobile end products
- Applying biological methods, supported by technological solutions
- Developing models for predicting and determining the efficiency of outcomes

The actions carried out and being carried out are included in annual reports, which are made public on a specific web portal for the management of lindane waste, together with the daily results of analyses of the five quality control points of the Gállego riverbed, and the state of the drinking water treatment facilities (www.stoplindano.es).

INTEGRATED WASTE MANAGEMENT PLAN (GIRA)

The strategic plan is part of a more ambitious plan "Integrated Waste Management Plan (GIRA)" which establishes objectives, action programmes and tools necessary for environmentally friendly management and sustainable development.

It is a global planning instrument for waste in the Autonomous Community of Aragon, which allows the Administrations and social agents to have the objectives, action programmes and tools necessary for environmentally friendly management and sustainable development.

It aims to minimise the amount of waste generated, its reuse and recycling, and when this is not possible, to ensure its proper disposal. It also aims to achieve greater environmental awareness. To this end, it establishes horizontal action programmes that apply to all types of waste, including a chapter on contaminated land.

The Strategic Plan for the Integral Control of Lindane Manufacturing Waste in Aragon is included as an annex to the GIRA Plan, as part of the Contaminated Soil Programme.

C. OBJECTIVES OF THE ACTION PLAN IN ARAGON

The objectives of the Action Plan in Aragón are to improve the management and implementation of the Aragon ERDF Operational Programme 2014-20, through tools, indicators and actions aimed at:

- Increasing the number of projects to be implemented under the policy instrument.
- Improving the channels of communication of the results obtained with the projects financed by the Aragon ERDF Operational Programme.
- Minimising the environmental risks of projects developed with Aragon ERDF funds 2014-20.
- Improving the Health and Safety of workers in projects financed with Aragon ERDF funds 2014-20.
- Optimising the human resources of the projects financed with the Aragon ERDF 2014-20.

IV. DETAILS OF PLANNED ACTIONS

The Action Plan in Aragon includes 4 actions, framed in three main axes:

- Awareness raising and communication actions (A1)
- Actions to improve and implement safe and qualified remediation work in rural areas (A2) and (A3)
- Actions to promote research and knowledge (A4)

These actions will be carried out during Phase II of the LINDANET project (January 2022-January 2023) and are developed below:

A. ACTION 1: Redesign of the HCH website: www.stoplindano.es.

Relevance for the project and inspiration for action 1

Lindane and the residues from its production have negative effects on human health and the environment, and their existence poses a risk to the environment. In view of the failure of the former lindane producers to take responsibility for soil remediation, and given that the protection of health and the environment is a priority, the regional government has taken over the management of the contaminated sites on a subsidiary basis.

The Government of Aragon has been responsible since 2015, initially through its corporate website, and subsequently through the specific web portal" www.stoplindano.es" for giving visibility to the problem of lindane waste contamination and the control, containment and remediation actions carried out at the different sites.

This website is aimed at informing both the general public and other actors interested in the Lindane problem: institutions, regions with similar problems, universities, research centres, or companies bidding for public contracts to carry out the different pollution management tasks.

The creation of an effective communication strategy is key to highlighting the multiple actions being carried out by the Government of Aragon. On the other hand, it is essential to review the form and content of the current web portal to adapt it to new communication trends in order to achieve the desired communication objectives.

Objectives for the improvement of the policy instrument:

Currently there is a large amount of information, multimedia files and large documents that make the website slow, unintuitive and unattractive to any visitor.

The redesign of the website www.stoplindano.es, has the following objectives related to the improvement of the Operational Programme (OP) ERDF Aragon 2014-20. SO.6.5.1:

- To create a specific section for the announcement of current calls for tenders financed with the Aragon ERDF OP 2014-2020. Improving communication will contribute to greater competition in tenders for decontamination actions, which are sometimes left deserted.
- To have a space for the repository of large documents where to present the projects in public exhibition, which will enable download links to be included in the tender notices of the projects financed with the OP ERDF Aragon 2014-2020.
- To make general and technical information on the problem of lindane contamination available to those bidding for tenders under the Operational Programme and to the general public.
- To increase the number of citizens who are informed of the results obtained with the projects financed by the Operational Programme.
- To communicate effectively to the whole population information on the daily analysis of the quality of the water in the river Gállego and the state of the treatment plants, which are the result of the two main actions financed by the Operational Programme.

