

Environment, Climate Change and Low Carbon Economy Programme

'Environment Programme'

European Economic Area (EEA) Financial Mechanism 2014-2021

Final Report

21/01/2022

03_CALL/SGS#2 - CLOSER – Close to Resources Recovery

Accordingly, with the Articles 25.2.j) and 29.4 of the 'Applicants Guide for Financing of Projects Supported by Environment, Climate Change and Low Carbon Economy Programme'

https://www.eeaqrants.gov.pt/media/2994/applicants-guide-for-financing-eea-grants_environment-projects_28112019.pdf

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i. Detailed description

a) Summary of activities

According to the proposal submitted to the call *Development of standards in the Construction Sector that promote the Circular Economy*, SGS#2, of the Environment Programme, the implementation activities for the development of the CLOSER Project – *Close to Resources Recovery* the tasks are as follows:

- i) T1 – Project Management;
- ii) T2- Conceptual Framework;
- iii) T3 – Stakeholders Survey;
- iv) T4- Portuguese Guide;
- v) T5 – Pilot Case;
- vi) T6 - Implementation politics;
- vii) T7-Dissemination.

A summary of these tasks is given hereafter:

Project Management (T1), is a task coordinated by LNEC, aimed at the overall management of the Project, general partnership policies, arbitration policies, information exchange plan and disclosure policy, discussion of the results obtained, and problems encountered, control planning and results, general technical coordination and meeting preparation. This task comprised: i) Collaboration of team members, which was developed mainly through meetings; ii) Hiring a scholarship holder; iii) Website definition and structuring; iv) Monitoring the website and social networks (Twitter and LinkedIn); v) Hiring a ROC for certification of Project expenses; vi) Proposal for the acquisition of computer equipment to perform the CLOSER tasks; vii) This activity was also complemented by sharing information via email and telephone contacts whenever it was considered important; viii) Contacts with stakeholders to implement task 5; ix) Meeting with representatives of other projects to discuss symbioses.

The good integration of the contracted grant holder, Seyed Rezvani, and the effective development of the tasks allowed an exchange of opinions and a very continuous analysis of the project development between the partners. It should be noted that the guarantee of good communication between the various partners and the Project leader, as well as the internal communication process in the entity promoting the Project, played a fundamental role in guaranteeing the synergy necessary for good teamwork. It is a task that was always, and continuously, interrelated with all the other tasks of the Project.

Conceptual Framework (T2), is a task coordinated by LNEC, whose main objective was to collect information on European and international experiences, concerning the use of pre-demolition audits before demolition and/or rehabilitation of buildings, with particular emphasis on the inventory of materials, presence of hazardous substances in the construction sector and competence of the involved stakeholders. It comprised: i) Analysis of policies and legislation; ii) Practice in several countries: Norway, Austria, Finland, among others; iii) Preliminary list of options to be included in the Portuguese Guide for Pre-Demolition and/or Rehabilitation Audits

Stakeholder Survey (T3), a task coordinated by IMPIC, aimed to understand the opinion of stakeholders on the integration of pre-demolition and/or rehabilitation audits as a tool that leads to the achievement of having safer secondary raw materials, achieved by careful removal of dangerous substances or materials containing hazardous substances, and with quality improved, due to better segregation of materials, which leads to lesser production and allows a higher recovery rate of materials from construction and demolition waste (CDW) in the

construction sector. This task included: i) Elaboration of the survey to listen to the interested parties regarding the practices used to enable the subsequent application of the materials obtained from CDW; ii) Contact with different entities with a view to wide dissemination of the survey; iii) Sending the final version of the questionnaire to interested parties, in Google Forms, for response; iv) Analysis and dissemination of the results obtained. Regarding companies in the construction sector, the survey was sent by IMPIC to 40000 companies. The survey responses were accepted until the end of April and 680 responses were considered valid.

Portuguese Guide (T4), a task coordinated by LNEC, comprised the development of a national guide for pre-demolition and renovation audits, PDA. The Pre-Demolition Audit Guide presents requirements on the execution of PDA to be carried out ahead of the licensing of demolition activities and on the competencies of auditors, building owners and other interested parties in the process. It also includes a glossary and relevant information on the reuse of materials and recycling of construction and demolition waste, as well as the list of hazardous substances likely to be found in the demolition of buildings. The guide comprises: i) Introduction; ii) Classification of construction and demolition waste; iii) Legislation and rule enforcement; iv) Roles and responsibilities; v) Audit of pre-demolition waste; vi) Pre-demolition waste audit requirements; vii) Waste management; viii) Models for reporting information to be included in PDA reports based on the guidelines established in the EU CDW Management Protocol, in the Guidelines for waste audits before demolition and renovation works of buildings and in the project LEVEL(s)], as well as good practices from the other Member States.

Pilot Case (T5), a task coordinated by LNEC, concerns the monitoring of case studies of demolition of buildings and the application of the requirements established in the PDA guide. Considering the expected start of this activity, a consultation was carried out with the entities that have expressed their willingness to collaborate with the CLOSER project (T3) to find out if they had any works planned and that could be followed up with a PDA. Within this context, the company Infraestruturas de Portugal, IP, presented as a possible case study some buildings to be demolished as part of the contract for upgrading the western railway line, *Modernização da secção Mira Sintra-Meleças - Torres Vedras (excl.) da Linha do Oeste*. The case studies indicated were the Covered Pier of Malveira, the Level Crossing Building (shelter) and also the Dois Portos Station. Thus, in August, the process of the Covered Pier of Malveira PDA was initiated with the

elaboration of a draft version of the report of the PDA that was analyzed in a meeting with the IP.

Implementation Policies (T6) aimed to define an alignment between all the activities developed in the Portuguese Guide with the existing policies related to the management of CDW, as well as proposing amendments to the current legislative framework for the successful implementation of the guide. This task was coordinated by the APA and in the future should incorporate additional stakeholder consultations, namely with representatives of related research projects. Due to the change of government and legislative elections at the beginning of 2022, it was not possible to start the process of amending the existing legislation for CDW in Portugal and therefore the foreseen policies for the implementation of the guide are on standby.

Dissemination (T7), a task coordinated by LNEC in which from the beginning of the CLOSER project all the partners were committed to transferring and sharing knowledge to the scientific community, stakeholders, students and the general public.

During the period under review, this task comprised: i) Public presentation of CLOSER at the conference Jornadas LNEC 2020 on the subject *Circular Economy: Building the Future*; ii) Development and presentation of the Project's image at the November 26th follow-up session, promoted by the General Secretariat for the Environment and Climate Action; iii) Structuring, development and monitoring of the website and social networks; iv) Preparation of the e-flyer and quarterly newsletters; v) Preparation of disclosure presentations; vi) preparation and holding, on June 21st, 2021, of the 1st Webinar of the CLOSER Project *Pre-Demolition Audits: Built to Unbuild*; vii) Preparation and submission of two scientific papers for the national conference REABILITAR-BE2021 and international conference CEES 2021; viii) Participation in the Summer Course School of Re-construction (SoR-c) organized by the Brighton School of Architecture and Design; ix) Participation of project members in the Webinar "Towards the circular economy: What is being done in Portugal", promoted by EConnect Portugal on the 13th of September; x) Participation, on September 24th, in the *European Researchers' Night 2021* at Jardim do Príncipe Real, with a quiz aimed at young people, on the theme *HOUSES: dangerous substances in our homes?*; xi) Preparing an article for an international journal; xii) Preparation and realization, on November 22nd, 2021, of the Final Seminar entitled *Pre-Demolition Audits: Step by step*.

The LNEC team also participated, during the Project, in meetings with EEA Grants, namely: i) 1st follow-up meeting - SGS#2 Projects - Standard Projects in the Construction Sector, on 16 October 2020; ii) Communication and Social Media Training - October 26th, 2020; iii) Follow-up Communication and Social Media - November 26th, 2020; iv) 2nd General Monitoring Meeting - SGS#2 Projects - Standard Projects in the Construction Sector, on January 21st; v) 3rd General Monitoring Meeting - SGS#2 Projects - Standard Projects in the Construction Sector, on May 6th, 2021; vi) 4th General Monitoring Meeting - SGS#2 Projects - Standard Projects in the Construction Sector, on September 8th, 2021.

The schedule of the different tasks have had some adjustments along the project and the final Gantt chart is presented below.

ID	Name / Designação	2020			2021										
		out	nov	dez	jan	fev	mar	abr	mai	jun	jul	ago	set	out	nov
T1	PROJECT MANAGEMENT														
T2	CONCEPTUAL FRAMEWORK														
T3	STAKEHOLDERS SURVEY														
T4	PORTUGUESE GUIDE														
T5	PILOT CASE														
T6	IMPLEMENTATION POLICIES														
T7	DISSEMINATION														

These adjustments were linked to the delay in hiring the grant holder and the need that him to become acquainted with the theme of the project. To recover this delay some tasks were initially developed simultaneously and this approach proved to be ineffective. It should also be noted that the planned schedule was also delayed due to the pandemic.

b) Information regarding the involvement of partners, regarding partners from Donor Countries

The CLOSER project did not have partners from Donor Countries. However, it was decided to search for the regulations applicable to stream construction and demolition waste in the Donor Countries, Iceland, Liechtenstein and Norway. Considering that Norway provides better recycling rates of CDW than those achieved in Portugal it was opted to include information about regulations and practices used in that country.

Although it was thought through the project development that it could be possible to have a joint action with Donor Countries to disseminate their practices for CDW management, the

short duration of the project did not allow it to occur. This would certainly be an added value to the CLOSER project.

c) Information regarding the Project's participants

The participants in the Project (LNEC, IMPIC, APAP) always have had an active collaboration. However, the tasks started with a delay due to the late hiring of the grantee and the other reasons highlighted in the summary of activities and it was necessary to apply for an extension of the duration so that it was feasible to complete as much as possible the proposed objectives.

Internal meetings were held at LNEC between the members belonging to the Materials Department and the Building Department and individual contacts were made with the heads of the partner entities involved to suggest, define and evaluate the proposals presented by the promoter or by the partners for the different tasks of the CLOSER. The strategic definition and optimization of the participation in the different tasks of the project were always being optimized throughout the whole project duration.

ii. Results achieved

Avaliação dos resultados do Projeto (em cada momento de reporte, incluindo possíveis desvios ao cronograma e ao orçamento) em termos de:

a) Activities

As mentioned before there were changes in the chronogram initially proposed for the development of the CLOSER. Unfortunately, these changes have had some influence on the development of the tasks. Namely, it was only possible to apply the pre-demolition audit inventory to one case study instead of a higher number of building demolitions or rehabilitations. On the other hand, it was not possible to send the final version of the pre-demolition audit guide to those stakeholders concerned with its content. Nevertheless, this situation will be remedied after the end of the project with a consultation and future publication of an updated version of the guide.

The results obtained in the different activities are described below:

T1- Project management – The technical management of the project continued with intense interaction between the promoter's team and the partners. Several project meetings were held

between partners (minutes of the meetings can be found in ANNEX 1) and were also held with the General Secretariat for the Environment. In addition, frequent individual contacts between partners allowed to analyse specific issues and to achieve common agreements.

Throughout the project, the activities developed have been described in quarterly reports. The appraisal of these reports by the General Secretariat for Environment resulted in improved reporting and, at the same time, a stronger relationship with the Environment Programme Operator.

Regarding the shortcomings observed during the management of the CLOSER, it should be noted that in a project with a one-year duration it was difficult to respond on time to the quarterly report requests as there were several project activities underway. Additionally, there were some constraints to collecting the documents to request the payment of the funding which are assigned to the General Data Protection Regulation.

T2 – Conceptual Framework – The activities of this task have given rise to the elaboration of the R2 report. This report presented the requirements for pre-demolition audits of some EU member states as well as from Norway. The collected information in association with relevant European documents and policies concerning CDW management was the basis for the Portuguese guide for PDA in buildings.

It should be mentioned that regarding the reporting of PDA, the models proposed at the European level for these audits, and included in the R2 report, were not those that have been adopted by the CLOSER project in the Portuguese guide for PDA. It should also be noted that the actual trend of reusing materials, lowering the environmental impacts when compared to recycling, was addressed in R2 by giving information on platforms from the other EU Member States that operate in this area.

Furthermore, the R2 report includes the list of the 18 main chemical groups of hazardous substances to be taken into account in the construction sector, as well as a detailed list of hazardous substances included in these groups, thus fulfilling Indicator 2 of the CLOSER project. A list of hazardous substances and their association to the materials/elements where they can be found in buildings is also included, which fulfils Indicator 3 of the CLOSER project.

T3 – Stakeholders Survey – Through this task, a set of questions addressing the current practices in Portugal when building demolition is performed was formulated and discussed by all the

CLOSER partners before developing the survey using Google Forms. The survey also intends to have an in-depth knowledge about the relations between the characteristics of the demolition companies, its commitment to training and to ensure the appropriate quality of the materials recovered during demolition or rehabilitation to maximize their value.

The disclosure was made by the promoter and partners and also by the Order of Engineers, Order of Technical Engineers, AECOPS - Association of Construction Companies and Public Works and Services, AICOPA-Association of Civil Construction and Public Works Industries of the Azores, ANIPB - National Association of Concrete Precast Industries, APPC - Portuguese Association of Designers and Consultants, AEPSA - Association of Portuguese Companies for the Environment Sector, Platform for Sustainable Construction and ASWP - Smart Waste Portugal Association.

The questionnaire was sent to the interested parties and the analysis of results, which were partially presented in the 1st webinar of the project, are the subject of the R3 report. In this survey, a total of 680 valid responses, for an approximate population of 40000 companies, were collected and for a confidence level of 98% the margin of error of the answers is estimated below 5%.

For the analysis, the data set collected was divided taking into consideration the existence of two types of questions: closed and open questions. The analysis of the answers to closed questions was in general carried out by applying filters to the possible answer options. For the descriptive responses to the open-ended questions the Yake Natural Language Processing (NLP) program, that uses artificial intelligence (AI), was used to collect the important keywords repeated among the participants' answers as well as analysing patterns of 2- and 3-word sets. This approach allowed about 90% of the information to be analysed automatically. Manual analysis of the information contained in the 10% of answers not analysed by AI was carried on.

The indicator assigned to this task, I4 – List of current practices for sorting the Construction and Demolition Waste (CDW) fractions, is included in the R3 report based on the answers to the survey. This indicator shows that in general there is a greater preference for recycling than for reusing which highlights the potential for improving the reclaiming of materials. Nevertheless, for fractions like concrete, tiles, bricks and wood both practices have similar results. It should be

noted that reuse of concrete and bricks, being unusual, may indicate that survey participants have not properly internalised the concept of reuse and recycling.

T4 – Portuguese Guide – The Portuguese Guide for Pre-Demolition Audits of buildings is the subject of the R4 report and corresponds to the indicator I5 of the project CLOSER. It is the main objective of this project because it fulfills the objective of the “Small Grants Scheme #2 – Projects for the development of standards in the Construction Sector that promote the Circular Economy”, i.e., it is a guidance for the construction sector aimed at expanding the implementation of circular economy principles. The models on the PDA guide regarding the inventory are in line with the recent European framework for sustainable buildings Level(s).

At this moment the PDA guide does not include the limit established in Portugal for its application on demolition and rehabilitation of buildings because this limit will be defined in terms of the implementation policies to be developed in the near future and it is expected that a public consultation will be held on this subject.

Besides the information regarding the development of the inventory of existing building materials and construction elements and because it is relevant for this assessment, the information on possible hazardous substances in buildings that was collected during the preparation of the R2 is included in the R4 report.

