

Id	Title	Date	Participants	Description	Research groups
39692005	Hormigones Reforzadas con Macrofibras Sintéticas para Aplicaciones Estructurales en Condiciones de Altas Temperaturas	01/09/2024	de la Fuente Antequera, Alberto;Tosic, Nikola;Galeote Moreno, Eduardo;Armengou Orús, Jaime;Pons Valladares, Oriol;Quijano Arteaga, Nadia Rosaura;Liu, Guanzhi;Denia Berrocco, Angel;Martínello Carlesso, Debora;Agudo De Cea, Antonio	<p>The use of fibres in concrete (fiber-reinforced concrete, FRCC) is leading to a revolution in the construction industry, particularly in sectors such as underground construction, industrial pavements, and prefabrication, even in elements with low structural responsibility. Although metallic fibers (SFRC) are widely used and have established regulations, synthetic macro-fibers with structural properties have progressively emerged in the last 5-7 years, proving to be competitive in technical and economic (and sustainability) terms, especially in marine environments where polymeric fibers exhibit resistance to aggressive agents affecting steel and concrete.□</p> <p>Despite their effectiveness, concrete reinforced with synthetic macro-fibers (MSFRCC) is not yet included in international design guidelines, limiting its application to non-structural elements or those with low load-bearing responsibility, such as pavements and shotcrete for non-resistant tunnel linings. The lack of research on the behaviour of this material under fatigue and creep conditions in cracked sections constitutes a significant regulatory obstacle. Particularly concerning at the structural level is the coupling of these phenomena with temperatures superior to 40°C (up to 100°C) in service conditions, temperatures covered by concrete structure design standards for which there is still no experimental evidence or calculation models for MSFRCC structures.□</p> <p>The project aims to address this challenge by providing answers through representative experimental results and constitutive models. This will enable the consideration of MSFRCC in future revisions of design codes, with a special emphasis on aspects of creep and resistance to high temperatures. Collaboration between laboratories and research groups specialized in FRCC is essential to carry out experimental campaigns and numerical simulations addressing parametric studies.□</p> <p>It is anticipated that the results obtained will drive significant advancements in the understanding of MSFRCC, facilitating its inclusion in future regulatory revisions and promoting its practical application in the construction of sustainable and efficient structures, with specific considerations regarding creep and resistance to extreme temperatures.</p>	EC - Enginyeria de la Construcció
37757923	Digitalized fire safety for resilient underground critical transport infrastructures	01/11/2023	de la Fuente Antequera, Alberto;Tosic, Nikola;Galeote Moreno, Eduardo;Martínello Carlesso, Debora;Nogales Arroyo, Alejandro;Ikumi Montserrat, Tai;Monserrat López, Andrea	<p>Through the project 'DIGITALIZED FIRE SAFETY FOR RESILIENT UNDERGROUND CRITICAL TRANSPORT INFRASTRUCTURES', called DIGITUN, the development of a digitized fire safety approach for the intelligent management of subway critical transport infrastructures based on the use of low-cost embedded wireless sensors and advanced structural reliability models is addressed. To this end, the project will make use of industry knowledge and technology assets (sensors and intelligence platforms) and advanced structural reliability models to improve the structural assessment of tunnels after a fire and optimize the repair/demolition strategy in terms of sustainability (environmental and economic).</p> <p>This new approach is thus intended to increase: (1) the level of safety against extreme fire events; (2) low-cost and reliable identification and quantification of the level of damage of the tunnel lining after the event and (3) to determine the most sustainable repair/reinforcement intervention according to the data recorded by sensors and structural analyses.</p> <p>The following results and outcomes are expected as a result of the completion of the project:</p> <ul style="list-style-type: none"> - A new low-cost wireless sensor system with traceability capabilities -inexistent within the market nowadays- for tunnel linings temperature monitoring during production, storage and accidental fire events during service. - A thermo-mechanical numerical model validated by means of real-scale tests carried out on tunnel concrete linings capable of determining level and intensity of damage in tunnel concrete linings owe to a fire accidental event. - An AI-Powered cloud platform capable to manage and optimize operations based on the data provided by the sensor systems and the outcomes obtained from the thermo-mechanical numerical model. This would be the first worldwide fire-safety management approach based on a digitalized system. <p>This sensor and AI-based approach can be installed in both existing and new tunnels to be built, so there is a large market potential for this new technology to be developed in the context of DIGITUN.