This entails two types of changes to the policy instrument:

1. The increase in the number of projects to be implemented, thanks to the greater participation favoured by the new website.
2. An improvement in governance, both by improving the management of tenders financed with funds from the Operational Programme, and in the communication of the results obtained with these projects to the public.

Inspiration:

The inspiration for the creation of this action comes from the Interregional Workshops ITW1, which dealt with governance, regulation and public policy, and ITW2, which dealt with technical aspects of HCH contamination respectively.

In both workshops, the current website of the Government of Aragon, specifically dedicated to lindane, was presented. In ITW1 Aragon presented its website as a good practice of communication and transparency of information, explaining how transparency had a positive impact on the management of sites contaminated by lindane.

However, during ITW2, a mind-map analysis was carried out which made the Government of Aragon analyse whether the website was reaching all the desired target groups. As a result of this analysis, it was detected that visits to the website are decreasing and the design is becoming obsolete compared to new dissemination trends, so a new design and content update is required. It was also detected in this analysis that stakeholders with a technical profile, such as universities, other administrations or companies, found it difficult to locate technical and administrative documentation on the website.

Nature of action 1 and specific activities

1-Content of the action

The main objective of Action 1 is to redesign the website www.stoplindano.es in order to achieve an effective communication strategy towards the citizens who receive the actions of the policy instrument and towards the technical actors interested in the Lindane problem, fulfilling the aforementioned *objectives for the improvement of the policy instrument*.

The aim is to redesign the website towards a modern, attractive and agile version, with a responsive design, that is to say, adapted to all types of devices such as mobiles, tablets, PCs, etc.

2-Activities

Activity 1.1. Hiring an external company

For the execution of the work required in this action, the hiring of an IT team, programmer and/or web designer is required. For the provision of the service, a contract will be signed consisting of a bag of working hours. This process requires the legally established deadlines, and must be executed and completed prior to any other activity included in the action.

The service for the redesign of the new website www.stoplindano.es aims to execute the necessary web programming and content updating activities. In addition, a parallel website will be created for multimedia web content and virtual tours (description in activity 1.4).

Activity 1.2: Hosting in a secure environment

The website will be hosted in a **secure SSL environment**, on the Government of Aragon's own servers. In this way, visitors to the website will have a secure environment, guaranteeing the encryption of all data between the browser and the website. SSL certificates also allow the website to be authenticated, so that the main browsers will show a padlock in the address bar, thus activating the https protocol and, in this way, enabling a secure connection from the web server.

For this it is necessary to acquire two certificates, "*stoplindano*" and "*wslindano.sarga.es*", since the values of the graphs are made through this server.

Activity 1.3: New Web Design

The website will have a functional **design**, with the essential information to be displayed, so that it is easy to use. The size and format of multimedia files will be optimised to improve the browsing speed.

The design is based on blocks of photos, where the content is clearly defined in each block. An extremely legible typography will be used, allowing a quick examination of the different sections.

The interface will be modified to make it more user-friendly, so that the user can navigate and find what he/she is looking for in an intuitive way.

**Activity 1.4: Establish the web information to be displayed**

It is necessary to **sort the information** currently displayed on the website in order to make it easier to consult information.

It is envisaged to cover the following functionalities:

- General Information: will include information on what lindane is, prevention of contamination, current situation and general information.
- Monitoring reports: Graphs of evolution of HCH at monitoring points, status of water quality and water treatment plants.
- News/newsletters (e-newsletter).
- European actions and projects to be developed in Aragon and in other affected regions at national and international level.
- Past and future actions.
- Public information.
- Virtual tours: this is designed as a link to another website where the multimedia files can be accessed, avoiding the collapse of information. They will include 3D images, which facilitate the user's understanding and knowledge of the different spaces.
- Link to social networks

Activity 1.5: Web analysis and testing tool and performance review

Create a **web analysis tool** similar to google analytics to be able to evaluate audience data, performance, behaviour, visited content, etc. and extract information in order to modify or update the website.



Carry out the necessary tests to ensure the correct functioning of the website, checking that it runs smoothly, displaying the appropriate information and adapted to any device.

3- Strengths of the action

The website is a good communication tool, and keeping it up to date promotes its usability, allowing direct communication with citizens.

