CONDEREFF

Interreg Europe

European Union
European Regional
Development Fund

ACTION PLAN

for Valencian Region, Spain

Construction & demolition waste management policies for improved resource efficiency

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

INDEX

1. General information

Project:	CONDEREFF - Construction & demolition waste management policies for improved resource efficiency
Partner organisation:	UPV - Universitat Politècnica de València
Other partner organisations involved (if relevant):	N/A
Country:	Spain
NUTS2 region:	Valencian Community
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2. Background

2.1. Introduction to CONDEREFF project

Construction and demolition waste (CDW) are the most voluminous waste streams generated in the EU. The European Commission's initiatives in the field of the circular economy, together with the European Union's protocol on waste management in construction and demolition (C&D), have triggered some European regions to improve their waste management policies for more sustainable growth. "CONDEREFF - Construction waste management and demolition policies to improve resource efficiency" project was born in this context with the support of Interreg Europe.

This action plan document is part of the activities of CONDEREFF project, which aims to accelerate policy work on construction waste management and demolition (CDW) and improve resource efficiency in the partners countries through the exchange of experiences, different studies on C&D waste, transferring lessons learned and the implementation of an action plan. The CONDEREFF project brings together 8 partners from 7 countries for the exchange of experiences:

Country	Partner
	Polytechnic University of Valencia (UPV)
	Region of Thessaly (RoT)
	Auvergne-Rhane-Alpes Energy Environment Agency (AURA-EE)
	The Regional Development Agency of the Pardubice Region (RRAPK)
	Italian National Agency for New Technologies, Energy and Sustainable Economic Development Lazio Region (Lazio)
	Styrian Provincial Government – Department 14 – Water management, Resources and Sustainability (STYRIA)
	Institute for Structural Policy and Economic Development (ISW)

2.2. Justification of the action plan activities

The Action Plan aims to improve the policy instruments addressed by each partner in collaboration with their stakeholders (the administrative authorities of the policy instruments in particular) by the following means: directing the funding towards projects that support resource efficiency through C&D waste management, steering the governance towards better achieving of policy goals and by suggesting structural changes. Proposed activities will be implemented and monitored during the 2 years of the second phase of the project and the impact of the action plans will be measured.

This action plan in particular will focus on try to better meet the goals of the current policy instrument and try to introduce tools or methodologies to help achieve this in subsequent amendments of the regional policy instrument.

During the development of the project, it has been possible to identify a list of main problems in the region of Valencia through the regional stakeholder meetings, the workshops and some study and analysis activities. The current situation of CDW in Spain and specifically in the region of the Valencian Community was stated as improvable by the most actors in the construction waste value chain (waste management companies, public authorities, construction companies, professional associations, architects, etc.) who encountered different difficulties in the correct monitoring of the waste generated. In addition, when comparing these problems with the other consortium partners, it was observed that some of them were also problems in their own country as well as that in other countries there are more advanced methodologies to manage them. The problems found were:

- The lack of connectivity between the different participating sectors. The **planner** writes the project and include a Waste Management study. On one hand, it is typical that there is a lack of sources of information or training on CDWs, so the waste management study can be very generalised just to meet the minimum requirements. On the other hand, the lack of control and sanction by the administration and professional associations or collectives, together with the dissemination (and in general, acceptance) of simplified mechanisms or calculus to complete or justify the management of CDW, has led to a lack of interest or concern for this subject. In addition, the planner has practically no communication with the management company, and in cases where he does not assume the direction of the construction work, nor with the construction company.
- After this, the **administration** receives a large number of documents to review and authorize the start of the construction works. This slows the whole process and takes up a lot of administration staff but there is a lack of personnel or means to be able to carry out a correct follow-up and control of the CDW.
- Then, the **construction manager or company** must adapt the Waste Management Study as the work construction progresses, including the modifications and variations that may occur during the execution. This means that, hypothetically, the entire Waste Management Study should be modified, but it implies many changes in the already extensive document. The usual pattern is that this document is not modified and is adapted with the waste management company. In addition, the lack of a clear distribution of responsibilities (even the total lack of it) is the first cause for abandoning the control or monitoring of CDWs. The lack of a clear management plan for CDW and the lack of clear objectives means that the control of CDW is gradually being transferred to the various subcontractors involved in the work.