</p> <p>The project is to be carried out by the following entities:</p> <ul style="list-style-type: none"> - DRAGADOS (consortium leader): is one of the leading construction brands in the ACS Group. The ACS Group is the most internationalized construction and engineering group in the world. DRAGADOS has unrivalled international experience in infrastructure projects with a presence in more than 40 countries, developing bridges, roads, tunnels, dams and marine works, and is a leader in the execution of concession projects. - SENER: SENER is a benchmark engineering company based in Spain and an internationally recognized name in the aerospace, energy and process, civil engineering and architecture and marine engineering sectors. Its outstanding participation in these four business areas distinguishes it as the first multidisciplinary engineering company in Spain and one of the leading European engineering companies. - UPC: The Polytechnic University of Catalonia (UPC) is a public university created in 1971, whose research and higher education activity is carried out in the areas of architecture, engineering and science. The activity of its campuses and centers make the UPC a reference and, in complicity with the productive fabric, an agent and engine of economic and social change, as it values basic and applied research, and transfers technology and knowledge to society. <p>The project has a planned duration of 3 years (36 months), starting on November 1, 2023, during which the following technical actions will be carried out: Sensor system development WP1, Validation of sensors for concrete tunnel linings (WP2), AI-powered cloud platform development (WP3) and Sustainability and impact on stakeholders (WP4).</p>	EC - Enginyeria de la Construcció
36017685	Boosting the uptake of circular integrated solutions in construction value chains	01/06/2023	de la Fuente Antequera, Alberto;Tosic, Nikola;Altimita Bosch, Mónica;Pàrrera Ruiz, Raquel;Galeote Moreno, Eduardo;Aidarov, Stanislav	<p>Objective:</p> <p>In order to upscale circular solutions in buildings and the construction sector in general, a concentrated research effort involving multiple actors and stakeholders is needed. This includes the development and deployment of both digital and technical solutions in building urban material databanks, digital twins, as well as demolition, decontamination and recycling and reuse of waste materials. With this in mind, the Circ-Boost project proposes to become a focal point and interaction node for different emerging technologies to foster circularity in buildings and the construction sector. The project's core consists of five pilot projects, deployed in different European regions, highlighting and demonstrating at large scale novel and integrated solutions for demolition, construction waste processing, management, and valorisation in new products. Transversal activities of digitalization will allow collaboration between the pilot projects and more efficient use of digital tools and platforms. Targeted activities are envisioned for boosting and maximising the pilot projects' commercial and business potential through effective exploitation measures. Furthermore, in order to ensure that the solutions demonstrated will actually be adopted by the industry, the project will support construction and design companies in educating and training their workforce to optimally use the new technologies as part of training activities. The Circ-Boost project will also leverage the partners' existing regional and international networks and connect with new networks, initiatives, and projects to disseminate and compare project results with a wide audience of construction stakeholders increasing the overall uptake potential of circular solutions. Finally, tailor-made communication and dissemination measures will further support the dissemination of project results with policy makers, and European-wide construction industry, as well as the promotion of the project's success.</p>	EC - Enginyeria de la Construcció
35725941	Desenvolupament de formigó nul en CO2 amb impacte ambiental positiu, basat en residus urbans i agrícoles	12/04/2023	Rosell Amigo, Juan Ramon;Bedini, Sara	<p>El projecte es mou sobre dos eixos: Investigació sobre putzolanes a partir del silici obtingut de la cendra de colofona d'arròs. Aquesta part de la investigació contempla la caracterització química del silici obtingut, la seva capacitat com a material putzolànic i la proposta industrial per a la fabricació d'aquesta putzolana. La segona part de la investigació contempla la caracterització de formigons basats en Caçq (hidràulica NHL o hidròxids càlcics CL-90) i putzolana natural a partir de la cendra d'arròs. Aquests formigons estaran compostos per agregats vegetals o provinents de residus industrials.</p> <p>El projecte busca la caracterització de formigons amb un marcat caràcter ecològic, on les emissions de CO2 i la utilització de subproductes urbans o vegetals siguin els paràmetres que emmarquin la investigació. El projecte combinarà una vessant d'investigació en laboratori i una d'implementació en casos reals i obra.</p> <p>L'objecte final de la investigació és la caracterització de formigons amb mínimes emissions de CO2 i marcat caràcter ecològic. El projecte constarà de tres fases: una primera d'estat de l'art i recopilació d'investigacions prèvies; una segona de formulacions i treball de laboratori on s'analitzarà la capacitat putzolànic de la cendra d'arròs i una tercera fase on s'incorporaran agregats de diferents naturals, residus vegetals o àrids procedents de ala indústria del reciclatge urbà.</p>	GICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
36687922	Vitralls, tradició i coneixement	28/02/2023	Bosch Prat, Mireia;Olona Casas, Joan;Martí Muñoz, Jordi;Gomez Xaudera, Laia	<p>El projecte Vitralls, tradició i coneixement científic pretén eliminar la idea de l'artesa com a reliquia del passat preindustrial, posant en valor la seva feina i el seu ofici. Aquesta visió de la restauració, dels artesans i de la transmissió del coneixement de generació en generació, cal posar-lo en valor i documentar-lo. Partint d'aquests principis, i a través dels vitralls de l'edifici Condeminas es pretén impulsar, divulgar i transmetre el coneixement de la tècnica i els artesans, sense els quals no es podria restaurar edificis amb caràcter patrimonial.</p>	REARQ - Rehabilitació i Restauració Arquitectònica