This action is an opportunity for improvement, learning from our own mistakes, in order to transmit information in a simple and agile way.

The aim is to show the current situation of contamination by lindane and other pesticides in the affected areas of our region, as well as to show the control, containment and remediation actions that are being developed.

The website will have up-to-date information on water quality and the status of water treatment plants.

Users will be able to request documentation, make queries through the various open communication channels (contact form and social networks), facilitating transparency and collaboration of all parties to achieve the ultimate goal of zero pollution.

4- Weaknesses of the action

The lack of information and communication encourages hoaxes and errors due to the lack of knowledge. The current website has many shortcomings that we must correct. Among them, we can highlight the following:

- Not agile or intuitive
- Slow loading due to over-information
- Large files
- Failure to upload updated data due to hosting on external servers
- Low usability

We must analyse our weaknesses in order to improve. The web analysis tool allows us to know the behaviour of users in order to avoid communication errors and, therefore, a reduction in visits.

Stakeholders and role

- Government of Aragon whose role will be the technical management of the requirements to be met by the website, preparing and approving content and functional analysis.
- General public, so that they can suggest changes or improvements to the website, thus achieving an agile and useful communication tool.
- Organisations, universities, companies in terms of feedback of technical content and exchange of information and visibility of web content.

Planned timetable for Action 1

The estimated implementation time for this action is 7 months.

Activity 1.1 Hiring an external company

60 days

<i>Activity 1.2 Hosting in a secure environment</i>	<i>10 days</i>
<i>Activity 1.3 New Web Design</i>	<i>90 days</i>
<i>Activity 1.4 Establish web information</i>	<i>60 days</i>
<i>Activity 1.5 Web analytics and testing tool</i>	<i>30 days</i>

Cost of implementing action 1

A budget of €10,000 is estimated for the execution of the activities included in Action 1 Web redesign, development and implementation.

This figure corresponds to a bag of hours of 50-60 hours for the implementation of the tasks included in the action, in addition to the payment of the web certificates for hosting in a secure environment and web maintenance.

Sources of financing for action 1

Aragon ERDF funds 2014-2020 and own funds of the Government of Aragon.

Indicators

Implementation of the indicated activities.

Analysis of visits using the web analytics tool, before and after the execution of the different activities.

B. ACTION 2: Study of the forest mass of the former Bailín landfill site.

Relevance for the project and inspiration for action 2

The general objective of this action is to reduce the environmental risks of the Bailín HCH contaminated site by analysing the best treatments of the woodland to prevent the risk of forest fires.

Objectives for the improvement of the policy instrument:

The Bailín site is an extensive area of approximately 20 Ha, where groundwater and runoff control and treatment facilities are in place and where pollution control, containment and remediation work is being carried out continuously.

The development of this action would mean the possibility of minimising a risk that could have negative repercussions on the site's installations and equipment, as well as on the personnel who work there on a continuous basis. Part of the installations and equipment at the Bailín site have been financed with funds from the Aragón ERDF 2014-20, within SO 6.5.1. Likewise, part of the actions carried out there are financed by the same policy instrument.

Consequently, the development of the action would have a direct impact on the facilities and projects funded by improving the management of the policy instrument by helping to ensure their proper functioning and performance.

Inspiration:

This action stems from a request made at the third stakeholder meeting on 24/02/2021, in which "Ecologistas en Acción" requested a fire protocol for the Bailín site that takes into consideration the possible bioaccumulation of HCH in trees.

This fire protocol is already included in the Bailín Self-Protection Plan,¹ which incorporates, among other aspects, a classification of risks and an Emergency Action Plan.

However, it is considered appropriate to carry out an analysis of the woodland at Bailín, in order to assess the benefits of possible silvicultural or forestry treatment for the prevention of forest fire risk at the site.

Improving the minimisation of environmental risks at the Bailín site has a direct impact on policy instrument SO.6.5.1.

Nature of action 2 and specific activities

1-Objective of the action

The aim of this action is to be able to determine, delimit and evaluate the risks associated with the forest stands in Bailín and to be able to make an objective decision on the advisability of carrying out silvicultural treatments on the forest stands around the site.

¹ currently under review

2-Activities

In order to carry out the study of the forest mass in the area around the old Bailín landfill site, the following activities are necessary:

Activity 2.1. Hiring an external company

The drafting and preparation of the necessary documentation for the hiring of an agri-environmental company specialised in this type of studies will be necessary. Budgets and administrative procedures for the hiring.