In what concerns the need to point out for the feasible destination for the materials and elements listed in the inventory, the PDA guide presents a first set of factsheets for different materials and the applications of reuse and recycling. This set should be updated and expanded based on real situations. More specifically, the symbiosis between the project CLOSER and one task of the project 08_Call#2_(Des)construir para a Economia Circular, also funded by EEA Grants, will result in a fruitful collaboration: the application of the CLOSER guide to case studies of the (Des)construir para a Economia Circular in the near future will allow the guide to be improved through the detection of shortcomings.

T5 – Case study – The R5 report presents the case study of the CLOSER project. Although initially it was expected to have more than one case study this was impossible to carry out due to the short duration of the project.

After the desk study, the development of this case study involved several visits to the site, the Cais Coberto da Malveira, to do the inventory and to follow the removal of asbestos. These

visits also included meetings with the construction owner and the supervision where it was discussed the strategies to recover the materials and the construction elements.

The indicators related to this task aimed at quantify the improvements on the recovery of CDW with and without application of the CLOSER guide for audits – I6, the benefits regarding environmental indicators – I7 and the decrease of hazardous substances in CDW stream – I8. The results achieved in this case study allowed to estimate that new destinations were assigned to the inventoried materials increasing their recovery, as described in report R5. In what concerns to the presence of dangerous materials, there was no improvement because the construction owner had already made an asbestos survey to be removed and contracted the asbestos removal with a company certified for this type of work before the inventory *in situ* of CLOSER was carried out. Nevertheless, it was analysed within the scope of this case study of the CLOSER project the possible contamination of timber beams that rely near the asbestos panels. The scanning electron microscopy (SEM) analysis did not detect the presence of asbestos fibres and possible asbestos contamination was ruled out. Regarding the environmental benefits an estimation was performed using a tool developed within the project 04_SGS#2_Edificios Circulares, also funded by EEA Grants. It should be mentioned that the results achieved are not representative of the improvements that can be expected with the implementation of the guide because they are based on a single case study and the typology of the building is not the most common, its use is only for storage of old materials.

Taking into account the symbiosis with the project (Des)construir para a Economia Circular, also funded by the EEA Grants, it is hoped that the feedback received by the application of the PDA guide, developed within the CLOSER project, to new case studies will allow CLOSER to improve and fill some gaps that may exist in the guide as well as having data for estimate I6, I7 and I8 and see the compliance of these indicators with the established targets.

T6 – Implementation policies – The R6 report presents the policies that must be into force to implement the Pre-Demolition Audit guide. To this end these policies should be the subject of a wide-ranging consultation to the different stakeholders. Receiving input from these entities will make possible to improve these policies aiming at promote better procedures for deconstruction of buildings and recovery of the materials and construction elements.

The R6 report include a table highlightinh the changes in the actual legislation that must be done to implement the Portuguese guide thus responding to the requirements set out in indicator I9, i.e., a “list of policies and deadlines to implement at national level the Portuguese guide for pre-demolition audits”. Unfortunately it was not possible to fix a deadline due to unexpected change of Portuguese Government that coincided with the end of the project. Regarding the indicator I10 it will only be possible to quantify the impact of the policies on the increase of separated flows of materials in CDW in the future.

T7 – Dissemination – The dissemination of the project lead to the development of the project's website and the presence of the CLOSER project signaled through several posts on the social networks LinkedIn and Twitter. On the social networks of the project promoter and on those of the EEA Grants, posts from CLOSER were also shared. There was a good implementation of CLOSER in LinkedIn

b) Results

Indicators

Below there is the list of indicators and the proposed targets. For each indicator the results achieved are presented

Indicador / Indicator	Unidade / Unit	Meta / Target	Fonte Verificação / Verification Source
I1 - Execution of the project CLOSER	%	100	Verification through the data reported in R1 to R7
I2 - List of key hazardous substances I3 - List of possible building materials containing hazardous constituents	un	2	Verification through the data reported in R2
I4 - List of current practices for sorting CDW fractions	un	1	Verification through the data reported in R3
I5 - Guide for pre-demolition audits	un	1	Verification through the data reported in R4
I6 - Estimate recovery of CDW (reuse and recycling activities) with and without application of the CLOSER guide for audits I7 - Estimation of benefits regarding environmental indicators, namely emissions of GHG I8 Estimate the decrease of hazardous substances in CDW stream	% % %	10 % increase 10% decrease 50% decrease	Verification through the data reported in R5
I9 - List of policies and deadlines to implement at national level the Portuguese guide for pre-demolition audits I10 - Increase of separated flows of materials in CDW after CLOSER implementation to improve circularity	un %	1 decrease of mixed CDW 30%	Verification through the data reported in R6
I11 - Number of scientific papers I12 - Number of participants in the conference and workshops as an indicator of the relevance of this project	un %	2 100	Verification through the data reported in R7

I1- Execution of the project CLOSER:

The R1 report corresponds to this final report of the project and to assess compliance of I1 to the target 100% requires to take into account the success of all the tasks, whose results are incorporated in the project reports R2 to R7, as well as achieving the proposed indicators. As can be seen the tasks were completed, except task T6 and the target for three indicators were not achieved, namely: there was no increase of hazardous waste removed from CDW due to the particularities of the case study, the deadlines to implement pre-demolition audits do not exist owing to the political situation and the increase of separate flows after audits could not be assessed due to lack of implementation. Therefore, at the end of the CLOSER project, the technical execution is 85% due to the difficulty in estimating the indicators and the lack of implementation of the guide that largely dependent on political will.

I2 - List of key hazardous substances: contained in R2 and R4

According to the Living Institute the main dangerous substances that can be found within the construction sector can be grouped into 19 substances sets , which represented more than 1000 compounds in 2021 in the so-called Red List, which are listed in Portuguese and English in the report R2.

Groups of chemical compounds

Alkylphenols and related compounds
Antimicrobials
Asbestos and related compounds
Bisphenol A (BPA) and structural analogues
California based solvents
Chlorinated polymers
Chlorobenzenes
Chlorofluorocarbons (CFC) e Hydrochlorofluorocarbons (HCFC)
Formaldehyde (added)
Monomeric, polymeric and organophosphate halogenated flame retardants (HFRs)
Organotin compounds
Perfluorinated and Polyfluorinated Alkyl Substances (PFAS) / Perfluorinated Compounds (PFCs)
Phthalates (and orthophthalates)
Polychlorobiphenyls (PCB)
Polycyclic Aromatic Hydrocarbons (PAH)
Short-chain and medium chain chlorinated paraffins
Toxic heavy metals
Volatile Organic Compounds (VOC) in wet applied products
Wood treatments containing creosote or pentachlorophenol

Certainly, asbestos is the best known dangerous substance in the construction sector because for many years it has been used for different purposes in buildings. As there is a growing concern with public health and the environment due to the presence of contaminants, an awareness raising action was carried out for a young population, on the European Researchers' Night, regarding the presence of dangerous substances in our homes



I3 - List of possible building materials containing hazardous constituents: contained in R2 and R4

The list linking dangerous substances with construction materials and elements where they can exist is shown below. In the extended version (report R2) the table also includes the code of the European Waste Catalogue for the waste flow, the legal requirements applied in Portugal and recommendations on handling these materials.

Substance	Where can be found (material/element)
Coal tar	Roofing felt, Damp proofing membranes

Substance	Where can be found (material/element)
Asbestos	Acoustic hard tiles, Fire doors (insulation) Etenit tiles or panels Paints and fillers Parapets Spark protection for electrical installations PVC floor coverings Insulation with sprayed asbestos (e.g. around steel constructions) Insulation material, e.g. around heating and cooling pipes Adhesive and mortar for tiles Vapour barrier insulation Sealants in boiler and piping systems Tar glue, e.g. on floors Sealants around sheet metal ventilation ducts Eternit ventilation ducts and other asbestos-containing products
Arsenic	Wood impregnated with preservative under pressure
Cadmium	Plastic wastewater pipes with cadmium Electric cables in yellow, orange and red tones PVC floor coverings in light shades of yellow, orange and red Tiles (and other glazed ceramic materials) in light shades of yellow, orange and red. Nickel-cadmium batteries
CFC, HCFC, HFCs	Refrigeration and freezing units (CFC, HCFC as cooling media) Refrigeration plants and air conditioning units (CFC, HCFC, HFC as cooling media)
CFC	Cellular plastic insulation (in floor coverings, insulation in walls and floating floors, refrigerators and freezers, cold rooms)
Lead metal	Lead in electrical cables Leaded glass Leaded brass and bronze Lead foil shielding against radiation Lead sheath and cable shielding Gaskets in tubes (lead packaging)

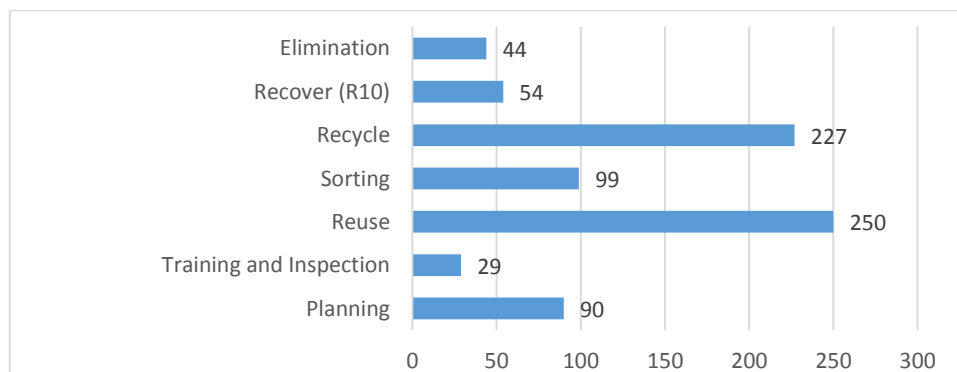
Substance	Where can be found (material/element)
Lead contaminants	Jointing compounds (Dry) paint layer that may contain lead (white lead, red lead, etc.) Tiles and roof tiles with lead glaze PVC pipes (e.g. waste water pipes) containing lead stabilisers PVC crossings
Copper metal	Copper cables Copper pipes
Copper contaminants	Wood impregnated
Volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), very volatile aldehydes and ammonia	Flooring, particle board, wall and ceiling finishes, wood-based panels and sealants, solvents, paints, adhesives
Creosote	Impregnated wooden sleepers
Chromium metal	Surface treatment of metal
Chromium contaminants	Impregnated wood
Halons	Fire extinguishing equipment containing halons
PAH Bituminous mixtures	PAH Bituminous mixtures PAH Insulation filler
Mercury	Deposits in wastewater pipes. Batteries Components in fixed installations that are not covered by producer responsibility. Fluorescent lamps, compact fluorescent lamps Electrical installations and instruments
Oil, coal tar, etc.	Cables
Oil	Concrete contaminated with oil
Chlorinated paraffins (chlorinated polymer group)	Compounds used in jointing and sealing of insulated glass PVC floor coatings, safety floorings
PCB	Floor coatings, Jointing compounds Window sealants Condensers PCB Concrete, etc. with PCB as contaminants
Dry rot	Wood attacked by dry rot

Substance	Where can be found (material/element)
Pests	Wood attacked by pests
PVC.	Plastic coating, sealing membranes, etc.
Radioactive substances	Fire detectors
Radon	Concrete
Brominated flame retardants	Cellular rubber insulation (black cooling insulation), Armaflex type. There are also other anti-condensation insulation materials with brominated flame retardants. Cellular plastic insulation (e.g. soft white insulation around soft copper pipes) Bands and plastic parts (PP or PE) of fans Textiles
Electrical waste	Products under producer responsibility: Lamps, power tools, computer equipment, office appliances, refrigeration and freezing units and other white goods, telecommunications equipment, etc.

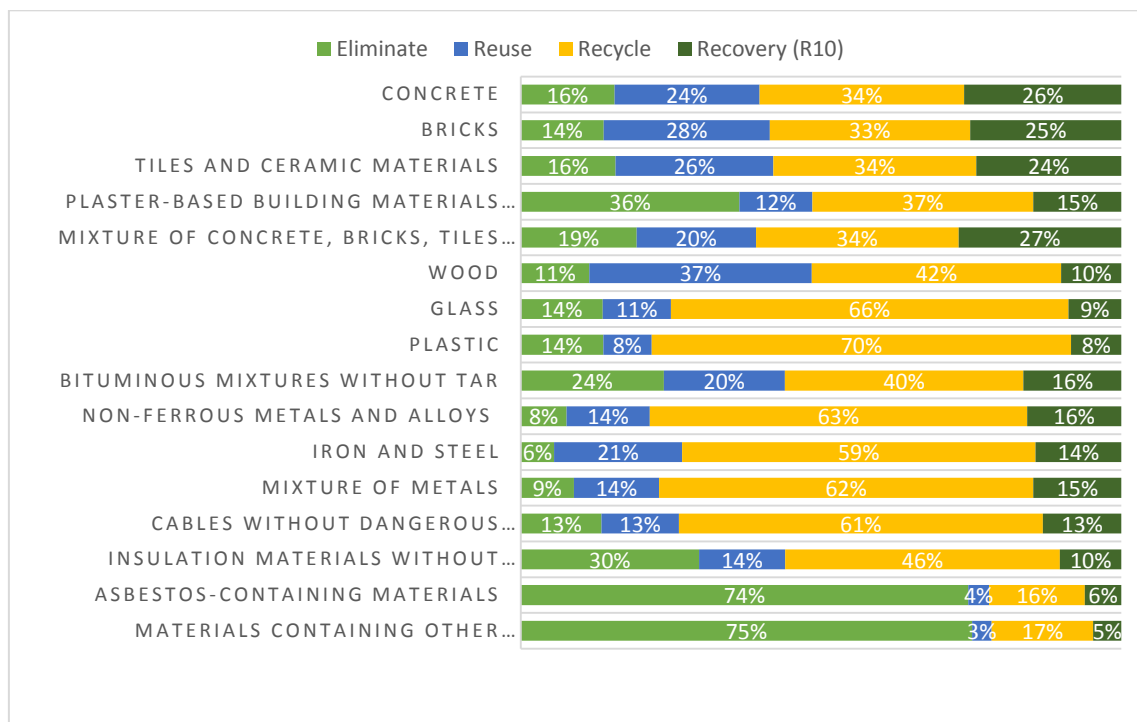
I4 - List of current practices for sorting CDW fractions: contained in R3.

The sorting of the waste fractions by different categories of waste flows is very relevant for having better recovery of the resources at their end-of-life.

In Portugal, according to the results of the survey, reuse and recycling are regarded as the best practices to decrease the CDW generated. The sorting, that is crucial for improving the quality of the recycled materials , occupies the third place of good practices, as shown in the chart below.



The results by material type highlight a high level of materials eliminated, which indicates that there is no major concern with sorting.



The main destination for wastes is recycling for which there is not a lot of requisites. These observations collectively show that there is not concern with sorting. Therefore it is not possible to comply with the target I2 and report sorting practices. Nevertheless, it is necessary to invest in staff training in order to achieve a change in attitude, namely a greater concern with sorting so as to reduce the CDW produced and improve its homogeneity and quality.

I5 - Guide for pre-demolition audits: contained in R4.

The development of the Portuguese guide for pre-demolition audits was the principal objective of the project CLOSER. The report is supplemented by a file, created in MS Excel, where the different materials, construction elements and construction and demolition waste are quantified and their preferred destination is recommended, following the proposed methodology of the Level(s) framework for the sustainability of buildings. The table below, which accompanies the template developed, provides information regarding how to fulfill it.