- The **waste management company** receives the contract from the construction management and does not usually have contact with the planner or with the Waste Management Study. It is simply limited to completing the tasks that the construction manager indicates on site and it is likely that not all the waste generated on site will reach the treatment plant. On the other hand, the waste manager assigned to treat the waste may not have the necessary requirements for the treatment of the different types of waste (machinery, space, waste entry control, etc.). Finally, those waste managers that create recycled construction materials claim a lack of subsidies or incentives for the consumption of recycled products as well as for the proper management of CDW by construction companies.
- Finally, the **administration** must close the process of the construction work, and for this it must review that all current regulations have been complied with. In the case of Waste Management, administration is limited to collecting the delivery notes of the waste management company. The current regulations (PIRCV) include the performance of random audits to verify that the work carried out is correct, however, given the dedication of the technicians and the administration in the review of the projects, it is not possible to carry out so many as to guarantee the general compliance with the regulations being limited only to cases where there has been complaints or allegations.

The following diagram shows the functioning of the traditional system, together with the problems identified for each stakeholder:

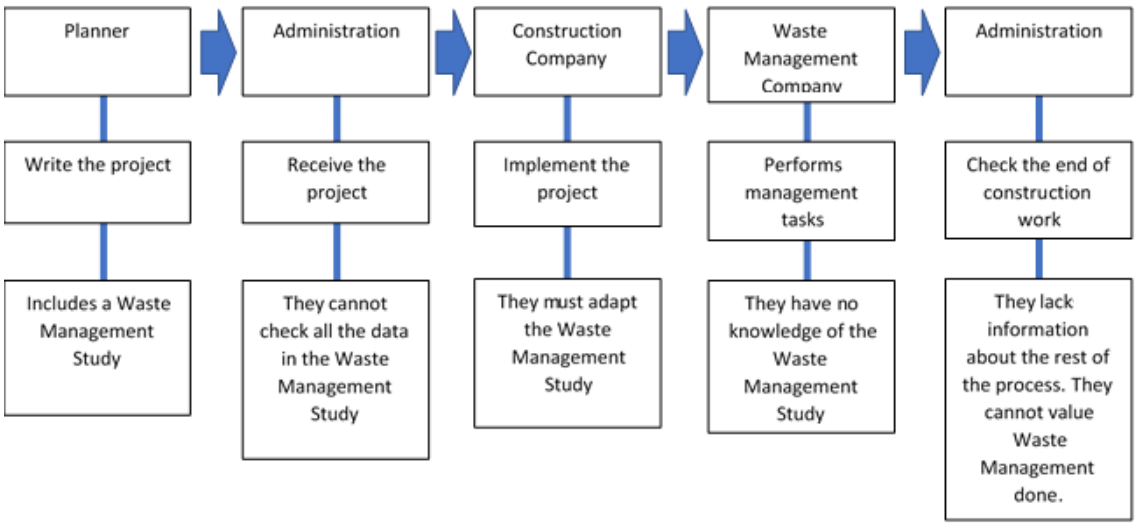

Figure 1 Traditional system on construction Works and problems found in each step

Therefore, the needs to be satisfied could therefore be summarised as follows:

- To allow the traceability of the CDW from the project phase to its final phase: collection from landfill, or even its tracking after treatment and/or transformation into new materials.
- To allow the inclusion or adaptation of a new tool applicable to existing and future regulations.
- To allow its visibility or control at all stages by all users affected, so that, for example, a planner can consult the status of the report in the final phase of construction or check whether the CDWs have been delivered to the correct landfill.

Based on these needs, a series of actions and measures have been drafted in this action plan. The first action will be determined by the implementation of an action protocol based on a digital toolkit which was developed during phase 1 of the project and that will be implemented during phase 2 in two real construction works in some regional towns. This toolkit is mainly designed to get a traceability of the CDW throughout the life of the project and to refine and clarify responsibilities. The objective is to obtain practical conclusions and measure the impact on the fulfilment of the PIRV goals so that it could be presented as a potential tool to be used to the Valencian Regional Government and then, if possible, introduce some structural changes in the policy instrument, which is expected to be updated from December 2022 onwards.

On the other hand, the second action responds to the need to strengthen the links between the actors in the value chain so that together they can better follow the new European directives, which are also reflected in the regional policy instrument. This would be carried out through seminars to provide advice on the knowledge and experience acquired in the project to the agents involved (especially with public authorities and professional associations in the sector).