Activity 2.2. Carrying out the "Study and analysis of alternatives in the area of action". Environmental requirements, permits and authorisations.

For this purpose, a geographical delimitation of the area of action, analysis of the forest mass, sectorisation, impact on other species, impact assessment, as well as an assessment of the run-off from the site if the vegetation surface is affected, will be carried out.

A detailed budget will be established for the study alternatives, as well as the human and material resources necessary for their execution (chainsaws, brush cutters, processors, etc.).

It will also be necessary to assess the environmental permits and authorisations, timeframes for their processing, as well as consultative and intervening bodies. This may lead to alterations in the planning depending on the environmental conditions or the resolution of authorisations to carry out works. Some of the authorisation/consultation bodies will be the Provincial Service of Huesca, INAGA, Ebro Hydrographic Confederation, etc.

3- Strengths of the action

This action is an opportunity to analyse different alternatives for the management of the forest mass around the Bailín landfill site, and to assess the advisability of carrying out specific treatments on the vegetation of a reduced area that may present bioaccumulation of HCH. All of this will allow an objective and specific evaluation of possible actions to be carried out.

4- Weaknesses of the action

A threat to this action will be that, having evaluated and weighed all the alternatives, none of them is considered optimal.

Stakeholders and role

- Government of Aragon: Tender, management of the action.
- Site workers, fire operatives, local citizens, society in general: beneficiaries of a possible minimisation of a risk.
- Environmental groups: the entity requesting the study, to which the results of the study will be communicated.

Planned timetable for Action 2

The estimated execution time for this action is 6 months distributed as follows:

- Activity 2.1 *Hiring an external company* 60 days
- Activity 2.2 *Study and analysis of alternatives of the area of action* 120 days

Cost of implementing action 2

Work for the study, alternatives and environmental requirements: €5,000.

Sources of financing for the action 2.

Aragon ERDF funds 2014-2020 and own funds of the Government of Aragon.

Indicators

- Carrying out the study and analysis of alternatives in the area of action.

C. ACTION 3: Health and safety application, for automatic control of PPE (Personal Protective Equipment) and health surveillance.

Relevance for the project and inspiration for action 3

The action consists of the implementation of an Integrated Management System through a digital application that serves to simplify and automate all the activities of monitoring the safety and health of workers. Currently, an old database is used, which requires manual input of the numerous data and specific knowledge.

This action has been contemplated as a practical tool within the LINDANET project to facilitate the execution of remediation actions, from any contaminated site, under a regulatory and legal compliance, so that an integrated management system is implemented.

Objectives for the improvement of the policy instrument:

An important part of the actions for the control, containment and remediation of contamination by lindane waste in Aragon are financed by the Operational Programme ERDF Aragon 2014-20, within the SO 6.5.1.

All work carried out at HCH-contaminated sites in Aragon takes place in areas with different levels of chemical risk and requires special health surveillance and safety measures, such as the use of individual work equipment with different levels of protection.

The creation of a PPP to improve the current system for monitoring the health and safety of workers will improve all current and future projects to be carried out at the aforementioned sites, including the hydrogeological monitoring of Sardas and Bailín, financed by the Aragon ERDF Operational Programme 2014.20.

Inspiration:

The inspiration for this action is based on the third interregional workshop based on the social and health aspects of soil contamination. The Government of Aragon presented the Health and Safety protocol as a good practice. During the internal working sessions for the preparation of the presentation for the partners' workshop, the need to improve the Health and Safety management tool for all workers, companies and contractors involved in the remediation of soil contaminated with HCH was highlighted.

Nature of the action 3. and specific activities

1-Content of the action

The action consists of the implementation of an Integrated Management System through a digital application linking the existing risk assessments in the different areas of the HCH-contaminated sites with the tasks to be performed on site by the workers.

This integrated management system will allow:

- Informing the worker of the preventive measures in terms of safety and equipment necessary to comply with the Health and Safety conditions required at the site.
- Carrying out an automatic control of the warehouse stock of protective equipment.
- Automatic monitoring of times and tasks performed, as well as equipment used by each individual user.
- Obtaining automatic reports on the overall control of the work and risk levels to which workers at the sites have been exposed.