Como utilizar	
 <p>O modelo de inventário de demolição de edifícios abrange materiais e elementos passíveis de reutilização e resíduos de construção e demolição que podem ser valorizados ou eliminados tendo em consideração a sua perigosidade e as suas características. O modelo é uma combinação do <i>template</i> adotado no nível 2 do LEVEL(s) com as orientações para auditorias de pré-demolição de edifícios e do protocolo de gestão de RCD na UE bem como de outros Estados-membros da UE.</p>	
1. Material / Elemento	Selecionar os materiais ou elementos com a seta. Se não encontrar a descrição correta na lista faça a adição manual. Ao seleccionar um material da lista é automaticamente associado o código do Capítulo 17 do LER. Para resíduos de equipamentos elétricos e eletrónicos, REEE, usar os códigos dos Capítulos 16 e 20 apresentados no separador 7-Lista de resíduos.
2. Código LER	Código de seleção automática relacionado com o material. No caso da utilização de uma descrição de material personalizada, é necessário inserir o código que melhor representa esse material.
3. Natureza do resíduo	A natureza do resíduo pode ser selecionada entre as opções: i) material inerte / não perigoso e ii) material perigoso. com base nas propriedades do material isolado ou caso esteja misturado com outras substâncias perigosas e no código LER. Se forem efetuadas análises para comprovar a perigosidade e o resultado for negativo a célula terá um fundo verde e se o resultados for positivo terá um fundo vermelho.
4. Quantidade	Quantidade de material resultante do levantamento <i>in situ</i> . Frequentemente é expresso em m3 e facilmente convertível a kg. Para elementos por vezes é apenas o número de unidades existentes.
5. Unidade	A unidade pode ser variável, no entanto a mais frequente é o m3
6. Fator de conversão	Fator que converte as unidades usadas durante a auditoria no local em kg e que pode ser utilizado para tornar os itens da lista comparáveis e compatíveis.
7. Quantidade estimada	A quantidade de material ou elementos é estimada em kg com base no fator de conversão.
8. Qualidade	A qualidade corresponde à condição em que o material/elemento se encontra, nomeadamente se apresenta impurezas se está degradado ou se apresenta uma condição próxima da natural.
9. Localização	Representa o local onde o material/elemento se encontra na obra, bem como a acessibilidade a esse material.
10. Destino recomendado	A recomendação do destino pode ser considerada na forma de reutilização, de reciclagem e de recuperação, podendo ser selecionado para ocorrer na obra ou fora dela. É projetado com base na hierarquia de resíduos. Este é o destino mais adequado com base nos princípios da economia circular.
11. Precauções a tomar	As ações a tomar devem considerar medidas de precaução em obra, visando a proteção dos trabalhadores e a preservação do ambiente.
12. Informação adicional	Incluir informação complementar se necessário (exº: ensaios de avaliação da perigosidade).
13. Fotografia	A fotografia melhora a precisão da informação (800x600 pixels min.; formato - jpg, jpeg, png). A fotografia deve ser bloqueada com a célula para garantir que não se altera quando são acrescentadas linhas ou são feitas outras alterações à tabela do inventário. As fotografias de componentes devem mostrar o contexto do elemento relevante. Relativamente a defeitos deve-se fotografar para cada tipo de material.

The template of the inventory shown below allows multichoice for the different parameters but is enough flexible to allow manual entries. Although the Level(s) approach focuses on recycling it was decided to extend the inventory to reuse of materials and elements. Because it is usual to find electrical components during renovation or demolition of buildings the corresponding EWC codes were also added.

Material/Elemento	Código LER	Número de resíduos	Quantidade	Unidade	Fator de conversão	Quantidade estimada (kg)	Categoria	Área	Localização	Destino recomendado	Precauções a tomar	Informações adicionais	Fotografia

All the information is subsequently summarized and indicators concerning the mass of CDW (kg) per construction area (m²) or the ratio of reused material are assessed.

I6 – Estimate recovery of CDW with and without application of the CLOSER guide for audits: contained in R5.

Based on the case study of CLOSER it was crucial the interest of the building owner to become engaged with application of predemolition audit, with planning for deconstruction, or better said with the design for reconstruction. The building owner was concerned to look at alternatives to prevent the materials/elements from being classified as waste. In this context and with an active exchange of ideas the final result of the deconstruction of Cais aberto da Malveira have had a very good result regarding valorisation of resources. As a matter of fact the plan of waste management of this demolition considers zero reuse of the existing materials/elements. The final result of the building owner shows that 82.23 tonnes were reused on-site or off-site, but it should be taken into account that 32.50 tonnes were stored along time ago inside the building so they do not result directly from the building deconstruction. Even so, there were 49.73 tonnes of reused material against the expectation of 0 tonnes reused if the pre-demolition audit was not applied. All the remaining, 96,42 tonnes, was classified as CDW and only 1,66% was sent for elimination of hazardous waste, the remaining went to recycling. All these data results in an indicator showing a decrease of 34% of generated CDW due to the application of the pre-demolition

audit. As planned on the map of indicators the target was a 10% increase on reuse and recycling activities. Regarding reuse this target was surpassed, it have had an increase of 49.73%. Concerning recycling it is not possible to say if it increased, but it is possible to say that CDW decreased by 34%.

17 - Estimation of benefits regarding environmental indicators, namely emissions of GHG, contained in R5.

Based on the final data on recovered CDW and reused material/elements from the owner of the building, economic and environmental impacts were estimated using a tool developed for this purpose within the project Edifícios Circulares, funded by EEA Grants. For this purpose, two situations were considered: one where there was no reuse and another where there was reuse of resources. Considering that the options of the tool used only cover a restricted set of construction elements, the impacts of the totality of the materials/elements removed during deconstruction were not surveyed. It was therefore decided to estimate the difference between the impacts of reuse materials and these impacts if these materials are recycled.

It is reiterated that this impact assessment exercise has a number of restrictions associated with it, including the fact that reuse only occurs partially on-site, that the impacts of all materials/elements are not assessed, that not all resources are analysed from a life cycle analysis perspective and that the database of the tool used is limited, so that the results cannot be assessed as absolute values. In addition, assumptions are made that the environmental impacts of reuse correspond to avoided production emissions relative to the use of a new product and that in the case of recycling the emissions are determined on the basis of the difference between the impacts relative to the production of primary raw materials relative to the production with recycled materials.

Considering that the state of conservation of the resources is medium, it is verified that in terms of environmental impacts, the recycling option is better for the elements in question because it leads to a larger quantity of avoided CO₂-eq emissions. From the perspective of economic impacts, they are frankly more positive in the case of reuse. This assessment does not present gains or losses in percentages due to all the limitations and assumptions

associated with the calculation performed. Nevertheless, but it is believed that the proposed target was exceeded.

Element of construction	Environmental impacts (kg CO ₂ -eq)		Economical impacts (€)	
	Reuse	Recycling	Reuse	Recycling
Wood	-92,707	-58,621	- 236,916.10 €	896.68 €
Ceramic tiles	-67,299	-83,538	- 33,246.00 €	5,866.62 €
Metalic gates*	-146,780	-222,073	- 201,836.24 €	13,036.98 €
TOTAL	-306,786	-364,233	- 471,998.34 €	19,800.28 €

I8 - Estimate the decrease of hazardous substances in CDW stream

The evaluation of the hazardous waste was performed before the pre-demolition audit was done by CLOSER. As a matter of fact, the management of asbestos by an accredited company was already outsourced. During the pre-demolition audit, the only material beyond asbestos that was targeted for attention was the wood supporting the fibrocement but the analysed fibres were not from asbestos. Therefore, the target was not achieved.

As was mentioned before, the building studied have particular characteristics, it was only used to store some drilling materials and does not show the presence of other materials that could typically be found in traditional residential or commercial buildings. Because the Portuguese guide is now being applied within the framework of the project (Des)construir funded by EEA Grants we will see whether this was a very ambitious goal.

I9 - List of policies and deadlines to implement at national level the Portuguese guide for pre-demolition audits) contained R6.

Although there is a list of policies (report R6) that should be implemented in the New Portuguese General Waste Management Regime (Decree-Law 102-D/2020) the change of government and the political have not been in support of establishing deadlines to implement the pre-demolition audits Therefore I9 was achieved only in part.

I10 - Increase of separated flows of materials in CDW after CLOSER implementation), contained in R6.

Due to the absence of implementation of new policies it was not possible to analyse this target.

I11 - Number of scientific papers) contained in R7.

During the period of the project two submissions of scientific papers were made: **1** to Congresso Reabilitar & Betão Estrutural 2020 and 1 to the International Conference Construction, Energy, Environment & Sustainability (CEES 2021). Although the abstracts were accepted, only the second paper was also accepted. Therefore only 50% of the target was achieved. The members of CLOSER are preparing a paper to submit to a scientific journal and will inform EEA Grants about the result.

I12 – Number of participants in the conference and workshops) contained in R7.

The webinar and the seminar of the CLOSER project have had 183 and 161 attendees.

Therefore the target of 100 attendees was achieved.

c) *Communication plan*

Concerning the Communication Plan, the results achieved in the CLOSER project include:

- Production of the **Project's image/visual identity** - The Project's image is the key element that was included in all the Project's promotional material, namely in the design of the website and on social networks. The image was used by the partners in all communications related to the Project. As shown below, the image of the CLOSER project was designed to show the main objectives and also the commitment of all



partners towards more resource-efficient buildings and towards the ambition of zero pollution for an environment free of toxic substances as foreseen in the European Green Deals. In detail, the image translates the concerns and guidelines of the project in all its dimension. Thus, thinking only about materials from the demolition or renovation

of buildings, firstly, it is essential to identify the materials present, i.e. to conduct a preliminary audit before the demolition or renovation works (LIST). Secondly, to check for the presence of materials containing hazardous substances and segregate them (REMOVE). The next step is to sort the materials by type to improve their homogeneity and quality (SEPARATE). Finally, to provide solutions to reuse or recycling CDW by processing preferentially it in the construction of new buildings (RECOVERY).

- Proposed **Questions to stakeholders** to verify their willingness, availability and commitment to be active members in the development of the Portuguese guide for pre-demolition and renovation audits (preliminary work);
- Structuring and setting up the content and start of construction of one (1) **bilingual website** (Portuguese and English) as a friendly communication tool, with tabs for the guide for pre-demolition and renovation audits, tool material search web site, article repository or links to published articles, press releases, etc. The website promotes the objectives of CLOSER, the results, and deliverables. The developed features and their updates will be available for free.
- • Structuring, defining content, and preparing a **bilingual promotional e-flyer** (Portuguese and English), to disseminate information about the CLOSER Project, which will also be available on the website (availability on the website scheduled for the end of March 2021)
- Preparation of **electronic newsletter**, distributed by email every 3 months, beginning in March 2021, with brief news about the Project. The four newsletters are available at: <http://closer.lnec.pt/news.html>;

Preparation of **presentations to publicize the Project** (Portuguese and English versions), which are available on the website <https://www.eeagrants.gov.pt/pt/programas/ambiente/projetos/projetos/closer-close-to-resources-recovery/>.

- **Communication Plan** amendment, considering the pandemic context and the need to reformulate the dissemination actions provided in the project candidature.
- **Project's image**/visual identity dissemination - The project's image is the key element that is included in all the project's promotional material, namely in the design of the website and on the cover of the project's products. The image continued to be used by

all partners in all project-related communications, also including the EEA Grants logo in accordance with the provisions of the Implementation Regulation of this funding mechanism for the period 2014-2021;

- Dissemination of a **stakeholder's questionnaire** to verify their willingness, availability and commitment to be active members in the development of the Portuguese guide for pre-demolition and renovation audits;
- Consolidation of one (1) **bilingual website** (Portuguese and English) as the main communication tool, in accordance with EU guidelines, with tabs for the guide for pre-demolition and renovation audits, materials search web tool, article repository or links to published articles, press releases, etc. The website will promote the project's objectives, results, and deliverables. The developed resources and their updates will be available free of charge;
- **Abstract submission** entitled "Pré auditorias de demolição em intervenções de reabilitação de edifícios: A experiência do projeto CLOSER" to REABILITAR-BE2020 - Congresso Nacional Reabilitar & Betão Estrutural 2020, authored by Seyed Rezvani, Isabel Martins and Maria João Falcão Silva;
- **Presentation of the CLOSER project at the 3rd Meeting of the Working Group on Construction and Demolition Waste** of the Smart Waste Portugal Association, held on March 10th;
- Preparation of the 1st regular **electronic newsletter**, with brief project news, distributed by e-mail and which can be subscribed on the project website;
- Dissemination of a **stakeholder's questionnaire** to collecting data related to interested parties in actively participating in the development of the Portuguese guide for pre-demolition and renovation audits;
- Updating the contents of the **bilingual website** (in Portuguese and English) as the main communication tool where the newsletters and presentations of the 1st webinar were made available. All website resources are freely accessible;
- Preparation of the 2nd **electronic newsletter**, distributed by e-mail with brief project news;

- On June 21, 2021, the **1st Webinar of the CLOSER Project: Pre-Demolition Audits: Built to Unbuild** (Auditorias Pré- Demolição: Construir a Desconstrução). This webinar, which had 183 participants, included a presentation session and a round table.
- **Abstract submission** entitled "Pre-demolition audits in building demolition and rehabilitation: CLOSER Project experience towards construction sustainability" to the International Conference Construction, Energy, Environment & Sustainability (CEES 2021), authored by Seyed Rezvani, Isabel Milagre Martins, Maria João Falcão Silva, Ana Filipa Salvado, Mafalda Mora and Ivone Nobre;
- After approval of the abstract, preparation and submission of **1 scientific paper** to the Congresso Reabilitar & Betão Estrutural 2020, which will take place from 3 to 6 November 2021;
- After approval of the abstract, preparation and submission of **1 scientific paper** to the International Conference Construction, Energy, Environment & Sustainability (CEES 2021), which takes place from October 12 to 15, 2021;
- Preparation and sending of the 3rd **electronic newsletter**, bi-monthly, distributed by e-mail with brief project news;
- After the accepted abstract for the Congresso Reabilitar & Betão Estrutural 2020, the paper was not accepted. So a related paper was prepared to be submitted to **the scientific journal** Waste Management & Research;
- Review and re-submission of the **scientific paper** for the International Conference Construction, Energy, Environment & Sustainability (CEES 2021), which takes place from October 12 to 15, 2021.
- The participation in a **science dissemination event** was accomplished with the activity developed at the European Researchers' Night.
- The **Final Seminar** entitled **Pre-Demolition Audits: Step by step**, takes place on November 22nd, 2021.