34999751	Regenerar Barcelona	20/12/2022	Ravetllat Mira, Pere Joan;Cornado Bardon, Cossima;Domenech Rodríguez, Marta;Vima Grau, Sara;Quintana Gomez, Jesus;Bosch González, Montserrat;Paris Viviana, Oriol;Alva, Alex;Plasek Vinocur, Gonzalo	<p>Aquesta proposta es planteja com una infraestructura eficient que s'adossa a l'edifici existent i permet millorar, protegir, reparar, re-equipar i ampliar els seus habitatges i espais comunitaris.</p> <p>El projecte es planteja com un Open System que consisteix en un suport (partint d'una estructura autoportant de fusta) modular i muntat en sec, capaç d'acollir formes d'ocupació i apropiació de l'espai diverses i adaptables a diferents situacions i tipologies preexistentes i en general a necessitats diverses. Es tracta d'una infraestructura urbana, un suport equipat, que no només permet i facilita acollir ampliacions i activitats sinó que incorpora sistemes i elements capaços de millorar les condicions d'habitabilitat, el confort i l'eficiència energètica, i reparar, protegir i abastir els habitatges i edificis residencials preexistents als quals s'aplica. A escala urbana, aquesta estructura modular es proposa contribuir també a equipar i millorar les qualitats ambientals i espacials de l'espai públic proper i de l'entorn urbà.</p> <p>Els equips o 'kits' que s'incorporen a aquesta estructura, també moduls i desmuntables, fomenten l'apropiació i l'ús d'aquest Open System i la posada en funcionament d'un micro-ecosistema ambiental i social. Es tracta d'elements i sistemes 'plug-in' que alhora són moduls, muntats en sec i resilients per tal d'adaptar-se a preexistències variades i a necessitats múltiples i possiblement canviants, a la vegada que poden ser desmuntats i reutilitzats.</p> <p>Així doncs, sobre una estructura de pòrtics i entramat de fusta desmuntable i muntada en sec, s'incorporen els diversos sistemes que conformen l'entorn bioclimàtic.</p> <p>L'adaptabilitat del sistema proposat respon al repte d'acollir diferents necessitats d'ampliació (espais comunitaris, exteriors i interiors, espais privats) i de re-equipament i millora de l'edifici existent a través de l'envoltant bioclimàtic. També dona resposta a la probable convivència de diferents necessitats i aspiracions per part de la comunitat existent. En aquest sentit, la generositat dels espais exteriors comunitaris ha de permetre la coexistència de múltiples usos i formes d'apropiació, propietades per la configuració de l'espai, per la presència de múltiples elements i materials dinàmics, i pel propi suport equipat.</p> <p>Aquesta proposta es configura com un sistema obert que vol ser exemplar des del seu caràcter ecològic tant en el seu ús com en la seva construcció i posada en obra, gràcies a l'ús de materials de proximitat, reciclables i reutilitzables i el seu assemblatge en sec conformant un sistema totalment desmuntable. A més de la circularitat que persegueix el sistema, les emissions de CO2 i l'energia embebuda en els materials i sistemes per a la seva construcció queden molt per sota dels valors de referència. La incorporació de sistemes dinàmics i d'elements o sistemes vius i de biodiversitat, i d'èines innovadores d'enregistrament i visualització de dades i informació, obren oportunitats d'activació comunitària estretament vinculades als hàbits i l'ús i funcionament de l'espai i l'edifici com una infraestructura que també és social.</p> <p>Un cop construïda, la infraestructura ecològica contribueix a regenerar un micro-ecosistema ambiental i social amb beneficis a petita i mitjana escala, per a la comunitat resident, el barri, la biodiversitat i la urbanitat del context on s'insereix. La seva replicabilitat i aplicabilitat en diferents contextos i situacions urbanes diverses de l'Àrea Metropolitana de Barcelona i altres entorns urbans similars permet escalar-ne el potencial d'impacte i millora a escala territorial.</p>	REARQ - Rehabilitació i Restauració Arquitectònica

35160966	SUSTAINABLE CONSTRUCTION WITH BIO-COMPOSITE MATERIALS	15/12/2022	Haurie Ibarra, Laia;Lacasta Palacio, Ana Maria;Navarro Ezquerria, Antonia;Ramirez Casas, Judith;Palumbo Fernandez, Mariana;Avelledana López, Aina	<p>Project description: For EU countries, the European Green Deal has set ambitious objectives to become climate-neutral by 2050. Global challenge is to reduce energy consumption and greenhouse gas (GHG) emissions and to obtain prosperity and sustainable economic development. To accomplish this goal, actions across all economic sectors are needed. ?The built environment has a significant impact on many sectors of the economy, on local jobs and quality of life. It requires vast amounts of resources and accounts for about 50% of all extracted material. The construction sector is responsible for over 35% of the EU's total waste generation. GHG emissions from material extraction, manufacturing of construction products, as well as construction and renovation of buildings are estimated at 5712% of total national GHG emissions. Greater material efficiency could save 80% of those emissions? (EC, 2022). To increase material efficiency and reduce climate impact, the European Commission has launched a comprehensive new strategy for a sustainable built environment, which promotes circularity principles throughout the lifecycle of buildings. One of the possible options is building with bio-composite materials. Typical construction materials (e.g., plastic, steel) have a large ecological footprint. Contrary, bio-composites are the next generation of sustainable building materials, made up of a combination of eco-friendly ingredients ? usually plant fibers mixed with natural resins and binders. Bio-composites help eliminate non-renewable waste, reduce raw material usage, and cut fossil-fuel consumption. It can be stated that the construction industry is experiencing a technological and green revolution across the entire building life cycle. However, analysis of available education across European countries reveals that higher education in green construction with bio-composites is still not sufficiently developed, teachers and students lack sustainability competences, as well as green