2-Activities

Activity 3.1: Hiring an external company

The execution of the work required under this action requires the hiring of an IT team, programmer and/or web application designer. Budgets and administrative procedures for hiring.

Activity 3.1. Functional analysis, design and development of the application

The performance of this activity shall provide for preventive traceability from the moment the need to perform a task arises until the task has been performed.

It shall link the submission of the work report, assessed task to be performed, worker(s) involved, level of risk, preventive measures, list of personal protective equipment required, removal of personal protective equipment from storage and completion of work report.

In addition to the above, the application will implement a stock control of personal protective equipment, through the registration of exits and entries of personal protective equipment from the warehouse.

It will allow the introduction of new tasks and levels of risk, personal protective equipment, etc. by the technical managers of occupational risk prevention/health and safety coordinators or authorised personnel, facilitating their use and updating.

By means of a wireless control and alarm system in different situations, situations such as minimum stocks in the warehouse, if the effective time of use of respiratory protection is exceeded according to established times, etc. will be detected and it will be compatible with mobile technology.

Activity 3.2. Development of the application

Creation of the basic structure for the functioning of the app. Prototypes will be made that can be tested as the creation of the application progresses in order to test, revise and improve the app.

Activity 3.3. Procurement of associated devices, implementation and testing

The devices for the use of the app must be compatible with each other (Smartphone, tablet, PC, etc.) and during the implementation phase, operation and functional tests will be carried out.

3- Strengths of the action

The advantages of this action include the following:

- Substantial improvement in equipment warehouse stock control. It will allow instant checking of the stock, which will make it easier to have a minimum stock consistent with the needs.
- Optimisation of the acquisition costs of personal protective equipment, as it allows for the purchase of equipment that is more in line with real needs, thus avoiding unforeseen events.
- Individual control by user and task of the delivery and receipt of personal protective equipment.
- Individual user control of the authorised tasks to be performed.
- Controlling the loan of equipment.
- The control of the delivery and receipt by the workers of the health and safety instructions for the task to be carried out.
- Traceability of personal protective equipment usage data.
- Improved control and supervision of work.
- Effective control of the time of use of personal protective equipment, especially respiratory protection, as it will be possible to know the time of use of protective filters and to discard them when the established time of use is exceeded.
- The ultimate improvement of health and safety management, certifications, inspections and corresponding audits facilitating the requirements for ISO 45001 certification.
- Facilitating the compilation of reports on possible requirements of the labour inspectorate with regard to occupational health and safety.

4- Weaknesses of the action

- Areas contaminated by lindane residues usually have poor coverage, so offline options are completely out of the question.
- Geographical dispersion of the different sites.
- Very limited access to the hardware elements and features of the device.
- The user experience (navigation, interaction, ...) and response time is shorter.
- It requires more effort and rigour in its use.

Stakeholders and role

- Government of Aragon: Tender, management of the action.
- Workers from the different sites, hired companies, technical staff, researchers, etc. as users of the application.
- Technical staff and the Government of Aragon in terms of defining the functionalities for legal compliance of activities and management of PPE.
- Labour inspection: Occupational health and safety for the control and enforcement of occupational health and safety regulations.

Timetable foreseen for Action 3:

The estimated implementation time for this action is 9 months:

- | | |
|--|----------|
| - Activity 3.1: Hiring an external company | 60 days |
| - Activity 3.2: Functional analysis, design and development of the application | 120 days |
| - Activity 3.3: Purchase of devices implementation and testing | 90 days |

Cost of implementing action 3

The cost of this action is estimated at €10,000 (€5,000 App design + €5,000 purchase of devices).

Sources of financing for action 3

Aragon ERDF Fund 2014-2020 and the Government of Aragon's own funds.

Indicators

Implementation of the application and purchase of the devices.

D. ACTION 4: Creation of a documentary collection on HCH, to be housed in the Pirenarium's "POPs Reference Centre".

Relevance for the project and inspiration for the action 4

The University of Zaragoza has carried out a study on the situation of research in the European Union on HCH and its associated problems. Based on the conclusions of this study and with the experience acquired in the search for information on this subject, this action aims to create a documentary collection to make information and technical publications on HCH available to students and researchers from public and private organisations in a centralised and accessible way.