ID	Name / Designação	Indicator / Indicador	Target / Meta	Execution / Execução	2020			2021										
					out	nov	dez	jan	fev	mar	abr	mai	jun	jul	ago	set	out	nov
T1	PROJECT MANAGEMENT			85%														
		I1 - Execution of the project CLOSER	100%	85%														
T2	CONCEPTUAL FRAMEWORK			100%														
		I2 - List of key hazardous substances	1 un	100%														
		I3 - List of possible building materials containing hazardous constituents	1 un	100%														
T3	STAKEHOLDERS SURVEY			100%														
		I4 - List of current practices for sorting CDW fractions	1 un	100%														
T4	PORTUGUESE GUIDE			100%														
		I5 - Guide for pre-demolition audits	1 un	100%														
T5	PILOT CASE			100%														
		I6 - Estimate recovery of CDW (reuse and recycling activities) with and without application of the CLOSER guide for audits	10% increase	100%														
		I7 - Estimation of benefits regarding environmental indicators, namely emissions of GHG	10% decrease	100%														
		I8 - Estimate the decrease of hazardous substances in CDW stream	50% decrease	0%														
T6	IMPLEMENTATION POLICIES			80%														
		I9 - List of policies and deadlines to implement at national level the Portuguese guide for pre-demolition audits	1 un	90														
		I10 - Increase of separated flows of materials in CDW after CLOSER implementation to improve circularity	30% decrease mixed waste	0%														
T7	DISSEMINATION			85%														
		I11 - Number of scientific papers		50%*														
		I12 - Number of participants in the conference and workshops as an indicator of the relevance of this project	100	100%**														

* 1 paper accepted for International Conference Construction, Energy Environment & Sustainability and Conferência Reabilitar & Betão Estrutural

** 183 participants on the 1st webinar (21 jun 2021)

iii. Description of costs and financial impact assessment

a) LNEC – Promotor

	Human Resources Expenses			Computer	Purchase of services	Participation in conference	Overheads
	Outubro	Novembro	Subsídios 2021	out/nov			out/nov
T1	40,9 €	92,4 €	285,3 €	0,7 €	615,0 €	- €	206,8 €
T2	- €	- €	314,4 €	- €	- €	- €	62,9 €
T3	- €	- €	285,3 €	- €	- €	- €	57,1 €
T4	1 732,0 €	517,3 €	346,3 €	26,2 €	- €	- €	524,3 €
T5	959,8 €	587,4 €	285,3 €	13,6 €	- €	- €	369,2 €
T6	665,1 €	752,0 €	285,3 €	13,8 €	- €	- €	343,2 €
T7	81,8 €	664,8 €	346,3 €	2,7 €	250,0 €	350,0 €	339,1 €
TOTAL	3 479,5 €	2 613,7 €	2 148,2 €	57,0 €	865,0 €	350,0 €	1 902,7 €

b) APA – Partner

	Human Resources Expenses			Overheads
	Outubro	Novembro	Subsídios 2021	out/nov
T1	46,3 €	- €	77,8 €	24,8 €
T2	- €	- €	62,8 €	12,6 €
T3	- €	- €	110,4 €	22,1 €
T4	945,6 €	- €	121,0 €	213,3 €
T5	156,7 €	61,2 €	121,0 €	67,8 €
T6	760,7 €	411,1 €	121,0 €	258,6 €
T7	82,3 €	210,5 €	136,5 €	85,9 €
TOTAL	1 991,7 €	682,9 €	750,6 €	685,0 €

c) IMPIC – Partner

	Human Resources Expenses			Overheads
	Outubro	Novembro	Subsídios 2021	out/nov
T1	29,1 €	27,8 €	129,7 €	37,3 €
T2	- €	- €	129,7 €	25,9 €
T3	- €	- €	129,7 €	25,9 €
T4	233,1 €	222,3 €	129,7 €	117,0 €
T5	145,7 €	111,1 €	129,7 €	77,3 €
T6	87,4 €	500,1 €	129,7 €	143,4 €
T7	- €	194,5 €	129,7 €	64,8 €
TOTAL	495,3 €	1 055,7 €	908,0 €	491,8 €

LNEC's expenses incurred in these last two months of activity are due to: costs with human resources allocated to the project (also include costs associated with holiday and Christmas subsidies earned during the year 2021 that had not yet been considered); 2 months of amortization of the computer; participation of the grant holder in the "International Conference Construction, Energy, Environment & Sustainability CEES 2021", which took place from 12 to 15 October; hiring the ROC to certify the project expenses and; coffee-break service of the final seminar of the project that took place in the LNEC auditorium on 22 November.

The expenses of APA and IMPIC in these last two months of activity are due only to costs with human resources assigned to the project (it also includes costs associated with holiday and Christmas subsidies earned during the year 2021 that had not yet been considered).

The execution rate of the Promoter LNEC in these last two months is 27.43%, the Partner APA is 43.63%, and the Partner IMPIC is 37.97%. For these last two months, the total execution rate is 31.42%.

The following table shows the financial execution rates by activity and entity for October and November 2021.

Financial implementation rates by activity between October and November 2021*			
Task	LNEC	APA	IMPIC
T1	25%	26%	39%
T2	7%	13%	27%
T3	12%	23%	27%
T4	22%	78%	122%
T5	48%	70%	80%
T6	66%	42%	149%
T7	30%	29%	67%

* the costs associated with holiday and Christmas bonuses for 2021, which had not yet been considered, are also included

ANNEX 6 contains the expenditure table with the overall execution of the project since its beginning. Regarding LNEC, the total amount executed was 38,239.5 €, corresponding to a total execution rate of 92%. APA executed a total of 6,823.3 €, which corresponds to a total execution rate of 72%. The total amount executed by IMPIC was 7,932.9 euros, corresponding to an overall execution rate of 102%. As can be seen, both LNEC and IMPIC have an execution rate above 90%, while APA's execution rate is about 25% lower.

The following table shows the accumulated financial execution rates since the beginning of the project, by activity and entity.

The total amount executed under this project was 52,995.7 euros, which represents an overall execution rate of 90%.

A first payment request was submitted in October 2021, with the human resources expenses of the LNEC team for the period between October 2020 and June 2021, all expenses having been considered as eligible. The second and final payment request will be submitted soon, covering all the human resources expenses of APA and IMPIC, as well as the remaining expenses of LNEC between July and November 2021.

Financial implementation rates by activity between October 2020 and November 2021			
Task	LNEC	APA	IMPIC
T1	104%	101%	115%
T2	127%	91%	109%
T3	194%	82%	109%
T4	76%	78%	198%
T5	94%	101%	166%
T6	66%	67%	149%
T7	59%	50%	116%

iv. Description of the Project's contribution to achieving the overall objectives of EEA Grants and the 'Environment Programme'

The main ambition of the CLOSER project is the effective implementation of preliminary audits to resources during demolition and rehabilitation of buildings. A significant reduction of CDW owing to an increase of reuse materials and elements of construction will drive them faster into the economy. In this way, its life cycle is prolonged, and the construction sector evolves towards a circular economy model.

This ambition is in line with the recommendations in program area PA11 – Increase the principles of application of the Circular Economy in specific sectors of the Environment Program of the EEA Grants. The elaboration of the Portuguese Guide for Pre-Demolition and/or Rehabilitation Audits in Buildings was achieved with success and their mandatory implementation depends only on political will. It should be recalled that this guide corresponds to the objective of the EEA Grants Call to which it applied, that is, “Development of standards in the Construction Sector that promote the Circular Economy”. Thus, CLOSER project contributes to achieving the target of the indicator “Number of standards and good practices developed” of Output 1.5 of the Environment Programme..

Indicador / Indicator	Unidade / Unit	Outcome 1				Output 1.5	
		Construction and demolition waste saved in the supported sectors (%)	Use of secondary materials increased in the supported sectors (%)	Number of jobs created (number)	Tonnes of plastic recycled through all supported sectors (number)	Environmental Product Declarations developed (number)	Standards and good practices developed (number)
I1 - Execution of the project CLOSER	%	X	X	-	-	-	X
I2 - List of key hazardous substances	un	-	-	-	-	-	-
I3 - List of possible building materials containing hazardous constituents	un	-	X	-	-	-	-
I4 - List of current practices for sorting CDW fractions	un	X	X	-	-	-	-
I5 - Guide for pre-demolition audits	un	X	X	-	-	-	1
I6 - Estimate recovery of CDW (reuse and recycling activities) with and without application of the CLOSER guide for audits	%	X	-	-	-	-	-
I7 - Estimation of benefits regarding environmental indicators, namely emissions of GHG	%	-	X	-	-	-	-
I8 Estimate the decrease of hazardous substances in CDW stream	%	-	X	-	-	-	-
I9 - List of policies and deadlines to implement at national level the Portuguese guide for pre-demolition audits	un	X	X	-	-	-	-
I10 - Increase of separated flows of materials in CDW after CLOSER implementation to improve circularity	%	X	X	X	-	-	-
I11 - Number of scientific papers	un	X	X	-	-	-	-
I12 - Number of participants in the conference and workshops as an indicator of the relevance of this project	un	-	-	-	-	-	-

X - CLOSER contributes to these outcomes

Project Promoter

Name	Laura Caldeira
Date and Signature	
Position	President of Laboratório Nacional de Engenharia Civil

Programme Operator – Secretary General for Environment

Name	Alexandra Carvalho
Date and Signature	
Position	Director of Secretary General

ANNEX 1

Meeting Minutes



ACTA DA REUNIÃO DE PROJECTO N.º 1

Local: Zoom

Data: 29/01/2020, 9h-10h30

Presenças

Isabel Martins (IM), Ana Cristina Carrola (AC), Ivone Nobre (IN), Maria João Falcão (MJF), Paula Couto (PC), Seyed Rezvani (SR), Rodrigo Gonçalves (RG), Mafalda Mota (MM), Susana Francisco (SF)

Ordem de trabalhos

- 1- Informações
- 2- Apresentação do contratado
- 3- Reporte das atividades
- 4- Outros assuntos
- 5- Próxima reunião

Assuntos Tratados	Responsáveis
1 Informações <ul style="list-style-type: none"> Contratação do Seyed Rezvani (SR) a 14 de dezembro de 2021; Aspetos financeiros (pagamentos, distribuição horária por instituição e relatório trimestral – out a dez 2020). 	IM
2 Apresentação do contratado <ul style="list-style-type: none"> Percurso académico e profissional do bolseiro SR até contratação Boas vindas ao bolseiro Apresentação dos participantes do projeto presentes na reunião 	SR AC AC, IN, MJF, PC
3 Reporte das atividades <ul style="list-style-type: none"> T1 – Algumas tarefas desenvolvidas. Aguarda-se contratação de ROC T2 – SR apresentou o trabalho desenvolvido até ao momento T3 – Proposta de questionário desenvolvida – Google forms (versão provisória). AC refere questionário já feito pela APA aos municípios em 2016, 2018 e relatório com comparação T7 – Apresentação da imagem e do ponto de situação do site 	IM, SR, AC, IN, MJF
4 Outros assuntos <ul style="list-style-type: none"> Validação do plano de comunicação até 03/02/2021 Site do projeto – disseminação pelos parceiros Filme de apresentação do projeto (2min) – até 15/02/2021 O IMPIC irá ver como disponibilizar a informação relativa a demolição de edifícios existente no Portal Base. 	IM, RG, IN
5 Próxima reunião Agendada por unanimidade para 17 de março de 2021, às 9:00h. Decorrerá por videoconferência e terá duração aproximada de hora e meia.	IM



CLOSER – CLOSE TO RESOURCES RECOVERY

ACTA DA REUNIÃO DE PROJECTO N.º 2

Local: Zoom

Data: 17/03/2021, 9h

Presenças

Isabel Martins (IM), Maria João Falcão (MJ), Paula Couto (PC), Seyed Rezvani (SR), Manuel Vieira (MV), Filipa Salvado (FS), Margarida Espada (ME), Mafalda Mota (MM), Sílvia Ricardo (SR), Ivone Nobre (IN)

Outros: Ordem de trabalhos

- 1- Informações
- 2- Reporte das atividades
- 3- Relatórios trimestrais
- 4- Comunicação e disseminação
- 5- Próxima reunião

Assuntos Tratados	Responsáveis
1 Informações <ul style="list-style-type: none"> Verificação das presenças; 	IM
2 Reporte das atividades <p>T1 – Tarefas desenvolvidas. Aguarda-se ainda contratação de ROC, que está para breve</p> <p>T2 – Ponto de situação do trabalho desenvolvido até ao momento. Relatório a ser finalizado.</p> <p>T3 – Apresentação da proposta de questionário desenvolvida no Google forms (versão provisória). Foram sugeridas alterações às questões colocadas por diversos participantes. Pedido de comentários finais por email para concluir o questionário e fazer o lançamento do mesmo em março. Além da divulgação por cada um dos parceiros, foi decidido solicitar a entidades relevantes a disseminação do inquérito, nomeadamente ANMP, OE, OET, APOGER entre outras.</p>	IM, SR, MM, IN, MV
3 Relatórios trimestrais <p>No que respeita a aspetos financeiros foram abordadas questões relacionadas com pagamentos, lançamento da mão-de-obra por instituição e relatórios trimestrais. Para o relatório de janeiro a março de 2021, solicitou-se o envio de informação sobre a distribuição de horas de cada entidade até 15 de abril.</p>	IM, ME
4 Comunicação e disseminação <p>Apresentação da imagem e do ponto de situação do site. Foi solicitado que os parceiros fizessem a divulgação do site. Relativamente à atividade nas redes sociais, os conteúdos serão partilhados por email entre os parceiros, os quais dispõem de 24h para apresentar propostas de alteração, sendo posteriormente publicados.</p>	IM, MJ

CLOSER – CLOSE TO RESOURCES RECOVERY



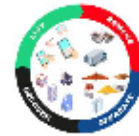
Validação final do plano de comunicação.
Foi apresentada a proposta de efetuar um webinar convidando entidades de países do EEA Grants.

5 Próxima reunião

Agendada por unanimidade para dia 28 de abril às 9 h

Decorrerá por videoconferência e terá duração aproximada de hora e meia.

IM



CLOSER – CLOSE TO RESOURCES RECOVERY

ACTA DA REUNIÃO DE PROJECTO N.º 3

Local: Zoom

Data: 28/04/2021, 9h

Presenças

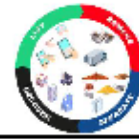
Isabel Martins (IM), Maria João Falcão (MJ), Seyed Rezvani (SR), Filipa Salvado (FS), Mafalda Mota (MM), Susana Francisco (SF), Ivone Nobre (IN)

Outros: Ordem de trabalhos

- 1- Aprovação da ata da última reunião
- 2- Análise da apreciação do relatório do 1º trimestre
- 3- Reporte das atividades
- 4- Outros assuntos
- 5- Próxima reunião

Assuntos Tratados	Responsáveis
<p>1 Aprovação da ata da última reunião</p> <p>A ata enviada com a convocatória da 2ª reunião foi aprovada por unanimidade</p>	IM
<p>2 Análise da apreciação do relatório do 1º trimestre</p> <p>No seguimento da leitura da apreciação crítica do Operador do programa ao relatório de atividade do CLOSER no 1º trimestre (out-dez 2020), no qual é indicada falta de comunicação entre os parceiros e entre os parceiros e o promotor, IN mostrou-se admirada relativamente ao comentário efetuado por considerar que sempre houve boa comunicação.</p> <p>IM explicou que atividade do projeto CLOSER reportada no Relatório do 1.º trimestre mencionava a necessidade de melhorar a interação entre parceiros pois tendo ocorrido pouca atividade nesse período a comunicação/interação entre parceiros foi reduzida, ou seja, o modo como a situação foi apresentada pode ter conduzido a uma interpretação errónea pelo Operador do programa.</p> <p>MM considera que o relatório tinha a informação necessária e suficiente e salientou a necessidade de estar atento às exigências dos EEA Grants.</p> <p>IM salientou que a falta de comunicação esteve associada à contratação tardia do bolseiro e início das atividades deste.</p> <p>IN referiu que o que está vertido no relatório é que não houve comunicação entre parceiros. IM indicou que essa situação será corrigida e acautelada num próximo relatório</p>	IM, MM, IN
<p>3 Reporte das atividades</p> <p>T1 – IM referiu a estreita colaboração que tem existido na coordenação das atividades do projeto e indicou que, após interação com os parceiros, foi enviado ao Operador do Programa o Plano de Comunicação revisto. MJ apresentou a estrutura do site e solicitou a contribuição dos parceiros para verificação e inclusão de informação sobre a APA e o IMPIC. IM informou que o processo de contratação</p>	IM, MJ

CLOSER – CLOSE TO RESOURCES RECOVERY



de ROC e a aquisição do computador continuam em curso.

T2 – IM fez o ponto de situação do trabalho desenvolvido até ao momento, apresentando a estrutura do relatório e partilhando *online* o mesmo. IM solicitou o contributo da APA para a apresentação da legislação afeta à gestão de RCD em Portugal e comparação com o Decreto-Lei 102-D/2020 que entra em vigor em julho. O IMPIC também foi convidado a contribuir para esta parte do relatório com a apresentação de dados sobre a incorporação de reciclados em obras públicas que constam do Portal Base. Foi solicitado que as contribuições fossem enviadas até 15 de maio.