3. Policy instrument

General Description of the Policy Instrument	
The Action Plan aims to have an impact on:	Other regional development policy instrument
Name of the policy instrument addressed:	DECREE 81/2013, June 21th, of the Department, of final approval of the Integral Plan of Waste by the Valencian Community (PIRCV). [2013/6658] modified after the start of the project to DECREE 55/2019, of 5 April, of the Valencian Council, approving the revision of the Integral Waste Plan of the Valencian Community. [2019/4208]
Geographical coverage of the policy instrument:	Valencian Community
Policy Instrument Responsible:	Regional Ministry for Infrastructures, Territory and Environment
Main features of the policy instrument:	The DECREE 81/2013 is a regional policy instrument aiming to improve the waste management plan of the Valencian Region (PLAN INTEGRAL DE RESIDUOS DE LA C.V. - PIRCV). The purpose of this policy instrument is to establish the general and restrictive provisions necessary for the material and territorial planning of waste management activities in the Valencian Community. It also includes mandatory technical measures and prescriptions necessary to implement those set out in the non-binding planning document, in order to achieve the fundamental waste management objectives, such as the technical standards necessary to guarantee adequate waste management, and the provision of a network of waste management facilities to enable self-sufficiency in the treatment of waste generated in the Valencia Region, taking into account geographical

	circumstances and the need for specialised facilities for certain types of waste. In the material field, the Integrated Waste Plan applies to all types of waste, divided into three groups that respond to the main origins of such waste: domestic and similar waste, industrial waste, and specific waste, the latter group bringing together those wastes that, due to their origin, special characteristics, or particular legislation, deserve a differentiated treatment and analysis. In addition, it aims to be a mechanism for the implementation in the Region of Valencia of the UN agreement of 25 September 2015 on the Sustainable Development Goals (hereinafter SDGs). Among others, goal 11 "Make cities and human settlements inclusive, resilient and sustainable", goal 12 "Ensure sustainable consumption and production patterns" or goal 13 "Take urgent action to combat climate change and its impacts". According to article 27 of Law 10/2000, of 12 December on Waste in the Valencia Region, the PIRCV has the nature of a territorial action plan of a sectorial nature, applying to its approval and modification procedure what is established in the current regulations in force on territorial planning. The PIRCV is committed to the creation of a Consortia Coordination Commission whose main objective will be to exchange experiences and resolve possible conflicts generated between PIR areas regarding the allocation of urban waste in their territorial area, thus cooperating with the Valencian Government in the primary objective of guaranteeing the adequate treatment of all waste generated in the Community.
Other relevant information:	The new State Waste Management Framework Plan 2016-2022 approved by the Council of Ministers' Agreement of 6 November 2015, published in the Official State Gazette on 12 December 2015, requires the revision of the PIR-CV, in order to adapt it to the plan. This allowed the transition to a new waste management model, in line with the hierarchically prevalent management options according to the European Directives. On 5 April 2019, Decree 55/2019 of the Valencian Regional Council was approved, adopting the revision of the Integrated Waste Plan of the Valencian Community. This Decree is focused on the transition towards a new model of waste management based on zero waste and circular economy, therefore betting on prevention in generation, reduction at source, preparation for reuse and quality recycling. It also promotes selective collection so as not to exceed the maximum of 10% destined for landfill set by future directives. Modification related to C&D waste included: -Establishment of a technical normative on the production and management of CDW in the Valencian Community. In addition, the management model will be sectored, so that all areas of the Community

	can have CDW's management facilities complying with the principles of proximity and self-sufficiency. - To receive the municipal works license, the CDW's producer will be required to include a construction and demolition management study in the execution project, which must contain the complete traceability of the CDW waste management. - Hazardous waste that may appear in construction and demolition works, other than minor construction or home repair works must be delivered to an authorized manager for its appropriate management. In the case of hazardous waste that may appear in minor construction or home repair works, these may be delivered to the "ecopark" site for its proper management. CONDEREFF project together with other associations, initiatives and groups of interests at the regional and national scale have influenced in this modification of the policy instrument through the regional meetings and the organization of the 1st CDW workshop in Valencia, which was an important event to discuss about the necessary modifications with the regional government and visualise the opinion of the different stakeholders. Regarding the second modification, the CONDEREFF project has continued working during Phase 1 on the development of a toolkit for the actors of the CDW value chain, but especially for the public authorities to facilitate them the process of verifying the real traceability of the waste beyond the demolition management study. As detailed in the previous section, this will be the focus of the actions of the action plan, in addition to further distributing the intermediate results of the project and visualising the lessons learnt from the exchange of experiences to those actors who have a direct influence on the modification of the policy instrument during the additional meetings of phase 2.