This documentary collection will be housed in a space set up in the laboratory of Persistent Organic Pollutants (POPs) of Pirenarium (Sabiñánigo), specifically in the premises ceded for 50 years to the Government of Aragon by the City Council of Sabiñánigo. So that both public and private researchers, as well as students and citizens in general, could visit the premises to make any enquiries they may require on the subject of HCH.

The Pirenarium POPs laboratory was built in 2018 with funds from the Aragon ERDF Operational Programme 2014-20 SO 6.5.1, with the ambitious objective of establishing itself as a POPs Reference Centre in Europe.

Currently, the facility is the laboratory where all water, soil and air samples from sites contaminated by lindane residues in Aragon are analysed for organochlorine compounds. Given the important work carried out by the Government of Aragon at its sites, which places it at the forefront of HCH decontamination in Europe, one of the regional government's objectives is to establish the current laboratory as a Reference Centre for the study of Persistent Organic Pollutants (POPs).

Objectives for the improvement of the policy instrument:

This action aims to improve the construction of the Pirenarium HCH laboratory carried out in 2018 and financed by the Operational Programme FEDER Aragón 2014-20, laying the foundations for the establishment of the POPs Reference Centre in Sabiñánigo.

In turn, the existence of a documentary fund in the COP Pirenarium laboratory means an improvement in the two main actions financed by the Operational Programme: hydrogeological monitoring of Bailín and hydrogeological monitoring of Sardas. As part of this hydrogeological monitoring, in addition to contamination control and containment work, remediation studies are carried out by experts from the contracting companies, in collaboration with researchers from various universities.

Making a repository of scientific publications on the research carried out at the sites available to the experts of the companies awarded the contract would have an impact on the optimisation of personnel resources and their dedication, and would lead to a reduction in certain costs (transport, obtaining publications, etc.), which could be used for new tasks within the same contract.

Inspiration:

Although the problem of contamination by lindane residues is widespread in almost all European countries, already in the preparation phase of the LINDANET project proposal, an absence of research centres that dedicate a large part of their efforts to research on HCH and other POPs was detected.

This fact was confirmed by the mind map analysis carried out in ITW2. During the third semester, and assessing the possible results of the joint study carried out by UNIZAR for the Government of Aragon and for the benefit of the whole consortium, the idea arose of creating an action within the Aragon Action Plan, to lay the foundations for the POPs Reference in Europe.

Nature of the action (describe precisely the content of the Action 4 What are the specific activities to be carried out)?

1-Content of the action

The adaptation of a technical documentary fund within the Sabiñánigo POPs laboratory aims to gather and recover the existing scientific documentation on HCH remediation and elimination and make them available to students and researchers participating in contracts financed by the Aragon ERDF Operational Programme 2014-20 or having an impact on them, with the long-term objective of promoting research and establishing knowledge in the same place where three sites contaminated by lindane (HCH) residues are located.

2-Activities

On the one hand, a physical space must be set up in the Pirenarium facilities, where computer equipment and a repository of documentation, both digital and on paper, can be located. The information must be efficiently retrievable by means of search engines, with categorised data (metadata) and quickly accessible, whatever the document and whatever the documentary support in which it exists. To this end, the aim is to:

Activity 4.1 Adequacy of a space for the location of the documentary collection

It will be necessary to adapt an existing space ceded by Sabiñánigo Town Council on the first floor of the municipally-owned building of the former Gravelinas Barracks (Pirenarium), located at Avenida del Ejército, 27, in Sabiñánigo (Huesca).

To this end, work is planned for partitioning, carpentry, cladding, false ceilings and installations to make the space habitable and provide a document collection service for an approximate surface area of 12 m². It also includes the purchase of office equipment and furniture for use and storage of reference material.

Activity 4.2 Creation and maintenance of a database and repository of publications on HCH

It will be necessary to carry out a compilation of existing documents and publications with the help of the study carried out in phase 1 by UNIZAR, in order to subsequently create a database and a library, both physical and virtual. In order to do this, the information must first be properly organised and an appropriate management and retrieval system adapted to the new information and communication technologies must be in place.

Activity 4.3 Selection and analysis of documentation, digitalisation

Organisation of the documentation according to thematic keywords or possible interest, as the information currently available can be found in many different types of format (whether on paper from books, magazines and/or newspapers; audio; photography; video...), as well as being dispersed and unorganised.