T3 – Relativamente ao questionário IM agradeceu aos parceiros a contribuição para a melhoria do mesmo bem como a disseminação a diferentes entidades. MM ficou de informar se na Madeira e nos Açores tinha sido feita a disseminação pelo Governo Regional para podermos agradecer a sua colaboração. Seyed apresentou o resultado da primeira análise a algumas questões.

T7 – No que respeita à disseminação, IM referiu a inclusão de conteúdos nas redes sociais tanto quanto possível numa base semanal. Informou ainda que apresentou o projeto CLOSER no Grupo de Trabalho sobre RCD existente no seio da Associação Smart Waste Portugal.

4 Relatórios trimestrais

Após a apresentação do 1º relatório trimestral verificou-se a necessidade de otimizar procedimentos associados a alguns aspetos financeiros. Assim, IM passou a palavra a ME que explicou em detalhe as questões de pagamentos e distribuição horária por instituição com vista a facilitar a elaboração do 2º relatório trimestral, isto e de janeiro. a março de. 2021.

5 Comunicação e disseminação

IM solicitou a divulgação do site do projeto pelos parceiros. O filme do projeto ainda não foi realizado

6 Próxima reunião

Agendada por unanimidade para dia 27 de maio pelas 9:30h.

Decorrerá por videoconferência e terá duração aproximada de hora e meia.

IM, MM, IN

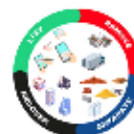
IM, MM, SR, IN

IM

IM, ME

IM

IM, MM, IN



CLOSER – CLOSE TO RESOURCES RECOVERY

ACTA DA REUNIÃO DE PROJECTO N.º 4

Local: Zoom

Data: 27/05/2021, 9:30h

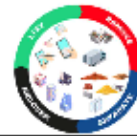
Presenças

Isabel Martins (IM), Maria João Falcão (MJ), Seyed Rezvani (SR), Filipa Salvado (FS), Mafalda Mota (MM), Susana Francisco (SF), Ivone Nobre (IN)

Outros: Ordem de trabalhos

- 1- Informações
- 2- Reporte das atividades
- 3- Organização do webinar
- 4- Outros assuntos
- 5- Próxima reunião

Assuntos Tratados	Responsáveis
<p>1 Informações</p> <p>Após as boas-vindas, IM referiu que a ata da última reunião estava em falta e srá enviada com a ata desta reunião.</p>	IM
<p>2 Reporte das atividades</p> <p>IN referiu que ainda não tinha enviado contributo para enquadramento conceptual em virtude de novo conselho de administração do IMPIC ter iniciado recentemente atividade (10 de maio) e das mudanças decorrentes dessa alteração.</p> <p>FS referiu o trabalho que tem feito com MJ no que se refere aos documentos do Level(s).</p> <p>APA enviou contributo para enquadramento conceptual. MM fez quadro comparativo com alterações legislativas</p> <p>SR apresentou a análise preliminar do questionário. MM e IN fizeram intervenções sobre a terminologia usada no inquérito. IM também interveio relativamente às respostas a algumas questões que não devem ter sido respondidas de forma realista.</p> <p>MJ falou do <i>site</i> do projeto e da experiência no <i>webinar</i> de outro projeto EEGrants.</p>	IM, MM, IN, MJ, FS, SR
<p>3 Organização do webinar</p> <p>No seguimento de troca de informações sobre a estrutura do <i>webinar</i> ocorrida entre IM, AC e IN, cada parceiro sugeriu duas pessoas para fazerem parte da mesa redonda. Pela parte do LNEC, IM indicou um representante do Level(s), isto é, do novo enquadramento europeu para a sustentabilidade de edifícios, e a arquiteta Catarina Barreiros, <i>influencer</i> e capaz de chegar a gerações mais jovens e de forma mais motivadora e ativa. MM sugeriu um responsável da empresa de demolição Demotri e outro da Câmara de Beja. IN sugeriu Firmino das Neves da AECOPS e Paulo Fonseca do laboratório colaborativo CoLab. IM referiu que a Câmara de Beja poderia estar associada a outro projeto financiado pelo EEA Grants que tem uma tarefa relacionada com auditorias de pré-demolição a nível local. IM referiu também que a atividade</p>	IM, MM, IN



CLOSER – CLOSE TO RESOURCES RECOVERY

desenvolvida por Paulo Fonseca é mais centrada em pavimentos pelo que IN sugeriu como alternativa convidar a Ordem dos Engenheiros.

IM apresentou proposta de estrutura do *webinar*, tendo solicitado que as perguntas para o painel da mesa redonda fossem preparadas com antecedência para enviar aos oradores.

4 Outros assuntos

No que respeita à parte financeira falta receber elementos da APA e alguns elementos do IMPIC, conforme solicitado por email (n.º horas; recibos vencimento, documentos comprovativos das despesas - movimentos de tesouraria, extrato bancário). ME Espada vai enviar email para APA e IMPIC com pedido dos documentos que a Secretaria-Geral exige.

IN questionou sobre o facto de o projeto ser financiado a 85% e a necessidade de as instituições comprovarem que têm os restantes 15% disponíveis para o projeto. ME vai averiguar como se processa esta questão pois o Acordo de parceria (Anexo ao contrato) fala desta verba, mas não está explícito.

Vai haver uma auditoria no próximo mês ao projeto CLOSER.

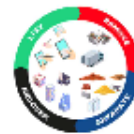
5 Próxima reunião

Agendada por unanimidade para dia 09 de julho pelas 10.00h a reunião de todos os membros da equipa. Decorrerá por videoconferência e terá duração aproximada de hora e meia.

Ficou também agendada uma reunião só com os responsáveis pelo projeto, IM, AC e IN, visando finalizar e ajustar os últimos procedimentos para o *webinar*.

IM, ME, MM, IN

IM



CLOSER – CLOSE TO RESOURCES RECOVERY

ACTA DA REUNIÃO DE PROJECTO N.º 5

Local: Zoom

Data: 09/07/2021, 10h

Presenças

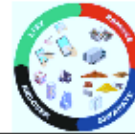
Isabel Martins (IM), Seyed Rezvani (SR), Filipa Salvado (FS), Paula Couto (PC), Mafalda Mota (MM), Susana Francisco (SF)

Outros: Ordem de trabalhos

- 1- Informações gerais
- 2- Reporte das atividades
- 3- Outros assuntos
- 4- Próxima reunião

Assuntos Tratados	Responsáveis
<p>1 Informações gerais</p> <p>Apreciação geral do webinar realizado a 21 de junho. Foi analisado o cronograma previsto do projeto e as alterações do mesmo até à presente data e discutida a evolução futura.</p> <p>Vai ser pedida a prorrogação até ao final de novembro.</p>	<p>IM, MM, SR</p>
<p>2 Reporte das atividades</p> <p>T2 (Enquadramento conceptual) – O LNEC está a concluir o relatório final de forma a dar cumprimento aos indicadores previstos para esta tarefa. Falta inserir a lista de materiais que podem conter substância perigosas. A abordagem utilizada foi indicar os principais grupos químicos responsáveis pela perigosidade e as substâncias individuais de cada grupo, num total de 900/100, são incluídas em anexo usando a nomenclatura em inglês.</p> <p>T3 (Inquérito às pares interessadas) – Está a ser finalizado o relatório com os resultados do inquérito, sendo expectável a conclusão até ao final de julho.</p> <p>T4 (Elaboração do guia português) – Já está definida a estrutura do guia. Vai ser enviada para a restante equipa de projeto se pronunciar sobre a mesma. Está agora a ser elaborado o texto nas secções definidas (conclusão prevista até meio de setembro). No entanto salienta-se que o desenvolvimento do caso de estudo (T5) possa introduzir alterações. Há uma estreita interligação entre estas duas tarefas.</p> <p>T5 (Caso de estudo) – Pelo facto de o caso de estudo no Porto que pretendíamos acompanhar ter parado é necessário contactar outras empresas de construção que façam trabalhos de demolição para se proceder à escolha de obra(s) para acompanhar. No máximo poderá ser possível acompanhar 2 obras na zona de Lisboa ou 1 na zona norte. Esta tarefa compreende a visita à obra antes de se iniciarem os trabalhos para fazer a listagem de materiais e depois acompanhar os trabalhos de demolição e os materiais a reutilizar,</p>	<p>IM, SR</p>

CLOSER – CLOSE TO RESOURCES RECOVERY



valorizar ou a eliminar. A MM ficou de averiguar, junto de empresas, a possibilidade de selecionar casos de estudo.

T6 (Políticas de implementação) – Já existem condições para a APA, responsável por esta tarefa, iniciar o seu desenvolvimento, embora seja uma tarefa com conclusão até ao final do projeto e cuja implementação se pode estender para além dessa data. IM informou que o LNEC está disponível para dar formação a auditores.

T7 (Disseminação do projeto) - IM referiu a inclusão de conteúdos nas redes sociais e a disponibilização de mais informação no site do projeto. MM referiu a possibilidade de continuar a incluir também informação do projeto no site da APA.

3 Outros assuntos

Por indicação de IM, SR vai fazer um curso de 15 dias (manhãs) sobre reutilização de materiais de construção. Este curso é promovido pela universidade de Brighton e tem como destinatários estudantes (School-of-Re-Construction@brighton.ac.uk).

PC informou que estão a ser traduzidos documentos do Level(s) no âmbito do projeto SECCLASS, complementando assim a atividade inicialmente desenvolvida pelo projeto CLOSER. A informação obtida nos dois projetos financiados pelo EEA Grants será partilhada entre si.

Na próxima 2ª feira de tarde há uma verificação de documentos pela Secretaria-Geral. Aguardam-se documentos da APA e do IMPIC. Provavelmente não será possível reunir toda a documentação até à data dessa auditoria.

Relatório trimestral ainda não está concluído.

SR pretende preparar uma apresentação similar à realizada no 1º webinar do projeto para ficar gravada. Terá de ser combinado com a IV.

4 Próxima reunião

Agendada por unanimidade para dia 10 de setembro pelas 10:00h.

Decorrerá por videoconferência e terá duração aproximada de hora e meia.

SR, IM, PC,
MM

CLOSER – CLOSE TO RESOURCES RECOVERY



ACTA DA REUNIÃO DE PROJECTO N.º 6

Local: Zoom

Data: 10/09/2021, 10h

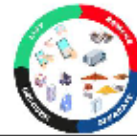
Presenças

Isabel Martins (IM), Seyed Rezvani (SR), Maria João Falcão (MJF), Filipa Salvado (FS), Paula Couto (PC), Mafalda Mota (MM), Susana Francisco (SF)

Outros: Ordem de trabalhos

- 1- Informações gerais
- 2- Reporte das atividades
- 3- Outros assuntos
- 4- Próxima reunião

Assuntos Tratados	Responsáveis
<p>1 Informações gerais</p> <p>Foi enviado o terceiro relatório trimestral do projeto à Secretaria-Geral do Ambiente.</p> <p>Relativamente à APA a despesa efetuada situa-se abaixo do previsto na candidatura pelo que poderá ser ajustado o número de horas para conseguir igualar o orçamento previsto na candidatura e cumprir. Esse ajuste deve-se refletir já no 4º trimestre do projeto.</p> <p>O LNEC fez ajustes ao orçamento que já foram aprovados visto o bolseiro ter um ordenado inferior ao previsto em fase de candidatura.</p> <p>O projeto termina no final de novembro com a extensão que foi pedida..</p>	IM
<p>2 Reporte das atividades</p> <p>T2 (<i>Conceptual framewok</i>) – Tarefa terminada.</p> <p>T3 (<i>Stakeholders survey</i>) – Tarefa praticamente concluída (encontra-se em revisão o relatório correspondente, R3).</p> <p>T4 (<i>Portuguesse guide</i>) – O guia está em elaboração. SR mostrou e explicou o que já está feito.</p> <p>Salienta-se que o desenvolvimento do caso de estudo, correspondente à tarefa T5, poderá conduzir a alterações no guia. Há uma estreita interligação entre estas duas tarefas.</p> <p>T5 (<i>Pilot case</i>) – Temos 3 projetos de demolição/reabilitação, da entidade Infraestruturas de Portugal, conseguidos por contactos efetuados pela APA: 1) Demolição do edifício da estação da Malveira; 2) Demolição de um pequeno edifício situado na Malveira; 3) Reabilitação e demolição do edifício da estação de Dois Portos.</p> <p>SR tem feito várias visitas ao local das obras e está a acompanhar os trabalhos. Estão a ser elaborados relatório com levantamento e enquadramento dos casos de estudo, bem como a listagem de</p>	IM IM, SR IM, SR



CLOSER – CLOSE TO RESOURCES RECOVERY

materiais e apreciação das suas características de forma a identificar materiais perigosos (e.g. existência de amianto no caso de estudo 1) e não perigosos. Também quais os materiais a reutilizar (e.g. azulejos históricos no caso de estudo 3) e outras perspetivas de valorização e/ou eliminação.

SR fez um vídeo com a remoção de amianto do edifício do caso de estudo 1.

T6 (*Implementation policies*) – A APA está a iniciar os trabalhos e por volta de 15 de outubro irá partilhar o documento com o LNEC e IMPIC para contribuições.

MM

3 Outros assuntos

Fomos convidados por ECONnect Portugal a participar no webinar: "Rumo à Economia Circular" (evento on-line a 13 de setembro). A IM irá fazer uma apresentação.

IM

Preparar um quizz para a noite dos investigadores relativo à presença de substâncias perigosas em edifícios (24 de setembro, público - jovens dos 12 aos 18 anos). Enquadra-se no plano de comunicação do projeto.

FS, SR

SR fez um resumo dos conteúdos do curso em que participou sobre reutilização de materiais de construção. Promovido pela universidade de Brighton (School-of-Re-Construction@brighton.ac.uk). O Seyed vai preparar uma apresentação sobre os resultados deste curso e poderá ser feito um webinar no âmbito do projeto CLOSER em conjunto com outros participantes internacionais deste curso.

PC sugeriu a possibilidade de, num futuro webinar do projeto, falar sobre o trabalho desenvolvido na tradução dos documentos Levels.

PC

4 Próxima reunião

Reunião de preparação da noite dos investigadores - Agendada por unanimidade para dia 20 de setembro pelas 10:00h. Decorrerá por videoconferência e terá duração aproximada de uma hora.

Reunião geral de projeto - Agendada por unanimidade para dia 15 de outubro pelas 14:00h. Decorrerá por videoconferência e terá duração aproximada de hora e meia.



CLOSER – CLOSE TO RESOURCES RECOVERY

ACTA DA REUNIÃO DE PROJECTO N.º 7

Local: Zoom

Data: 15/10/2021, 14h

Presenças

Isabel Martins (IM), Seyed Rezvani (SR), Manuel Vieira (MV), Paula Couto (PC), Mafalda Mota (MM), Susana Francisco (SF)

Outros: Ordem de trabalhos

- 1- Informações
- 2- Reporte das atividades
- 3- Outros assuntos
- 4- Próxima reunião

Assuntos Tratados	Responsáveis
<p>1 Informações</p> <p>O projeto CLOSER esteve presente na Noite Europeia dos Investigadores (NEI2021) com uma adesão interessante relativamente ao conhecimento sobre a presença de substâncias perigosas na demolição de edifícios. A adesão do público mais jovem foi superior, motivada pelo quizz realizado com a aplicação Kahoot.</p> <p>O Seyed Rezvani representou no dia 12 de outubro o projeto CLOSER na International Conference of Construction, Energy, Environment and Sustainability com a apresentação da comunicação intitulada "Pre-demolition audits in building demolition and rehabilitation: CLOSER project experience towards construction sustainability". Esta conferência não é indexada mas algumas comunicações serão escolhidas para publicação em jornais indexados.</p> <p>Situando-se a despesa da APA abaixo do previsto na candidatura deverá ser ajustado o número de horas para conseguir igualar o orçamento previsto na candidatura. Esse ajuste deve-se refletir já no 4º trimestre do projeto.</p>	<p>IM SR MM PC</p>
<p>2 Reporte das atividades</p> <p>T2 (<i>Conceptual framework</i>) – Tarefa terminada.</p> <p>T3 (<i>Stakeholders survey</i>) – Concluída a revisão do relatório R3 relativo ao inquérito às partes interessadas.</p> <p>T4 (<i>Portuguese guide</i>) – A 1ª versão do guia preparada, pelo bolseiro Seyed Rezvani foi revista pela Filipa Salgado e Maria João Falcão, centrando-se a maior parte das sugestões em correção da língua portuguesa. O processo de revisão continua, sendo expectável o envio aos parceiros na semana que se inicia a 18 de outubro, com um prazo de 10 dias para envio de contributos. A revisão terá também em consideração a experiência adquirida no caso de estudo e as dificuldades sentidas na aplicação do inventário</p>	<p>IM IM IM, SR</p>

CLOSER – CLOSE TO RESOURCES RECOVERY



bem como o conhecimento adquirido na tarefa 2. SR apresentou o modelo de inventário ajustado e alinhado com o projeto Level(s).