4. Actions

4.1. List of actions

Action 1	**Application of the Toolkit tool for the traceability of C&D waste with support from the administration in different municipalities of the Valencian Community.**
Sub-Action 1.1	Case study 1: Music House acoustic conditioning in Aldaia (Valencia)
Sub-Action 1.2	Case study 2: Construction of the municipal indoor swimming pool in Xabia (Alicante)
Action 2	**Disseminate and provide advice on the knowledge and experience acquired in the project to the agents involved in the CDW management.**

4.2. Detailed actions

ACTION 1	
Action name	**Application of the Toolkit for the traceability of C&D waste with support from the administration in different municipalities of the Valencian Community.**
Relevance to the project	The main relationship of the proposed action with the policy instrument addressed is linked to the need for a differentiated follow-up and analysis according to the type of waste, which implies a sustainable construction, selective demolition and correct monitoring of construction waste from its projection to its management. In addition, the PIRCV is committed to the circular economy and a network that efficiently manages waste, points that should be addressed through the toolkit created by the exchange of experiences of the CONDEREFF Project. The application of the toolkit has two main objectives related to the agents involved in the process of waste generation and management and which have a direct impact on the points to be addressed by the PIRCV: on the one hand to purify and clarify responsibilities, through various review phases in which all those involved are responsible for verifying and checking the data provided, and, on the other hand, to check the traceability of the waste throughout the project process, from the documentation phase to its reception at the plant.
Nature of the action	Dealing with the points addressed in the PIRCV related to the generation and disposal of construction waste, and, in addition, introducing a new verification method involving all actors, the application of the tool developed for the CONDEREFF project is proposed. Its functionality will be tested through **two pilots on construction and demolition projects.**

The first action will be to identify municipalities that can apply the tool to a construction site at source, thus making a simultaneous comparison between the traditional system and the system proposed through the tool.

Once the construction sites have been identified, the tool will be introduced in each of the construction phases involving all actors as defined below:

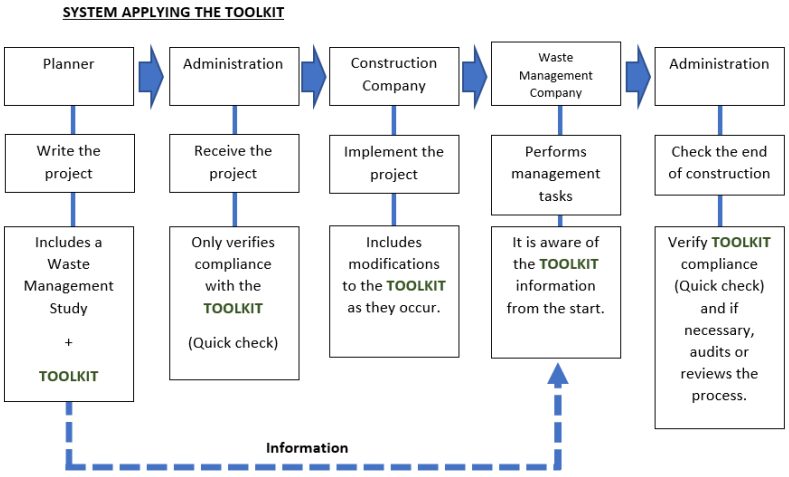

Figure 2: Proposed new system on construction Works

By using the tool, each of the actors involved should take the following actions:

- The **planner** initially selects a management company appropriate to the type of waste generated according to a database. In this way the management companies have up-to-date information on the type of project, estimated amount of waste, etc. In addition, by selecting a management company from a database, it is easier to check the capacities and permits of the different companies, avoiding the possibility of selecting companies that do not have a licence for the transport or treatment of any type of waste.
- The **administration** only makes a review of a table. It must check that deviations of more than 10% must be justified, and that all waste can be transported or treated by the selected company/companies. This review does not require specialised personnel in Waste Management, and can be carried out by any administrative staff.
- The **construction company** should introduce and mark in the toolkit (if needed) changes on site quickly and easily. At the same time, they have a summary of the estimated quantities of waste to be generated, making it easier to control them.
- The **waste management company** is informed in advance of the volume of waste generated at the work site and they can better organise the work and waste treatment. It collects data on partial deliveries and allows the waste collected to be