construction knowledge and skills. Bio-composites are often neglected in civil engineering and other construction-related study programmes. The gaps in education and skills mismatches, observed in 7 universities, encouraged the new BIO-FIBRE project's idea ? to develop and deliver the innovative student-centered trans-disciplinary course in green construction using bio-composite materials. For development of such education, efforts and resources of single institution are not sufficient, joint collaboration actions, sharing of know-how among different higher education institutions are necessary, moreover, to maximise the impact, international trainings of students are required. Therefore, it is expected that funding will enable participating organisations to gain experience in international cooperation, join and share trans-disciplinary knowledge, strengthen their capacities and will help to produce high-quality innovative deliverables, including innovative courses on green construction with bio-composites.</p> <p>Objectives: O1. To develop methodological framework, based on innovative student-centered learning approaches and improve pedagogical competences of teachers; O2. To develop a new course on green construction with bio-composites; O3. To educate students in sustainable construction practices with bio-composites; O4. To ensure open awareness of the project's results at local, national, EU and transnational level and promote sustainable construction in higher education.</p> <p>Added European value Green construction with bio-composites is rather new and just started to be developed in European countries. HEIs lack of knowledge on how to produce and use bio-composite materials in construction and implement circular economy principles, therefore education in this field is not sufficiently developed. Collaboration between professionals from different countries and universities is necessary to collect know-how and to create the new trans-disciplinary course. Universities involved in the partnership are specializing in different bio-fibres that can be used in construction in Northern, Middle and South European countries. Sharing of knowledge of teachers from different countries will create an added value and provide education on different types of construction solutions with bio-composites. Obtained knowledge will be spread across 7 universities from 7 countries and, due to dissemination activities, to other European universities. Joint research activities by participating HEIs will lead to development of new knowledge in construction with bio-composites and will further encourage research at European and international level. Added value will be created in implementation of the new course. Students from 7 European countries will have an opportunity to study topics of the course at their HEIs, they will have access to study materials, developed by the group of international teachers. International blended mobility course will be organized. During this course students will be able to make experiments on bio-composite materials at advanced laboratories of AUTH (Greece) and TU/e (Netherlands), attend lectures delivered by international group of teachers and company representatives. Working in international groups students will develop their intercultural communication, social and English language skills.</p>	GICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
34895476	Bio-retardantes de llama para el desarrollo de plásticos ecológicos	01/12/2022	de Redondo Realinho, Vera Cristina;Haurie Ibarra, Laia;Arenón Osuna, David;de Sousa Pais Antunes, Marcelo	<p>This proposal gives continuity to previous projects of the Polyfunction Polymeric Materials (POLY2) group dedicated to the conception and development of multifunctional lightweight materials with high specific performance and of the Interdisciplinary Group of Science and Technology in Building (GICITED) projects related with by-products agriculture recovery, through the development, characterization and improvement of materials and sustainable constructive solutions. This encompasses four cross-cutting actions: □ A - Characterization of bio-based raw materials from sustainable natural resources to investigate their potential application as flame retardants in multicomponent polymeric systems with high flame retardant efficiency. □ B - Replace commercial flame retardant systems with efficient bio-based alternatives in bio(plastics). □ C - Establish relationships between the composition, processing, microstructure and properties of the new eco-friendly fire-retardant bio(plastics) with high environmental sustainability, with the aim of extend the industrial applicability of these polymeric solutions with low environmental impact. In particular, in sectors with very strict fire protection and environmental regulations, such as construction, transport or electrical/electronic (E&E). □ D - Carry out an analysis of the life cycle of the optimal performance bio-retardant formulations. This information is a necessary action to assess the environmental and economic impact that this kind of solution may have in the industrial sector. □ In this sense, the proposal will contribute to the ecological transition by focusing on the following environmental objectives described in the Taxonomy Regulation: □ Climate change mitigation: within this objective, the proposal focuses on the use of renewable materials from sustainable sources. □ Transition towards a circular economy: the central axis of the presented proposal is to obtain products with high added value from byproducts of biological origin. Besides of reducing the resource consumption in the affected industrial sectors, it also seeks to have a positive impact on the agricultural and forestry sectors, which could obtain new products with which to increase the yield of their productions. □ Pollution prevention and control: the aim is to