T5 (*Pilot case*) – Por questão de tempo dos 3 projetos de demolição/reabilitação, da entidade Infraestruturas de Portugal, só está a ser acompanhado o caso de estudo do cais coberto da estação da Malveira. Além das diversas deslocações da bolseiro do projeto ao local foi realizada uma visita mais alargada na qual foi analisada a primeira versão do relatório correspondente à auditoria de pré-demolição. SR apresentou diversas soluções de reutilização para o caso de estudo.

T6 (*Implementation policies*) – A APA já tem uma primeira versão do relatório visando as políticas a implementar que aguarda aprovação superior antes de ser enviada aos parceiros para contributos., o que deve ocorrer na semana que se inicia a 18 de outubro. O prazo de envio de contributos é de 10 dias.

T7 (*Dissemination*) – Até à data só há 2 orçamentos para a produção do vídeo pelo que se afigura muito difícil concretizar esta forma de disseminação.

3 Outros assuntos

Fez-se uma análise da situação atual do projeto ficando em dúvida se se conseguirá fazer o vídeo do projeto.

Estabeleceram-se possíveis datas para realização da conferência final. Deve ser um evento híbrido a realizar no auditório do LNEC na 3ª ou 4ª semana de novembro, dependendo da disponibilidade do auditório.

Foram contactados elementos do projeto Level(s) visando partilhar a tradução portuguesa de alguns dos documentos desse projeto.

Necessidade da APA e do IMPIC enviarem as certidões atualizadas de não dívida à Segurança Social e à Autoridade Tributária.

4 Próxima reunião

Reunião geral de projeto - Agendada por unanimidade para dia 29 de outubro pelas 11:30h. Decorrerá por videoconferência e terá duração aproximada de 1 hora.

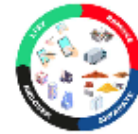
IM
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IM
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SR

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MM



CLOSER – CLOSE TO RESOURCES RECOVERY

ACTA DA REUNIÃO DE PROJECTO N.º 8

Local: Zoom

Data: 29/10/2021, 11:30h

Presenças

Isabel Martins (IM), Seyed Rezvani (SR), Paula Couto (PC), Maria João Falcão (MJF), Mafalda Mota (MM), Susana Francisco (SF)

Outros: Ordem de trabalhos

- 1- Informações
- 2-Ponto de situação do relatório R6
- 3-Outros assuntos
- 4- Próxima reunião

Assuntos Tratados	Responsáveis
<p>1 Informações</p> <p>Foi efetuada a verificação de presenças, estando ausente o parceiro IMPIC.</p>	<p>IM MM</p>
<p>2 Ponto de situação do relatório R6</p> <p>passando-se em seguida ao levantamento do ponto de situação do relatório R6. A APA, responsável pela tarefa associada a este relatório, enviou a versão preliminar do mesmo para análise. O LNEC fez uma primeira apreciação do mesmo, centrando-se os comentários desta primeira iteração em questões de linguagem. Contudo, foram ainda discutidas as propostas de alteração na legislação no que se refere ao critério relativo a quais os edifícios para os quais deve ser obrigatória a implementação das auditorias pré-demolição. Como hipóteses podia ser por valores financeiros ou por volume de resíduos gerados. A APA não impôs nada para gerar a discussão e posteriormente poderem ser afinados esses valores. Isabel Martins propõe que possa ser por área de construção</p>	<p>IM MM SR</p>
<p>3 Outros assuntos</p> <p>Relativamente ao seminário final foi proposto um evento híbrido face à situação COVID 19. Estabeleceu-se também que a mesa redonda sugeriu-se que seja centrada na apresentação de sinergias com outros projetos EEAGrants. Mafalda Mota vai questionar Ana Carrola e Rodrigo Gonçalves sobre esta questão.</p>	<p>IM MM</p>
<p>4 Outros assuntos</p> <p>Próxima reunião marcada para 17/11 pelas 9h30, com duração aproximada de 30 min para discutir pormenores sobre o evento final..</p>	<p>IM</p>

ANNEX 2

Newsletters



March 2021
Issue 1



CLOSER

Close to Resources Recovery



On behalf of the CLOSER project, we are pleased to welcome you to the first issue of our newsletter.

Here you will find information about the project activities, as well as news and events related to construction and demolition waste (RCD).

You received this first newsletter because we believe that the topic is of interest to you.

To receive future numbers (one every 2 months) sign up [here](#).

Highlights:

- CLOSER Project
- Secondary raw materials

| 1

CLOSER Project

Aware of the current challenges in the management of construction and demolition waste, the Laboratório Nacional de Engenharia Civil (LNEC), the Agência Portuguesa do Ambiente (APA), and the Instituto dos Mercados Públicos, do Imobiliário e da Construção (IMPIC) are developing the Project CLOSER - Close to Resources Recovery, funded by the EEA Grants Environment Program.

This project aims to develop a national guide for carrying out preliminary audits on the demolition and rehabilitation of buildings and the presentation of solutions for the recovery of existing materials.

The CLOSER Project focuses on the end-of-life phase of materials used in buildings and on their future reintroduction into the economy, contributing to be closer to the ideal recovery of materials.

It should be noted that the CLOSER Project contributes to

the application of the established principles of the New Circular Economy Action Plan, playing an important role in the transition to more efficient buildings in terms of resource utilization and in the trajectory towards a built environment free of toxic substances, as foreseen in the European Green Deal.

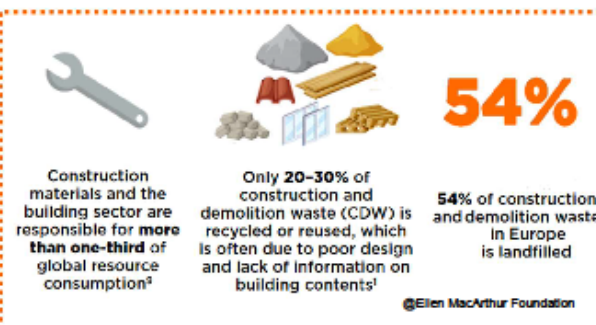
At the end of March, a survey was launched among different stakeholders. The aim of the survey is to find out the opinion on the integration of pre-demolition and / or building rehabilitation audits as a tool that, combined with deconstruction, enhances the valorisation of materials.

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Facts



“Pre-demolition audits contribute to ensure the quality of materials and the necessary segregation for higher value applications.”

Secondary raw materials

Construction and demolition waste, CDW, is a priority waste stream in the EU due to the high quantities produced and its potential for transformation into high quality secondary resources.

In Portugal, despite the recovery target being above 70% (2008/98/ EC), the backfilling operation represented, in 2018, more than 65% of the recovery operations while recycling stood at around 30 % (EUROSTAT; 2018).

The demolition pre-audits, contributing to ensure higher quality of the recovered materials and the segregation of dangerous substances, allows the use of materials from CDW as secondary raw materials in higher value applications.



CLOSER

Close to Resources Recovery



On behalf of the CLOSER project, we are pleased to welcome you to the second issue of our newsletter.

Here you will find information about the project activities, as well as news and events related to construction and demolition waste (CDW). We hope that the topics of this second newsletter are of interest to you.

Due to technical issues, the contacts of newsletter subscribers have to be verified. Therefore, we kindly ask you to subscribe again the newsletter and apologize for the inconvenience. Please, sign up [here](#).

Highlights:

- *CLOSER framework*
- *Stakeholders survey*
- *1st WEBINAR*

CLOSER Framework

The conceptual framework gathered different countries' best practices concerning the application of demolition pre-audits in buildings as a useful tool to minimize the construction and demolition waste generation, the environmental impact of the generated waste by maximizing the reusability of materials and recyclability of the CDW due to improved quality.

Some EU Member States faced several barriers regarding CDW recovery, namely: failure of sorting at source and on the application of deconstruction practices; non-compliance with legislation; lack of technical guidance documents for recycled materials use; lengthy application of End of Waste (EoW) criteria; insufficient reuse expertise; low cost of natural raw materials; lack of financial recycling incentives; early stage of Green Public Procurement (GPP) for promoting the use of recycled materials; lack of a developed network of CDW treatment facilities; gap in training of professionals and at the educational level; lack of trust in the quality of recycled materials; knowledge and experience with CDW is poorly disseminated.

Being aware of the constraints is the first step towards identifying which one could represent better potential drivers to achieve higher CDW management efficiency and reach better recycling performance.

Additionally, the use of up-to-date technologies could also boost better CDW management. From using AI for detection of objects from different nature with robotic arms, based on the chemical composition of CDW, to developing web-based platforms for registering data on produced CDW and promoting the market of reused and recycled materials new perspectives arise.



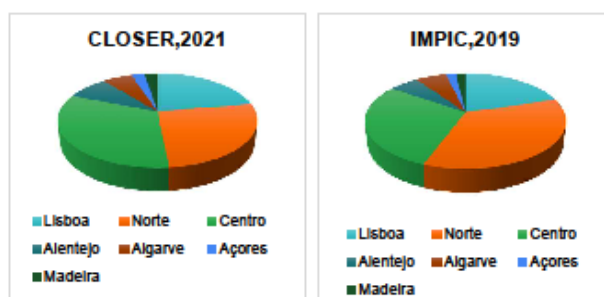
CLOSER word-cloud

"Identification, sorting and processing of CDW is crucial for having materials in the production cycle for a longer time, maximizing their value and guaranteeing the adequate quality for the intended application"

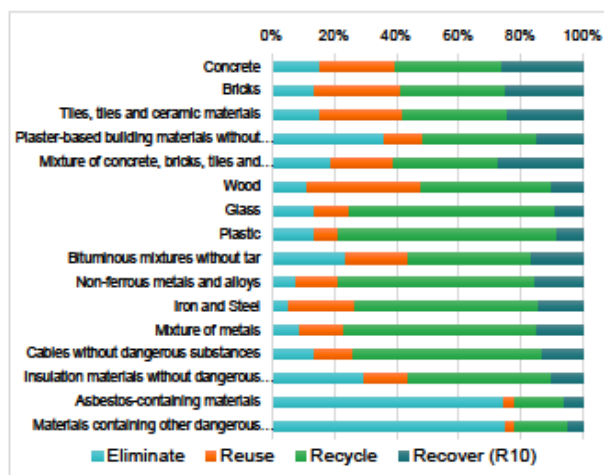
Stakeholders Survey

A survey was developed aiming to understand the stakeholder's opinion regarding the integration of pre-demolition and/or renovation audits in buildings as a tool leading to safer materials and with improved quality, enabling higher incorporation of recycled materials as raw materials and increasing the reuse of materials in the construction sector. Almost 700 participants completed the enquiry and the analysis of the results is nearing completion.

Comparative geographical distribution of the construction / demolition / rehabilitation companies who answered the enquiry and data from IMPIC for the whole registered companies shows a similar pattern, being the main differences assigned to missing information on municipalities.



Destination given to the materials from demolition and rehabilitation of buildings shows improvement potential of specific streams, namely for plaster-based and materials containing dangerous substances.



WEBINAR

SAVE THE DATE

21

JUN

2021

11:30

Pre-demolition audits
Built to Unbuild

14 WEBINAR

CLOSER

(CLOSER - CLOSER - CLOSER)



Online



Free registration



Presentations



Round table

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CLOSER

Close to Resources Recovery



On behalf of the CLOSER project, we are pleased to welcome you to the third issue of our newsletter.

Here you will find information about the project activities, as well as news and events related to construction and demolition waste (CDW). We hope that the topics of this third newsletter are of interest to you.

If you are not registered to receive the newsletter, please sign up [here](#).

Highlights:

- 1st Webinar CLOSER
- Pre-demolition PT Audit Guideline
- Summer Course SoRc

1st WEBINAR CLOSER

The 1st Webinar of the project CLOSER "Pre-demolition Audits – Built to unbuild", was held on 21 June 2021. A total of 183 attendees participated in the event.

The conference opening was held by Dr Maria de Lurdes Antunes, a Member of the Board of Directors of LNEC, who welcomed the attendee's and drew their attention to the importance of resource efficiency in the context of pursuing the transition to a circular economy.

Dr Ana Filipa Salvado chaired the webinar. The first speaker, Dr Susana Escária from Secretaria-Geral do Ambiente, highlighted the relevant role of EEA Grants towards reducing social and economic disparities in Europe and strengthening bilateral relations. Iceland, Liechtenstein and Norway have established the Multiannual Financial Mechanism EEA Grants through the European Economic Area (EEA) Agreement to improve the economic and trade relations.


Dr Maria João Falcão Silva, the second speaker, gave a short introduction to the CLOSER project underlining the relevance of implementing pre-demolition audits in buildings.

Eng. Ivone Nobre from IMPIC and Eng. Seyed Rezvani from LNEC presented the legal obligations of contracting authorities and the main results of the survey carried out in task 3 of CLOSER. The different practices adopted during the demolition and rehabilitation of buildings were mainly referred by the construction companies.

Eng. Mafalda Mota from APA, presented the changes due to the new waste legislation that comes into force on the 1st of July. The communications session ended with Dr Josefina Lindblom presenting the Level(s) approach for the sustainability of buildings.



The round table panel joined Eng. Carlos Mineiro Aires, President of the Portuguese Order of Engineers, Dr Josefina Lindblom, Senior Policy Officer of DG Environment - European Commission, Eng. Ana Carvalho, Vice-President of Figueira da Foz Municipality and Eng. Maria José Ramalho from Grupo Casais to debate how to raise people awareness for responsible building demolition. The moderators were Dr Isabel Martins from LNEC and Eng. Mafalda Mota from APA.

The presentations and the round table discussion can be accessed through the link <http://closer.lnec.pt/repository.html>



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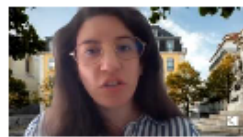
Eng.º Carlos Mineiro Aires



Dr.ª Josefina Lindblom



Eng.ª Ana Carvalho



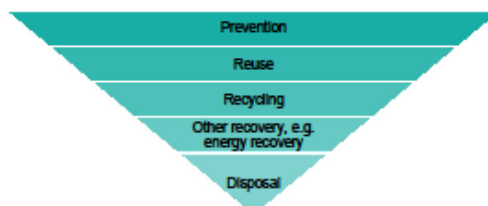
Eng.ª Maria Ramalho

Pre-demolition PT Audit Guideline

The guide, under development, covers CDW pre-demolition audit and aims to enhance the national recovery rate, the quality, traceability, transparency, and confidence level on materials from CDW. The set of recommendations should promote competitiveness between natural and recycled aggregates and facilitate the certification of secondary materials. The adoption of pre-demolition audits requires the support of policymakers to make it recognizable and acceptable in the construction sector.