Activity 4.4 Purchase and/or acquisition of digital material and journal subscriptions

In order to ensure that the information in the documentation collection is always at the forefront of knowledge and the fight against HCH contamination and remediation, specialised content on HCH and on the remediation of contaminated soil and water will have to be obtained in the relevant subject area.

Activity 4.5 Establishment of an information management and retrieval system

Accessibility to the contents both online and on Pirenarium premises for all interested organisations and research institutions, companies and citizens in general, facilitating access to all the information available in a fast and efficient manner, highlighting those lines of research that are being studied or carried out at any given time.

3 -Strengths of the action

The creation and maintenance of the HCH documentary collection at the Sabiñánigo POPs Reference Centre will make it possible to add value to the information available, making the centre a world reference in the fight against HCH contamination and its remediation processes, which is undoubtedly an important benefit on a social and institutional level.

The concentration, organisation and availability of information on HCH and its associated contamination problems in one place will greatly facilitate research and knowledge development for institutions, companies and research centres interested in HCH.

In turn, the transfer of part of the Pirenarium premises to the Government of Aragon by the Sabiñánigo Town Council offers a unique opportunity to locate a centre of this type in a place where the problems caused by HCH are present, at the same time as it serves to enhance the value of the territory and decentralise knowledge, bringing it closer to those affected (educational exhibitions and even guided tours of the landfill and the actions carried out).

The study carried out by the University of Zaragoza will provide the basis for the information gathering project, as well as a guide to the steps to be followed to carry out the digital repository.

In addition, new technologies offer the opportunity to centralise all information in a single format, which will be easily accessible to all those who require it.

On the other hand, there is also the possibility of creating a network of agents interested in this issue, and making the Sabiñánigo POPs Reference Centre the focal point for the exchange of experiences and knowledge on HCH and its associated contamination.

4- Weaknesses of the action

One of the main weaknesses of this action may be the difficulty in compiling all the available information on the subject, due to the dispersion of this information. Moreover, it is not only a matter of collecting the information, but fundamentally of organising this information in the right way in order to facilitate its access in a quick and efficient way for stakeholders, which will require time and an appropriate information management and access system.

Another possible threat/weakness could be the lack of awareness of the existence of the Documentation Centre among researchers and companies that might be interested in it, which is why it is essential to carry out an introductory campaign to these agents.

At the same time, it will be necessary to keep an eye on any new information on the subject, so as to always have an up-to-date database and documentation.

Stakeholders and role

There are several stakeholders in this action:

- Research centres/universities: They will be able to consult the information they need, as well as availability for the presentation of future work related to HCH and its remediation.
- Government of Aragon and other bodies (Provincial Councils): Promoter and manager of the funds necessary to create and maintain these documentary facilities, as well as benefiting from the knowledge hub created.
- Sabiñánigo Town Council: Transfer until 9 September 2061 (for 45 years) part of the premises of Pirenarium for the Interpretation Centre.
- Companies specialised in soil decontamination and remediation: The documentation centre will be a key knowledge hub for HCH remediation processes.
- Confederación Hidrográfica del Ebro (Ebro Hydrographic Confederation): It is of interest as an information centre due to the effect of lindane on the river Gállego.

Planned timetable for Action 4

It is estimated that 6 months will be needed for the creation of the documentary collection and the digital repository of information.

- *Activity 4.1 Adequacy of a space for the location of the documentary collection* 90 days
- *Activity 4.2 Establishment and maintenance of a database and repository of publications on HCH* 90 days

- *Activity 4.3 Selection and analysis of documentation, digitalisation* 90 days
- *Activity 4.4 Purchase and/or acquisition of digital material and journal subscriptions* 90 days
- *Activity 4.5 Establishment of an information management and retrieval system* 30 days

Cost of implementing action 4

The estimated cost is €45,000 with the largest initial investment as detailed below:

- Work: adaptation of the space
- Acquisition of publications and documentation.
- Material: Shelving, cupboards, filing cabinets, computers, tables, chairs...
- Creation and maintenance of digital repository.
- Web creation and maintenance with access to the repository.
- Journal subscriptions and conference fees