reduce or eliminate pollution generated by some synthetic flame retardants currently on the market. □ The POLY2 and GICITED groups have means and infrastructure distributed in four laboratories, three in Barcelona and one in Terrassa, and broad experience in the development of sustainable materials with low environmental impact, demonstrated by the number of publications in journals with a high impact factor, participation in competitive projects with public funding, contracts with transfer of knowledge to the industry and supervised doctoral theses. In particular, two are being directed, within the framework of industrial doctorate, in collaboration with two big companies, related to the field of knowledge of the project. □ For all these reasons, it is expected that the results of this proposal will have repercussions on the well-being of society with the reduction of fire hazard and environmental impact. As well as, in the economy of several productive sectors previously cited strengthening their competitiveness and resilience.</p>	POLY2 - Polyfunctional polymeric materials
34895414	Dispositivos inteligentes de control solar para la rehabilitación de envolventes a partir de residuos	01/12/2022	Pons Valladares, Oriol;Muros Alcojor, Adrian;Bosch González, Montserrat;Masseck, Torsten;Crespo Sánchez, Eva;Muñoz Blanc, Carlos;Calderon Valdivezo, Lucrecia Janneth;Nikolic, Jelena;Sanchez Riera, Alberto;Paris Viviana, Oriol;Bagheri Moghaddam, Faezeh;Ledesma Hidalgo, María Gabriela;Habibi, Saied;Fortea Navarro, Inmaculada;Castillo De Leon De Romero, Rosnery Nayarith;Alva, Alex;Ortega Donoso, Sara Isabel	<p>WiSeR responds to current global sustainability issues, specifically those problems caused by the construction sector, which is responsible for around 40% of the global carbon emissions and energy consumption. This proposal does so in line with current measures and initiatives such as the directives from the European Union (EU), which aim to reduce environmental impacts caused by buildings to achieve the UE 2050 climate-neutral target. In Europe, there are over 220 million buildings of which 85% date before 2001 and are high-energy consumers. To rehabilitate these buildings will require technicians to reuse or recycle at least 70% of their construction and demolition waste, which will reduce the impact of their rehabilitation processes significantly because fewer new materials will be needed while waste matter will be recirculated. □ □ New methodologies, tools and processes are needed to introduce circular economy principles in the building sector. This does not only require technological solutions and innovative material stream design, but also the need to overcome human resistance to change. These procedures can be supported by understanding, designing, and experimenting with real circular solutions, which after a successful first prototype experience can then be improved, upscaled and designed for market-readiness. This intermediate, experimental, learning-by-doing approach will be developed by designing and implementing an innovative process from waste identification to design, prototyping, improvement, and implementation of waste-based multifunctional facade elements for school buildings. WiSeR explores among others the principles of eco-sufficiency, optimized waste-to-reuse processes, and lifecycle carbon foot printing for building components. □ □ WiSeR aims to develop new waste-based intelligent facades to then rely to refurbish buildings, which will also contribute to mitigate and adapt to climate change by focusing on openings, whose thermal conductivity and solar thermal gain highly influence interior comfort and related energy efficiency. WiSeR employs the role of waste in architecture innovation by recycling and reusing waste while these facade systems become to recycle at the end of their life. Resulting buildings will improve their own sustainable behaviour, including economic, environmental and social issues. This project will consider the lessons the researchers learned from a previous competitive project which developed workshops for children to build their own solar control devices. WiSeR aims to overcome the weaknesses discovered in those alternatives while introducing new materials. To minimize its environmental impact, this proposal will focus on digital modelling, simulation, characterization and monitoring. A holistic user-centered development is expected, not only for the material but the whole systems. These new systems will be first validated in a school center receiving feedback from our future citizens. Multiple participatory processes, from seminars to workshops, should contribute to move towards more sustainable, better self-operated, wiser solar-control devices for the future.</p>	SMART - Sustainability and Metabolism in Architecture and Technology
36613825	Hormigón arquitectónico no estructural para uso urbano formulado con cementos activados alcalinamente utilizado como precursor escorias de incineración de residuos municipales	01/12/2022	Chimeno Ribera, Josep Maria;Formosa Mitjans, Joan;Andres Payan, Ana;Rosell Amigo, Juan Ramon;Cifrian Bemposta, Eva;Maldonado Alameda, Alex;Mañosa Bover, Jofre;Alfocea Roig, Anna		GICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