It provides information about the general concepts and specific subjects about the CDW pre-demolition audit. The document must be well-aligned with CDW protocol and guidelines, WFD 2008/98/EC, European strategies, the Construction 2020 strategy, the Communication on Resource Efficiency Opportunities in the Building Sector and the most recent European Circular Economy Plan presented by the European Commission in 2020.

The audit will address the amount, nature and composition of the reusable materials and waste produced, identified through documentation analysis and *in-situ* study. The management options will depend on the presence of dangerous substances or materials containing these types of substances and the policies that rule their removal. A comprehensive report will enable precious recommendations for the future application of recycled materials and reused materials. Through the audit, the waste hierarchy must always be observed.



Summer Course SoR-c

The research fellow of the project CLOSER, Seyed MHS Rezvani, will attend the School of Re-construction (SoR-c) hosted by Brighton's School of Architecture and Design to re-think, re-use, and recreate new structures based on discarded construction materials.

Demonstration on the use of reclaimed materials will be the objective of students from design, architecture, construction and engineering areas working together from 2 to 13 August.

This summer school aims to provide a response to the declaration of a climate emergency by the UK Parliament committed to becoming carbon neutral by 2030.

SoR-c is part of a larger project whose goal is to increase the reuse of building elements after their first application. There is a large number of elements that are technically reusable, but they end up being recycled and even disposed into landfills. These alternatives should be avoided over reutilization because they lead to greater environmental impacts and a clear reduction in economic value of the elements.

The Summer school can widen the perspectives of the project CLOSER regarding the reconstruction and explore various proposals that may be relevant for using materials arising from demolition and rehabilitation projects of buildings.



CLOSER

Close to Resources Recovery



On behalf of the CLOSER project, we are pleased to welcome you to the fourth edition of our newsletter

Here you will find information about project activities, as well as news and events related to construction and demolition waste (CDW). We hope the topics in this fourth newsletter are of your interest.

If you are not registered to receive the newsletter please subscribe [here](#)

Highlights:

- Portuguese pre-demolition guide and case study
- European Researchers' Night
- Summer course SoRc

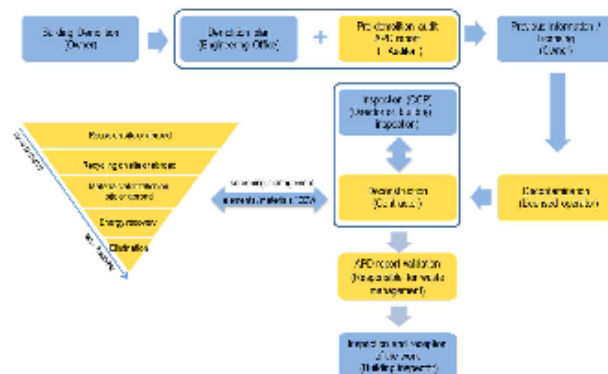
Portuguese pre-demolition guide

The CLOSER – Close to Resources Recovery project, intended to prepare the Portuguese guide for pre-demolition or renovation audits for buildings (PGPDA) meets the objective of increasing the application of circular economy principles in the construction sector, contributing to reduce the generation of construction and demolition waste (CDW), minimizing the contamination of this flow and promoting the production of better quality secondary materials. Pre-demolition audits (PDA) allow for a more accurate identification of the types and quantities of existing materials, presenting suggestions for future applications, whether for the reuse of materials or recycling of CDW.

PDA has to be planned and carried out by auditors with specific training before the application for licensing the demolition of the building and, consequently, before carrying out any work. The removal of hazardous substances is the first step to increase the value of elements, materials and CDW present. The importance of correct sorting, identification and segregation of the various components should be noted.

The scope of the PGPDA is defined by authorities at the national level. At the local level the guide may have more demanding requirements, based on environmental, social and economic requirements. This document is developed by the members of the CLOSER project team – LNEC as promoter and APA and IMPIC as partners and the contribution of entities that showed interest in it.

PGPDA comprises: i) Introduction; ii) Classification of construction and demolition waste; iii) Legislation; iv) Roles and responsibilities; v) Audit of pre-demolition waste; vi) Requirements vii) Waste management; viii) PDA reporting templates.



Simplified scheme of pre-demolition audit implementation

Case study

In recent years, recommendations and technical specifications have been developed in different countries, aiming to present reuse and recycling solutions for materials and waste from the demolition of buildings.

Proposing the most appropriate solution implies knowledge of the quality and quantities of materials, their location, condition and associated hazardous characteristics, information that is identified in pre-demolition audits.

In a first approach to the application of the actions proposed in the Portuguese Guide for Pre-Demolition Audits (PGPDA), the partners of the CLOSER project and Infraestruturas de Portugal agreed to develop case studies of the buildings to be demolished within the scope of the "Modernization of the section" project Mira Sintra-Meleças - Torres Vedras (excl.) of the West Line*. More specifically, the Cais Coberto da Malveira case study is in progress.



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European Researchers' Night

The European Researchers Night 2021 initiative (ERN 2021) took place, at European level, on the 24th of September and, in this pandemic year, again in person. With a creative character, ERN2021 included the participation of different segments of the scientific community, during the event and in the preparatory activities, aiming at the communication of science and the active involvement of the public.

The theme of ERN 2021 in Portugal, Science for the Climate, was aligned with the European Green Deal which proposes climate-neutral impact in Europe by 2050, through the promotion of initiatives that protect the environment and boost the green economy, reducing pollution.

ERN 2021 encompassed the social, economic and environmental dimensions of sustainability, promoting the relevance of science and research in contributing to climate neutrality in the future.

The participation of the CLOSER project took place at Jardim do Príncipe Real, in Lisbon, between 18:00 and 23:00. There was an interesting participation of young people, who were the target audience of the Quiz "What Dangerous Substances Do We Have in Our Houses?", developed for this purpose.



Summer course SoRc

CLOSER Project Research Fellow Seyed MHS Rezvani participated in the School of Reconstruction (SoR-c) organized by the Brighton School of Architecture and Design to rethink, reuse and recreate new structures based on discarded building materials.

School of Reconstruction consisted of 11 groups that worked on different subjects in online workshops using MS teams and Miro. Seyed Rezvani was in Group F named Material Flow that was supervised by Mark Oldengarm and Nicole Maurer from Netherland. The study of material flows relates to two sites in two cities (ENCI Maastricht and Harculo Zwolle) within the Netherlands.

The challenge was to use the material flows present to make proposals for the improvement of the sites under analysis, addressed to the public, colleagues and policy makers (and the planet)).

Seyed Rezvani used analytical hierarchy process known as AHP to weigh the criteria and rank the proposals within the group to reach a comprehensive conclusion in which option will work the best for the two sites.

The proposals ranked by decreasing order of relevance for the two sites were: used material market, a renewable energy central, a training center, a totem, a boat, new housing and refuse to do anything.



ANNEX 3

CLOSER events



CLOSER

Close to Resources Recovery

Event summary

The 1st Webinar of the project CLOSER "Pre-demolition audits – Built to unbuild", was held on 21 June 2021. A total of 183 attendees participated in the event.

The conference was opened by Dr Maria de Lurdes Antunes, Member of the Board of Directors of LNEC, who welcomed the attendee's and drew their attention to the importance of resource efficiency in the context of pursuing the transition to a circular economy.

The webinar, chaired by Dr Ana Filipa Salvado begins with the communications session. The first speaker was Dr Susana Escária, from Secretaria-Geral do Ambiente, who highlighted the relevant role of EEA Grants towards reducing social and economic disparities in Europe by strengthening bilateral relations. Iceland, Liechtenstein and Norway have established the Multiannual Financial Mechanism EEA Grants through the European Economic Area (EEA) Agreement allowing the strengthening of the economic and trade relations.

Dr Maria João Falcão Silva, the second speaker, gave a short introduction to the CLOSER project and Eng. Ivone Nobre from IMPIC and Eng. Seyed Rezvani from LNEC presented the legal obligations of contracting authorities and the main results of the survey on the different practises adopted in the demolition and rehabilitation of buildings, addressed mainly to construction companies.

Eng. Mafalda Mota from APA, presented the changes regarding the new waste legislation that comes into force on the 1st of July. This communication session ended with Dr Josefina Lindblom presenting the Level(s) approach for the sustainability of buildings.





CLOSER

Close to Resources Recovery



Dr. Marta de Jesus Antunes



Dr. Isabel Martins



Dr. António João Pinheiro Neto



Eng. Sérgio Rezende



Eng. Rita Pinheiro



Eng. Joana Mendes



Dr. Susana Escóbio



Eng. Mariana Ribeiro



CLOSER

Close to Resources Recovery

The round table panel joined Eng. Carlos Mineiro Aires, President of the Portuguese Order of Engineers, Dr Josefina Lindblom, Senior Policy Officer of DG Environment - European Commission, Eng. Ana Carvalho, Vice-President of Figueira da Foz Municipality and Eng. Maria José Ramalho from Grupo Casais to debate how to raise people awareness for responsible building demolition. The moderators were Dr Isabel Martins from LNEC and Eng. Mafalda Mota from APA



Eng Carlos Mineiro Aires (top, left), Dr. Josefina Lindblom (top, right), Eng. Ana Carvalho (bottom, left), Eng. Maria Ramalho (bottom, right).





CLOSER

Close to Resources Recovery

Event summary

The final seminar of the project CLOSER "Pre-demolition audits – Step by step" was held on 22 November 2021. A total of 181 attendees participated in this hybrid event.

The conference was opened by Dr. Laura Caldeira, President of LNEC, who welcomed the attendee's and emphasized the important role of applying circular economy principles to the use of materials from the demolition and rehabilitation of buildings.

Dr. Anabela Carvalho, Secretary-General for Environment, took the floor to congratulate the consortium of CLOSER for the achievements of the project and point out the importance of the EEA Grants, namely the Environment Program, for the development and establishment of synergies between projects aiming to boost the transition to a circular economy.

The opening session continued with the intervention of Eng. Pedro Guedes Pinto, Member of the Board of Directors of IMPIC, which highlighted two strategic drivers of IMPIC: i) the national strategy for public procurement and; ii) the circular economy and sustainability of the construction sector the latter of which CLOSER is part.

To conclude, Eng. Ana Cristina Carrola, Member of the Board of Directors of APA, underline the opportunities and challenges of the European Green Deals concerning the lifecycle of materials and products, from the production to the consumption and the end-of-life.





CLOSER

Close to Resources Recovery



Giving a second life to these materials reduces costs and the use of raw materials.

Dr. Laura Caldeira
President of LNEC



The closing of the materials cycle is the driving force in the transition to the circular economy.

Dr. Anabela Carvalho
Secretary-General for
Environment



Reuse must be on the agenda, it has to be everyone's goal.

Eng. Pedro Guedes Pinto
Member of the Board of Directors
of IMPIC



The demand must be addressed, to enhance the use of these materials.

Eng.ª Ana Cristina Carrola
Member of the Board of Directors
of APA



CLOSER

Close to Resources Recovery

Regarding CLOSER, the first speaker was Dr. Filipa Salvado, who made the general presentation of the project and the indicators. Dr. Isabel Martins then proceeded to present the national Pre-Demolition Audit Guide, outlining the advantages of reusing materials instead of recycling and introducing the templates developed. The application of the methodology of the Guide in a case study was presented by Eng. Seyed Rezvani. Finally, Eng. Mafalda Mota talked about the policies to implement the Pre-Demolition Audits.



Dr. Filipa Salvado (LNEC)



Dr. Isabel Martins (LNEC)



Eng. Seyed Rezvani (LNEC)



Eng. Mafalda Mota (APA)

The round table panel joined Eng. Sofia Santos, from Infraestruturas de Portugal (IP), Prof. Jorge de Brito, representative of the project CirMat,





CLOSER

Close to Resources Recovery

Dr. Paula Duarte, representative of the project Desconstruir para a Economia Circular and Dr. Paula Couto, representative of the project SecClass. The theme "An integrated approach for CDW" was discussed from the perspective of synergies that could be driven by pre-demolition audits. The moderators were Dr Isabel Martins (LNEC) and Dr. Maria João Falcão Silva (LNEC).



From left to right: Dr. Paula Couto (SeCClasS), Prof. Jorge de Brito (CirMat), Dr. Isabel Martins (LNEC), Dr. Maria João Falcão Silva (LNEC), Eng. Sofia Santos (IP), Dr. Paula Marques (Desconstruir para a Economia Circular)

ANNEX 4

Stakeholders survey

4/27/2021

Inquérito

Inquérito

*Required

CLOSER

Close to Resources Recovery

Promoter



LABORATÓRIO NACIONAL
DE ENGENHARIA CIVIL

Partners



https://docs.google.com/forms/d/1JST9R_1EF5Teoj2AJ-qC1_9pEgVsWrg4TyO3CRKvSns/edit

1/17

4/27/2021

Inquérito



http://youtube.com/watch?v=zDPOT_GVRnk

CLOSER - Mais Perto da Recuperação de Recursos

O projecto CLOSER - Close to Resources Recovery visa desenvolver e implementar um guia português de auditorias preliminares à demolição e / ou reabilitação de edifícios, contribuindo assim para obter materiais de maior qualidade e não contaminados.

Este guia é uma ferramenta que concorre para a dinamização da economia circular no setor da construção fechando os ciclos dos materiais de construção.

Este inquérito, de resposta voluntária, pretende caracterizar os hábitos e práticas adotadas pelas diferentes entidades antes das obras de demolição e reabilitação de edifícios e diagnosticar possíveis constrangimentos.

Todos os dados recolhidos serão tratados em pleno respeito pelas obrigações de sigilo e de confidencialidade do RGPD.

A sua participação é muito importante para nós e não demorará mais do que alguns minutos.

Agradecemos antecipadamente a sua disponibilidade.

Perfil do participante

1. 1 - Dimensão da empresa *

Mark only one oval.

☐ Micro (1-9)

☐ Pequena (10-49)

☐ Média (50-100)

☐ Grande (+100)

☐ Other: _____

4/27/2021

Inquérito

2. 2 - Localização *

Mark only one oval.

- ☐ Aveiro
- ☐ Açores
- ☐ Beja
- ☐ Braga
- ☐ Bragança
- ☐ Castelo Branco
- ☐ Coimbra
- ☐ Évora
- ☐ Faro
- ☐ Guarda
- ☐ Leiria
- ☐ Lisboa
- ☐ Madeira
- ☐ Portalegre
- ☐ Porto
- ☐ Santarém
- ☐ Setúbal
- ☐ Viana do Castelo
- ☐ Vila Real
- ☐ Viseu

4/27/2021

Inquérito

3. 3 - Área de atividade *

Tick all that apply.

- ☐ Demolição
- ☐ Construção
- ☐ Reabilitação
- ☐ Administração regional
- ☐ Sistema de gestão de resíduos urbanos
- ☐ Regulamentação
- ☐ Associação industrial
- ☐ Operador de gestão de resíduos
- ☐ Consultoria
- ☐ Fabricante
- ☐ Investigação e desenvolvimento

Other: ☐ _____

4. 4 - Anos de experiência? *

Mark only one oval.

- ☐ <5
- ☐ 6-10
- ☐ 11-15
- ☐ >16

4/27/2021

Inquérito

5. 5 - Em média, qual a percentagem total do orçamento alocado para a demolição? *

Mark only one oval.