	tracked until it is taken to the plant, or even after treatment. Furthermore, thanks to the toolkit's database, it has already been verified that all companies comply with the relevant licences to collect, transport and treat the indicated waste. • Finally, the **administration** again performs a compliance review of the toolkit, checking that everything in the table of the toolkit is correct. If it is not correct, the Waste Management technician can audit the process (in this case there is no longer saturation of the technicians as the initial general review has been streamlined). In order to properly explain the functioning of the toolkit, a specification guide was developed in the CONDEREFF project and is available. Once the tool has been tested in the different works with the agents involved, a report will be drawn up compiling all the information, benefits obtained and possibilities for improvement. The ultimate aim of this action is to test the functioning of the tool so that it can be introduced as a possible improvement in the PIRCV
Stakeholders involved	For the testing of the tool, it will be applied to two construction works to be carried out by local municipalities. The aim is to involve all the agents participating in the process of the construction work in each of its phases: planning, control, construction, management and closure. Therefore, it is necessary to focus on construction works starting as soon as possible and executing the complete work within the second phase of the project (until May 2023) to validate the performance of the tool.
Timeframe	The estimated time period to properly follow up this action and report the necessary conclusions is estimated to extend until the end of phase 2 (May 2023). For this purpose, two works of different character have been selected: a small refurbishment in which to carry out a first test of the toolkit, and a larger construction work of longer duration.
Indicative costs	To obtain the estimation of the total cost, it shall be calculated as the sum of the staff cost for each of the construction sites where the toolkit will be implemented. It will be considered that two senior experts from the UPV team will carry out the corresponding follow-up and monitoring of the application of the toolkit, providing support to the agents involved in each of the construction phases. It is estimated that two senior experts will work on the monitoring and implementation of the toolkit about 5 hours per month. Costs will be as follows: • 6-month project: 1.072,5 €

	• One-and-a-half-year project (18 months): 3.396,25 € The total cost of this action will therefore amount to 4.468,75 €. The cost will be assumed by the organisation itself.
Indicative funding sources	NA
Dissemination and communication	The dissemination of this action will be carried out through regional newspaper, the CONDEREFF website, as well as the proper website of the companies involved. Local municipalities will also be able to disseminate news about their participation in the project and the introduction of the toolkit to improve the traceability of construction waste.
Monitoring the action	The different agents involved in each of the phases of the toolkit must report the necessary information, always being advised by a technician (from UPV) to facilitate the use of the tool. The agents involved are: - City council technician (main contact). - UPV staff in charge of requesting information and monitoring. - Construction company - Management company - Public Administration
Case study 1: Music house acoustic conditioning in Aldaia (Valencia)	
Name of the sub-action	***Acoustic conditioning of a rehearsal room in the house of music in Aldaia (Valencia)***
Description and expected results	*This is a small project focused on the acoustic conditioning of a music rehearsal room, for which it is planned to cover walls, modify the geometry of the ceiling, move partition walls, modify the positioning of the seats and change the interior carpeting.* *All the documentation for the project has been submitted to and approved by the city council, so it is expected to start within a short period of time.*
Stakeholders involved	*The main parts defined to monitor the implementation of the toolkit are:* - *UPV: Application of the tool, monitoring and support.* - *Constructora San José S.L.: Construction company* - *Aldaia Town Council: Contracting party* *The other parties involved, for example in the management of waste generated, remain to be defined.*
Timeframe	*As for the expected timeframe for the work, the drafting phase is expected to start in October 2021. The execution and management phases will take place until approximately January, with the final completion of the works scheduled for March.* *The total expected duration of the work is around 6 months.*

Indicative funding sources	*The necessary funds are covered by the organisations themselves.* It is estimated that a senior expert will work on the monitoring and implementation of the toolkit about 5 hours per month. Costs will be as follows: • 6-month project: 1.072,5 €
Monitoring the action	*For a proper follow-up of the action, a continuous communication via e-mail with each of the parties, mainly with the municipality and the construction company, is expected. In addition, a contact person will be established to allow fluid communication (by mobile phone, in situ, etc.) between the UPV and the construction site, in order to make the transfer of information more efficient and provide the necessary assistance.*
Case study 2: Construction of the municipal indoor swimming pool in Xabia (Alicante)	
Name of the sub-action	***Execution of the construction works of the municipal indoor swimming pool in Xàbia (Alicante)***
Description and expected results	*This is a larger scale project, the present construction work is intended to complement and extend the sports facilities in the town of Xàbia (Alicante) by constructing an annexe to the existing sports centre which will house 2 indoor swimming pools on the ground floor, the main one measuring 25 x 12.50 m with a capacity for 105 people and another learning pool measuring 12.50 x 10 m with a capacity for 42 people.* *It will have 3 floors, ground floor, first floor and a basement.*
Stakeholders involved	*The main parts defined to monitor the implementation of the toolkit are:* - *UPV: Application of the tool, monitoring and support.* - *Contratas Vilor S.L.: Construction company* - *Xàbia Town Council: Contracting party* *The other parties involved, for example in the management of waste generated, remain to be defined.*
Timeframe	*The work will start on 27/09/2021. The construction project is expected to be finished by April 2023.*
Indicative funding sources	*The necessary funds are covered by the organisations themselves.* It is estimated that a senior expert will work on the monitoring and implementation of the toolkit about 5 hours per month. Costs will be as follows: • One-and-a-half-year project (18 months): 3.396,25 €
Monitoring the action	*For a proper follow-up of the action, a continuous communication via e-mail with each of the parties, mainly with the municipality and the construction company, is expected. In addition, a contact person will be established to allow fluid communication (by mobile*