34895431	Producción de sedimentos en cuencas de montaña. Evaluación del impacto del cambio climático sobre la sedimentación en embalses y la pérdida de suelos	01/12/2022	Hürilmann Ziegler, Marcel;Medina Iglesias, Vicente Cesar de;Abanco Martínez de Arenzana, Claudia;Puig Polo, Carolina;Moya Sanchez, Jose;Lantada Zarzosa, Nieves;Bull Pozuelo, Felipe;Latron, Jérôme;Ruiz Carrulla, Roger;Matas Casado, Gerard;Orthuis Gomez, Raul;Rianna, Guido;Martinez Bofill, Joan;Rickenmann, Dieter;Lloret Morancho, Antonio;Torra i Truncal, Ona;Diaz Delgado, Alberto	<p>The sediment budget in mountainous watersheds is of utmost importance for multiple issues related to the ecological transition described in the Taxonomy Regulation of European parliament and council. The protection of natural resources like the reduction of land degradation or soil erosion as well as the water supply, the improvement of renewable energies like the ones related to water reservoirs, or the mitigation of the impacts of climate changes are only a few aspects. Energy storage in reservoirs is the main short-term energy storage system in EU and it has been identified as crucial in the implementation of the renewable mix energy generation. In the following years the available capacity must double, otherwise the European Green Deal will not succeed. Therefore, the impacts of future climate and soil cover changes on the sediment budget in mountainous watersheds is of highest importance regarding the EU strategies for decarbonization and Climate Change. □ □ Since second half of the last century, an extensive research has been conducted to quantify the sediment budget, but mainly focused on agricultural soils, and less aimed to mountain areas and associated processes. Therefore, gully/badland erosion and landslide-related sediment yield has been less investigated. In Spain, important research has been performed in erosion processes for the last 30 years, delivering valuable results to improve the sediment yield quantification. The SED4BDU project will take advantage of all the existing knowledge in order to develop a regional scale sediment budget model for mountainous watersheds. □ □ This newly developed, open-source model will principally include the following improvements: special attention to gully/badland erosion and landslide-related sediment, the incorporation of the weathering in badlands, and the integration of sediment transport equations for steep channels. The model will be verified, calibrated and validated by existing and newly gathered data, which are coming from La Baells watershed (main study area) as well as Sau and Talam watershed. Finally, the new model will be used as a working tool to evaluate the Climate Change impacts to the sediment budget in the three watersheds, aside with the effect of the future land use changes. The final outcome of the project is a picture to quantify the expected future impacts to the water reservoirs or any other element susceptible to the sediment budget, as the natural soils. The overall workplan applies an innovative and ambitious multidisciplinary methodology, which will be performed by a consortium combining experts of hydraulic, geological, geotechnical and geomatic engineering as well as earth and environmental science. In addition, the consortium counts with the support of multiple stakeholders, which will assure the transfer of results.</p>	Geo2Aqua - Monitoring, modelling and geomatics for hydro-geomorphological processes

34916557	Producció local de materials de construcció amb terra i activitats formatives	01/12/2022	Navarro Ezquerria, Antonia;Palomino Fernandez, Mariana;Tous Coll, Marc;Columbès González, Andreu;Ramírez Casas, Judith;Hamard, Erwan;Rivera Vidal, Amanda Catalina	Construction is one of the most polluting human activities, being responsible for 40% of carbon emissions, air pollution, the use of material resources and 30% of waste production. Large-scale works and buildings are confronted with the problem of excavation, which is difficult to store and transport. In the EU, 75% of the wastes from the building sector are composed of earths. In 2015, the volumes of excavation debris in Spain were of 35.6 million tonnes, and for the next twenty years have been estimated at 600 million tonnes. What is now considered unusable and bulky waste may in fact become a huge resource. In the years to come, it is possible to build millions of square meters by reusing the earth from excavation of buildings and urban infrastructures, rather than storing it in landfills. □ Earth is a low-energy, low-emissions and recyclable construction material. Like wood, stone or plant fibers, earth has tremendous ecological and social virtues, such as very low carbon footprint, completely reusable as a raw material, recyclable as component of earthen products, and it is 100% healthy and without VOCs. Earthen buildings have a high environmental and health quality because earth walls and coatings are breathable and work as a natural hygrometric regulator, and they have a high inertia, guaranteeing good regulation of the interior temperature. Building with earth is synonymous with rewarding jobs, gender equality, and local trades because they carry a sustainable meaning. Building with local soils means 'renaturing' the city and rebalancing its natural material in the face of the growing artificialization of our living environment. Reuse at the end-of-life of building materials is primarily responsible for the material savings. Earth building is an interesting outlet for the reuse of these wastes, while meeting the challenge of circular economy.□ Terra-Cycle aims to reuse and recycle uncollected excavated soil for the construction of new districts with raw earth. Terra-Cycle proposes a new model of town planning development, based on local resources. The aim of the project is to set up an industrial process to reuse soil extracted from the excavation sites of the new urban areas, public infrastructures, and other construction sites in Spain. The significant innovation lies in creating a circular industrial process using extracted soil from construction excavation as raw material.□ A base case will be used for replicable projects: the construction of a new district in the Municipality of Cerdanyola del Vallès, included in the Urban Metropolitan Area of Barcelona, Spain. The first innovation consists in reversing the logic: developing a process adapted to the existing material instead of seeking the resource adapted to the process. Terra-Cycle will transform the raw earth from construction sites into local materials such as earth plasters, earth blocks and rammed earth for walls and floors. The materials which will be produced will be used in construction sites in urban areas after receiving appropriate technical certification. These products are circular, carbon neutral, healthy and consume minimal embodied energy. In a context of growing scarcity of resources and unbridled production of waste, Terra-Cycle offers a virtuous, ecological and sustainable approach, while improving local economy.	GIICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