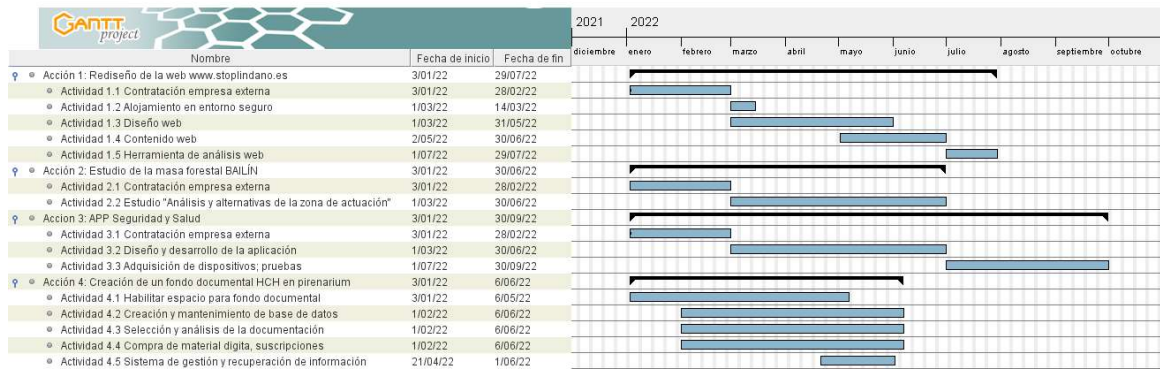
Indicative sources of financing for action 4

Aragon ERDF Fund 2014-2020 and the Government of Aragon's own funds.

Indicators

Implementation of action and equipment.

V. TIMETABLE FOR THE IMPLEMENTATION OF THE ACTIONS



VI. EVALUATION OF THE ACTION PLAN

For the evaluation of the action plan we will focus on analysing the following aspects:

EXECUTION. Degree of development of what was planned: deviations in execution and economic deviations, issues of interest not contemplated.

EVALUATION OF RESULTS AND IMPACTS: validity of the action and impact, degree of satisfaction for stakeholders or lessons learned.

The vision of all the agents involved is fundamental in the evaluation, so the evaluation process will also be a participatory process, as has been done with the design process of the Action Plan, through participatory workshops, which will allow not only to evaluate the implementation, results and impacts of the Action Plan, but will also be a process of learning and proactivity.

The monitoring and quality indicators of the process will also be specified in the evaluation process.

VII. ANNEX I. REFERENCES

INTERREG EUROPE <https://www.interregeurope.eu>

LINDANET. <https://www.interregeurope.eu/lindanet/>

WEB STOP LINDANO: <http://www.stoplindano.es/>

SUSTAINABLE DEVELOPMENT GOALS:

<https://www.un.org/sustainabledevelopment/es/objetivos-de-desarrollo-sostenible/>
Stockholm Convention

ARAGONESE STRATEGY FOR SUSTAINABLE DEVELOPMENT (<https://www.aragon.es/-/estrategia-aragonesa-de-desarrollo-sostenible-1>)

RECOVERY, TRANSFORMATION AND RESILIENCE PLAN
<https://planderecuperacion.gob.es/>

STRATEGIC PLAN FOR INTEGRATED CONTROL OF LINDANE MANUFACTURING WASTE IN ARAGON:
http://www.stoplindano.es/app/uploads/2017/10/PLAN_ESTRATEGICO_LUCHA_LINDANO_201612_v1.pdf

INTEGRAL WASTE MANAGEMENT PLAN (GIRA): <https://www.aragon.es/-/plan-de-gestion-integral-de-residuos-gira-#:~:text=Plan%20Gira%202018%20%2D%202022,-The%20Plan%20GIRA&text=Aims%20to%20minimise%20the%20quantity%20of,%20achieve%20greater%20environmental%20awareness%20.>

VIII. ANNEX II. ACRONYMS

APP	Application for mobile and tablet devices
POPS	Persistent Organic Pollutants
ERDF OP	European Regional Development Fund Operational Programme
GIRA	Gestión Integral de Residuos de Aragón (Integrated Waste Management of Aragón)
HCH	Hexachlorocyclohexane
ITW	Interregional Thematic Workshop
LINDANET	European Network of Lindane waste affected regions working together towards a greener environment
SDGs	Sustainable Development Goals
SO	Specific Objective
SSL	Secure Sockets Layer
EU	European Union
UNIZAR	University of Zaragoza

Date: _____

Name of the organisation: Governement of Aragón

Signature(s) of the representative(s) of the relevant organisation(s):_____