	phone, in situ, etc.) between the UPV and the construction site, in order to make the transfer of information more efficient and provide the necessary assistance.

ACTION 2	
Action name	**Disseminate and provide advice on the knowledge and experience acquired in the project to the agents involved.**
Relevance to the project	This action is linked to the commitments referred to in the PIRCV policy instrument. On the one hand, it highlights the need to exchange experiences for continuous improvement and dialogue between administrations as an instrument for coordinating and implementing solutions. For this reason, the PIRCV intends to create a Consortia Coordination Commission to, among others, guarantee the adequate treatment of waste in the Community. In this sense and through this action, the aim is to influence this commission, specifically for construction and demolition waste, by reporting on the results obtained through the project. On the other hand, the PIRCV also specifies the creation of a public outreach and information programme to ensure that citizens and social agents take responsibility for both the generation and proper management of waste, and develop the capacity to constructively debate and discuss the waste management model. Therefore, the aim of this action is to raise awareness in society and, in particular, among the agents involved, of the relevance of construction and demolition waste management. Furthermore, the idea is to influence with the results obtained from the pilots of the previous action (case study 1 and 2) the modification of the PIRCV after the change of the State Waste Management Framework Plan in force until 2022.
Nature of the action	This action consists mainly of organising training meetings on the basis of the information obtained from the project. For this purpose, specific seminars will be organised through the Professional Associations (Architects, Engineers in their different specialities) and groups of Companies in the Sector, in which the information available in these groups (theoretical or legal aspects) will be reviewed and updated, some good practices will be presented and then the implementation of measures, resources, computer tools, etc., will be proposed in order to carry out a more correct management of construction waste. From this point onwards, contact will be made with stakeholders, representatives of local councils and municipal technicians, apart from those who already have some contact (through project activities such as regional meetings, workshops, etc.), starting with small or medium-sized towns, who can explain how they manage construction and demolition waste and how they think they could improve it. Through surveys at these seminars, the opinions and sensitivities of the parties involved are gathered in order to increase the

	knowledge of construction and demolition waste management. In addition, it is also expected to raise awareness of the use of the tool and the benefits obtained after its application. Basically, this action aims to achieve results at two levels: At a general level it aims to collaborate with representatives of the Administration, Companies, Technicians and other interested parties to improve the situation of construction or demolition waste management, with personalised or specialised advice. On a specific level, the aim is to influence future proposals to modify or update local regulations (specifically the PIRCV). In order to achieve these results, it is proposed to hold a total of **three meetings** (one per semester), with the aim of bringing together **10 relevant experts** who can influence the above-mentioned points. The estimated total **number of surveys** will be **30**, from which information will be collected to measure the knowledge gained.
Stakeholders involved	The main agents involved in this action will be, on the one hand, those related to the UPV who will prepare the meetings and lectures. On the other hand, all those who are going to be instructed: technicians from local councils and the administration, construction companies, waste managers, developers, property administrators, etc.
Timeframe	The schedule starts from November 2021 to May 2023 in order to be able to organise meetings with the different actors in advance, and to be able to report on the conclusions drawn from Action 1.
Indicative costs	The necessary costs will be assumed by the UPV. It is estimated that the costs of preparing the meeting (staff time, facilities, etc), inviting experts, dissemination material and processing survey data could be in the range of €900 per meeting. So that if there are three meetings these could reach the amount of 2.700,00 €.
Indicative funding sources	NA
Dissemination and communication	Communication with the different parties involved will be done through social networks, as well as through previously established contacts. The information obtained will be disseminated through social media, the CONDEREFF website, the UPV website and regional newspapers.
Monitoring the action	Follow-up meetings will be held at the UPV, the knowledge acquired will be evaluated through surveys.