36613777	Desarrollo de materiales cementicios ecoeficientes, con bajo impacto y alta durabilidad	01/09/2022	Chimenes Ribera, Josep Maria;Formosa Mitjans, Joan;Rosell Amigo, Juan Ramon;Padilla Sanchez, Jose Antonio;Giro Paloma, Jessica;Lopez Montero, Teresa;Maldonado Alameda, Alex;Mañosa Bover, Jofre;Afocea Rogi, Anna		GIICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
36892954	Les veus de la pedra: conservació i difusió de l'art sonor contemporani. El cas de les escultures pètries de Pnuccio Sciola	01/07/2022	Guasch Ferre, Nuria;Navarro Ezquerria, Antonia	Pnuccio Sciola, és un dels escultors sonors en pedra més coneguts internacionalment, al poble natal del qual es troba un 'Jardí de Pedres Sonores' ideades pel propi escultor. L'expansió de l'escultura en pedra cap al camp de l'art sonor possibilita l'intersecció amb altres disciplines artístiques com la música, les arts escèniques i visuals, vinculant-les també amb altres àrees del coneixement com la física acústica i la geologia. Sobre aquesta idea de treball conjunt transdisciplinari entre científics i artistes es planteja el projecte que aquí es presenta, el qual persegueix no sols mostrar les escultures com objectes sonors de caràcter instrumental, sinó també, per una banda, expandir aquesta disciplina cap al creament discursiu de diverses àrees de coneixement i, per altra banda, fer ús de l'art com a mitjà per a connectar a les persones, per mitjà de la conservació i la preservació de l'art.	GIICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
35702439	AWASUKA - Programa per a la Millora de l'Hàbitat al Nepal Rural? ¿Cuines sense fum? i ¿Preservació del Patrimoni?	01/06/2022	Bosch González, Montserrat	Feina A: (Arquitectònica) Proposta de petites modificacions de distribució en les cuines rurals nepaleses per tal de millorar-ne les condicions higièniques. Es tracta d'intervencions tan senzilles com escollir el lloc ideal per a la xemeneia, perquè aquesta pugui funcionar bé, tenint en compte l'alçada de la teulada. Les propostes es faran a les noves cases, partint de les anàlisis prèvies del màxim nombre de cuines on ja n'hi han instal·lades xemeneies i traient conclusions de les lliçons apreses. Feina B: (Mapejat Satèl·lit i Impacte Social) Monitoratge del procés d'implementació (selecció de beneficiaris, fabricació i instal·lació) de les cuines sense fum ja instal·lades, per tal de millorar-ne, en la mesura del possible, el seu sistema d'implementació actual. Mapejat en satèl·lit de les cuines visitades i les rutes d'accés. Estudi de l'impacte social d'aquest projecte per tal de poder-ne treure conclusions de cara a escalar-lo cap a altres territoris de Nepal. Feina C: (Patrimoni i Turisme). Elaborar un petit dossier sobre el patrimoni històric-arquitectònic del poble, per a ús turístic. Taranà Viatges Amb Sentit ha organitzat un viatge a Nepal on s'inclou la visita de Bhirmpedi per primer cop, amb un doble objectiu: veure el projecte de les xemeneies (cuines sense fum) i entendre l'important passat històric del poble a través dels seus edificis.	GIICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
37833865	Diagnosi de construccions tradicionals i revisament de revestiments de terra amb gel d'origen vegetal (GOV)	01/06/2022	Navarro Ezquerria, Antonia;Ramirez Casas, Judith	Les comunitats indígenes de la conca lacustre de Pátzcuaro, a l'estat de Michoacán (Mèxic), tenen una important tradició constructiva en terra, una arquitectura tradicional que s'està substituint per construccions basades en l'ús del formigó, mantenint únicament alguns construccions tradicionals que pertanyen a famílies més pobres i en situació de vulnerabilitat. Aquest projecte planteja un treball de diagnòs i intervenció als habitatges tradicionals de la regió, aplicant una innovació tecnològica desenvolupada a l'EPSEB-UPC, a partir d'un revestiment de terra amb gel d'origen vegetal que permet millorar les capacitats mecàniques d'aquest i disminuir l'alteració dels habitatges enfront de l'aigua. La transferència tecnològica permetria millorar la qualitat de vida de les comunitats indígenes a la vegada que mantindria les seves tradicions, cultura constructiva i imatge urbana. El treball es farà amb la col·laboració d'institucions locals i alumnes d'arquitectura de la Universitat Michoacana.	GIICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
35664813	Supervisió i capacitatció en l'execució de la reconstrucció de tres aules l'escola primària Guadalupe Victoria situada en la colònia Vicente Guerrero en Villacorzo Chiapas	01/06/2022	Navarro Ezquerria, Antonia	L'escola primària Guadalupe Victoria situada en la colònia Vicente Guerrero en Villacorzo Chiapas, va ser afectada fortament per un sisme el 7 de setembre del 2017. Els murs van sofrir fallades estructurals severes, la qual cosa va obligar al desallotjament complet de l'edificació. Amb ajuda de pares de família i mestres es van construir unes petites aules provisionals per a la continuïtat de les classes. L'associació Un Hogar para Chiapas juntament amb Arquitectura Tècnica Sense Fronteres van col·laborar per a crear una proposta de reconstrucció: Proyecto Félix. Es fonamenta en la utilització de materials obtinguts en la zona i tècniques constructives de baix impacte ambiental com ho és el bahareque, que permetran transformar l'espai en un lloc segur, pràctic i funcional.	GIICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