- ☐ 0%
- ☐ 1%
- ☐ 2%
- ☐ 3%
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5/17

4/27/2021

Inquérito

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6/17

4/27/2021

Inquérito

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- ☐ 84%
- ☐ 85%
- ☐ 86%
- ☐ 87%
- ☐ 88%
- ☐ 89%
- ☐ 90%
- ☐ 91%
- ☐ 92%
- ☐ 93%
- ☐ 94%
- ☐ 95%

https://docs.google.com/forms/d/1JST9R_1EF5Teoj2AJ-qC1_9pEgVsWnG4TyO3CRKvSns/edit

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- ☐ 96%
- ☐ 97%
- ☐ 98%
- ☐ 99%
- ☐ 100%
- ☐ Não aplicável

6. 6 - Tem formação específica para a realização de obras de demolição e/ou reabilitação desconstrução de edifícios? *

Mark only one oval per row.

	Não	Sim. (Continue para a pergunta 7)
Demolição	<input type="radio"/>	<input type="radio"/>
Reabilitação	<input type="radio"/>	<input type="radio"/>
Desconstrução (demolição seletiva)	<input type="radio"/>	<input type="radio"/>

7. 7 - Qual? Como foi avaliado?

Destino de resíduos de construção e demolição (RCD)

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8. 8 - Indique até 2 práticas relevantes para diminuir a quantidade de RCD produzida: *

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9. 9 - Qual o destino para o material proveniente de RCD? *

No preenchimento a seguir tenha em consideração que os materiais foram listados de forma similar às categorias do capítulo 17 do LER. Considere ainda as seguintes definições: Eliminação – operações D, nas quais se incluem o aterro; Reutilização – utilização de produtos para o mesmo fim para que foram concebidos; Reciclagem – operação de valorização; Valorização (R10) – enchimento de vazios de escavação.

Tick all that apply.

	Eliminar	Reutilizar	Reciclar	Valorizar (R10)	Não aplicável
Betão	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tijolos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladrilhos, telhas e materiais cerâmicos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Materiais de construção à base de gesso sem substâncias perigosas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mistura de betão, tijolos, telhas e cerâmicas sem substâncias perigosas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Madeira	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vidro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plástico	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Misturas betuminosas sem alcatrão	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metais e ligas não ferrosas (alumínio, chumbo, zinco, estanho, cobre, bronze e latão)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ferro e aço	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mistura de metais	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cabos sem substâncias perigosas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Materiais de isolamento sem substâncias perigosas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Materiais contendo amianto	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

https://docs.google.com/forms/d/1JST9R_1EF5TeoJ2AJ-qC1_9pEgVsWrg4TyO3CRKvSns/edit

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Materiais contendo outras substâncias perigosas

--	--	--	--	--

Outras questões de gestão



10. 10 - Faz transporte do RCD por um operador licenciado?

Mark only one oval.

- ☐ Sim
- ☐ Não
- ☐ Nem sempre
- ☐ Other: _____

11. 11 - Transporta RCD para aterros sanitários licenciados e legais?

Mark only one oval.

- ☐ Sim
- ☐ Não
- ☐ Nem sempre
- ☐ Other: _____

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12. 12 - Qual a sua preocupação com a limpeza do espaço de trabalho?

Mark only one oval.

- ☐ Alta
- ☐ Média
- ☐ Baixa

13. 13 - Qual o destino que dá em relação aos itens abaixo? *

Mark only one oval per row.

	Reutilização	Venda em mercados B2B	Entrega em instalações de reciclagem e triagem	Mistura e entrega em aterros	Doação a terceiros	Não aplicável
Louças sanitárias	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Portas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Portões	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guardas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Corrimãos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Armários	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Janelas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contadores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comutadores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tomadas elétricas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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14. 14 - Qual o destino que dá a outros componentes não listados na pergunta anterior? *

15. 15 - A valorização dos materiais e componentes é feita com base nalgum regulamento/especificação? (se sim, qual ou quais) *

16. 16 - Na sua cidade existe algum mercado de materiais resultantes de obras de demolição e/ou reabilitação de edifícios? *

Mark only one oval.

- ☐ Não
☐ Sim (Continue para a pergunta 17)

17. 17 - Quem é responsável pela gestão desse mercado de materiais?

Mark only one oval.

- ☐ Município
☐ Setor privado
☐ Organização sem fins lucrativos
☐ Other: _____

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18. 18 - Quais as medidas que adota, nomeadamente de segurança, ao realizar a demolição de elementos estruturais, por exemplo pilares, vigas, lajes e paredes estruturais? *

19. 19 - Quais as medidas que adota, nomeadamente de segurança, ao realizar a demolição de elementos não estruturais, por exemplo paredes divisórias, painéis de revestimento? *

20. 20 - Quais as medidas que adota para não danificar elementos a preservar, por exemplo a fachada, do edifício durante a intervenção? *

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21. 21 - Adota medidas para contenção e recolha de poeiras?

22. 22 - Que medidas legislativas sugere para incentivar a aplicação de auditorias de pré-demolição ? *

23. 23 - Caso seja uma entidade adjudicante/dono de obra pública, indique se procede no âmbito da comunicação obrigatória ao Portal Base prevista no artigo 2º da Portaria 701-E/2008, de 29 de julho, nomeadamente no que refere ao Relatório final da obra, à informação sobre a quantidade de materiais reciclados incorporados, que nos termos legais é pelo menos 5% do total da obra?

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24. 24 - Caso seja uma empresa de construção indique se é titular de alvará contendo a subcategoria demolição. Em caso afirmativo indique a classe desta subcategoria.

25. 25 - Está interessado em participar na elaboração do guia de auditorias de pré-demolição de edifícios? *

Mark only one oval.

- ☐ Não
☐ Sim (Por favor deixe o seu e-mail para contacto)

26. Endereço de email:

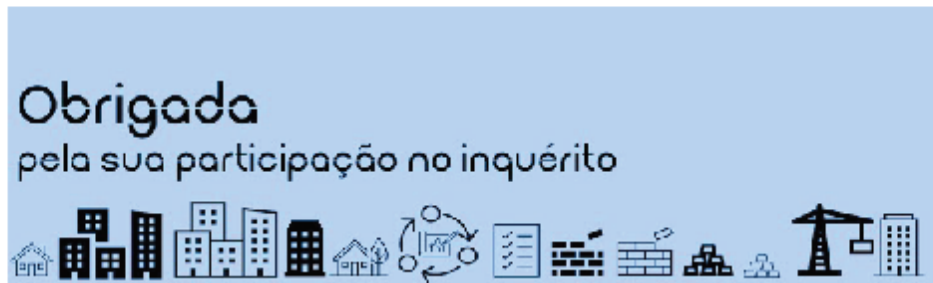
27. Os dados pessoais serão apenas utilizados para enviar os resultados do inquérito e para participar na elaboração do guia. Autoriza a sua utilização nestes termos? *

Mark only one oval.

- ☐ Não
☐ Sim

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Inquérito



This content is neither created nor endorsed by Google.

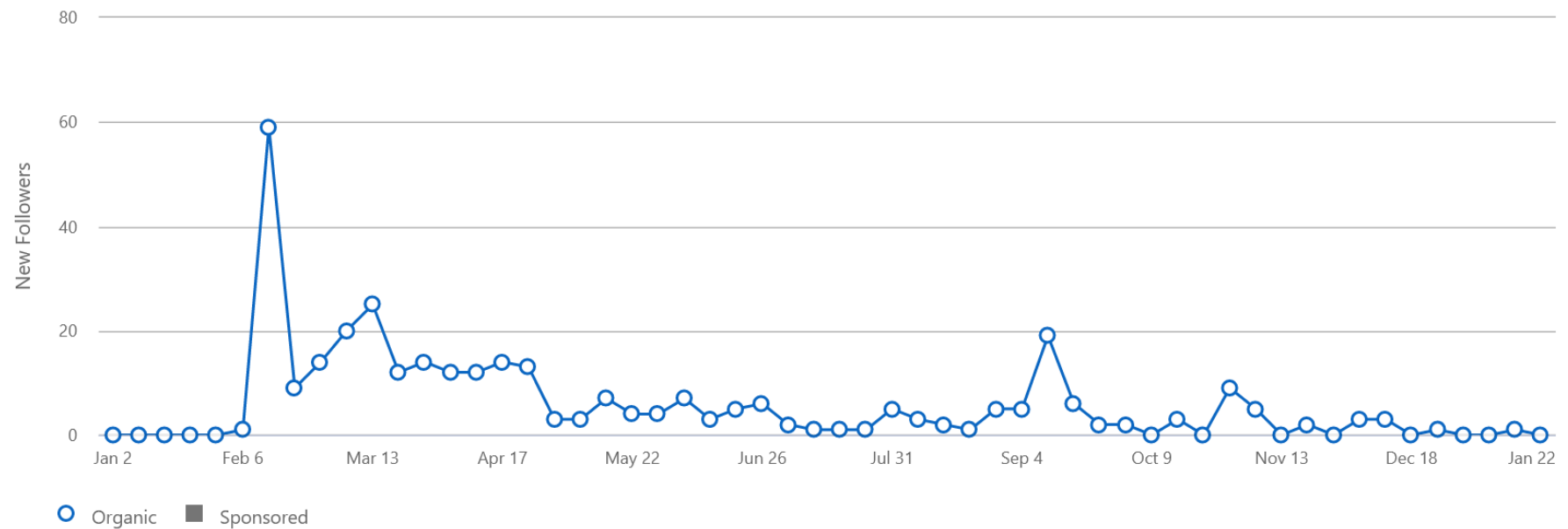
Google Forms

ANNEX 5

Social networks

Number of LinkedIn followers: 330 (31 January 2021)

Number of LinkedIn followers until the end of CLOSER: 323



ANNEX 6

Expenditure table

UHEC

Human Resources Expenses			Overheads		Human Resources Expenses			Overheads		Human Resources Expenses		
October	November	December	oct/dec	January	February	March	jan/mar	April	May	June	July	August
T1	350,7 €	- €	679,2 €	204,8 €	400,7 €	256,6 €	381,8 €	300,0 €	172,9 €	149,6 €	125,3 €	190,8 €
T2	140,3 €	- €	1 082,2 €	234,5 €	707,0 €	824,3 €	458,3 €	740,7 €	513,1 €	362,5 €	323,3 €	- €
T3	- €	- €	6,4 €	12,3 €	265,7 €	351,4 €	601,5 €	455,2 €	- €	788,1 €	437,8 €	- €
T4	- €	- €	- €	- €	- €	- €	- €	77,2 €	- €	581,6 €	131,8 €	- €
T5	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T6	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T7	- €	- €	- €	- €	107,5 €	135,4 €	157,1 €	238,4 €	352,3 €	504,5 €	585,5 €	- €
TOTAL	491,0 €	- €	1 766,8 €	451,6 €	1 537,2 €	1 451,4 €	1 965,0 €	1 813,8 €	1 795,4 €	2 386,5 €	1 199,2 €	1 864,4 €

Total executed 38 239,5 € 92%

APA

Human Resources Expenses			Overheads		Human Resources Expenses			Overheads		Human Resources Expenses		
October	November	December	oct/dec	January	February	March	jan/mar	April	May	June	July	August
T1	31,3 €	32,8 €	36,5 €	20,1 €	37,2 €	40,6 €	12,7 €	18,0 €	22,1 €	23,2 €	13,5 €	73,4 €
T2	103,0 €	108,1 €	120,2 €	65,3 €	- €	- €	- €	- €	46,1 €	- €	8,8 €	- €
T3	- €	- €	- €	- €	82,3 €	82,3 €	40,3 €	41,0 €	- €	- €	15,7 €	- €
T4	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T5	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T6	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T7	- €	- €	- €	- €	23,2 €	23,2 €	51,4 €	19,5 €	17,1 €	110,7 €	8,2 €	- €
TOTAL	134,3 €	141,0 €	156,6 €	86,4 €	142,7 €	146,0 €	103,3 €	78,5 €	117,5 €	175,0 €	71,7 €	211,1 €

Total executed 6 823,3 € 72%

IMPC

Human Resources Expenses			Overheads		Human Resources Expenses			Overheads		Human Resources Expenses		
October	November	December	oct/dec	January	February	March	jan/mar	April	May	June	July	August
T1	32,3 €	67,8 €	39,8 €	28,0 €	58,1 €	50,9 €	21,8 €	41,7 €	41,7 €	- €	16,7 €	32,3 €
T2	- €	- €	- €	- €	116,1 €	29,1 €	39,2 €	- €	- €	- €	- €	- €
T3	- €	- €	- €	- €	- €	407,9 €	152,8 €	138,9 €	33,4 €	320,5 €	158,6 €	- €
T4	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	117 €	- €
T5	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T6	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T7	- €	- €	- €	- €	58,1 €	87,4 €	36,1 €	27,8 €	27,8 €	204,0 €	51,9 €	- €
TOTAL	32,3 €	67,8 €	39,8 €	28,0 €	232,3 €	524,5 €	553,3 €	268,4 €	402,8 €	582,8 €	238,8 €	153,2 €

Total executed 7 952,9 € 102%

Human Resources Expenses			Overheads		Human Resources Expenses			Overheads		Human Resources Expenses		
October	November	December	oct/dec	January	February	March	jan/mar	April	May	June	July	August
T1	32,3 €	67,8 €	39,8 €	28,0 €	58,1 €	50,9 €	21,8 €	41,7 €	41,7 €	- €	16,7 €	32,3 €
T2	- €	- €	- €	- €	116,1 €	29,1 €	39,2 €	- €	- €	- €	- €	- €
T3	- €	- €	- €	- €	- €	407,9 €	152,8 €	138,9 €	33,4 €	320,5 €	158,6 €	- €
T4	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	117 €	- €
T5	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T6	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T7	- €	- €	- €	- €	58,1 €	87,4 €	36,1 €	27,8 €	27,8 €	204,0 €	51,9 €	- €
TOTAL	32,3 €	67,8 €	39,8 €	28,0 €	232,3 €	524,5 €	553,3 €	268,4 €	402,8 €	582,8 €	238,8 €	153,2 €

Human Resources Expenses			Overheads		Human Resources Expenses			Overheads		Human Resources Expenses		
October	November	December	oct/dec	January	February	March	jan/mar	April	May	June	July	August
T1	32,3 €	67,8 €	39,8 €	28,0 €	58,1 €	50,9 €	21,8 €	41,7 €	41,7 €	- €	16,7 €	32,3 €
T2	- €	- €	- €	- €	116,1 €	29,1 €	39,2 €	- €	- €	- €	- €	- €
T3	- €	- €	- €	- €	- €	407,9 €	152,8 €	138,9 €	33,4 €	320,5 €	158,6 €	- €
T4	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	117 €	- €
T5	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T6	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T7	- €	- €	- €	- €	58,1 €	87,4 €	36,1 €	27,8 €	27,8 €	204,0 €	51,9 €	- €
TOTAL	32,3 €	67,8 €	39,8 €	28,0 €	232,3 €	524,5 €	553,3 €	268,4 €	402,8 €	582,8 €	238,8 €	153,2 €

Human Resources Expenses			Overheads		Human Resources Expenses			Overheads		Human Resources Expenses		
October	November	December	oct/dec	January	February	March	jan/mar	April	May	June	July	August
T1	32,3 €	67,8 €	39,8 €	28,0 €	58,1 €	50,9 €	21,8 €	41,7 €	41,7 €	- €	16,7 €	32,3 €
T2	- €	- €	- €	- €	116,1 €	29,1 €	39,2 €	- €	- €	- €	- €	- €
T3	- €	- €	- €	- €	- €	407,9 €	152,8 €	138,9 €	33,4 €	320,5 €	158,6 €	- €
T4	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	117 €	- €
T5	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T6	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €
T7	- €	- €	- €	- €	58,1 €	87,4 €	36,1 €	27,8 €	27,8 €	204,0 €	51,9 €	- €
TOTAL	32,3 €	67,8 €	39,8 €	28,0 €	232,3 €	524,5 €	553,3 €	268,4 €	402,8 €	582,8 €	238,8 €	153,2 €