35254110	Rehabilitació i Restauració Arquitectònica REARQ	01/01/2022	Ravellat Mira, Pere Joan;Cornado Bardon, Cossima;Llobet Ribeiro, Xavier;Oñecha Perez, Bolen;Domenech Rodriguez, Marta;Lopez Lopez, David;Santana Roma, Galdric;Bru Bistuer, Eduardo;Bosch Prat, Mireia;Vima Grau, Sara;Quintana Gomez, Jesus;Salazar Aloy, Aleix;Casals Paniella, Joan;Olona Casca, Ivo		REARQ - Rehabilitació i Restauració Arquitectònica
32424441	Reviure als terrats (REV-TER)	10/12/2021	Ravellat Mira, Pere Joan;Cornado Bardon, Cossima;Domenech Rodriguez, Marta;Piasek Vinocur, Gonzalo;Vima Grau, Sara;Bosch González, Montserrat;Paris Viviana, Oriol;Rosell Amigo, Juan Ramon;Simó Solsona, Montserrat;Pradel Miquel, Marc;Brui Palou, Julia;Tous Monedero, Victoria;Receder Moreno, Ivo	Aquesta proposta s'adreça al repte de millorar la qualitat de vida de l'entorn dels residents a les ciutats de l'Àrea Metropolitana de Barcelona, partint del districte de Ciutat Vella com a estudi de cas i de la transformació dels terrats comunitaris, com a espais de cures, trobada i repòs. El projecte proposa la millora d'aquests espais exteriors, des de la perspectiva de l'entorn actiu i saludable, mitjançant la diagnòs sociodemogràfica del col·lectiu al districte i la recerca de solucions de baix cost, desmuntables i reciclables per a la recuperació dels terrats existents. Actualment, aquests espais es troben infrutilitzats, però presenten clau gràcies a la seva condició d'exterioris comunitaris de dimensions generoses en un context molt dens. El projecte proposa l'estudi de la totalitat de cobertes de Ciutat Vella per tal de poder valorar el potencial d'implementació de solucions de millora eficients que puguin executar-se de forma col·laborativa, amb un cost assequible o baix, mitjançant una construcció en sec i amb solucions reutilitzables. L'impacte de la proposta es basa, d'una banda, en la seva naturalesa 'bottom-up' fonamentada en l'estudi participatiu de les capacitats locals, i de l'altra, en la seva voluntat expansiva i escalable, a través de l'elaboració d'un catàleg de micro-projectes i el prototipatge de solucions integrals com propostes 'plug-in' d'aplicació en casos pilot i replicables en altres punts de la ciutat i de l'Àrea Metropolitana. En aquest sentit, el projecte busca posar en valor la capacitat de l'escala més petita de la intervenció socio-arquitectònica, tot explorant els límits de les intervencions constructives senzilles amb un alt impacte sobre la qualitat de vida de la gent gran i les seves comunitats, i que puguin arribar a autogestionar-se, construir-se i replicar-se des de les comunitats a curt i llarg termini.	REARQ - Rehabilitació i Restauració Arquitectònica
32424446	Verd de proximitat BCN: Pla de monitoratge i avaluació del funcionament i l'impacte de les cobertes i façanes verdes a la ciutat de Barcelona.	10/12/2021	Lacasta Palacio, Ana Maria;Bosch González, Montserrat;Rodríguez Cantalapiedra, Inmaculada;Alva, Aleix;Beriguete Alcántara Alcantara, Fanny Esther		GIICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
32078537	Soluciones bio-sostenibles para la mejora acústica y al fuego de envolventes de edificios.	01/09/2021	Lacasta Palacio, Ana Maria;Haurie Ibarra, Laia;Giraldo Forero, Maria Del Pilar;Correal Modol, Eduard;Ramirez Casas, Judith;Rodríguez Cantalapiedra, Inmaculada;Navarro Ezquerria, Antonia;Tous Coll, Marc;González Espinosa, Vanessa;Avelleda López, Aina;Aguilar Larrinaga, Roberto;González Sánchez, Belén;Miranda Santos, Marta;Arias Cárdenas, Brenda	The BioSAFE project aims to influence in the building envelopes, mainly facades, promoting designs with criteria of sustainability, comfort and safety. This implies the use of materials based on renewable resources (wood, bamboo, and agricultural by-products), taking into account two important aspects: their safety in case of fire and their acoustic performance. This proposal is, to a large extent, a continuation of the SBES project - Sustainable solutions for building envelopes (BIA2017-88401-R). However, the present project focuses on new and original objectives: the improvement of both acoustic and fire performance and the development of natural flame retardant products. Three basic lines of research are proposed. In line A. Analysis of the acoustic behaviour of materials made of vegetal by-products, we seek to advance in the determination and analysis of the acoustic properties of a wide range of materials that incorporate fibres or particles of vegetable origin, in order to optimize the formulations and suitable manufacturing processes depending on the use of each material. On the one hand, low density products will be analysed (such as the thermal insulators developed in the previous SBES project) whose most important acoustic quality will be their capacity as absorbent. On the other hand, medium-density products made up of binders lightened with fibres or vegetable particles, where not only absorption, but also insulation against airborne noise and impact noise will be important. Conglomerates will be chosen with sustainability criteria, focusing mainly on clay, raw earth and traditional gypsum. In parallel to the laboratory work, in-situ measurements will be carried out in buildings already built with raw earth and vegetable fibres. Line B. Improving the fire behaviour of bio-based materials and development of natural flame retardants has the double objective of improving the fire behaviour of lignocellulosic materials, and to do so by using flame retardants of natural origin. The materials and products to be studied include those used as façade cladding, such as wood, as well as bamboo and thermal insulation systems based on agricultural by-products developed in the previous SBES project. Taking into account that many of the flame retardant products commonly used in the treatment of wood and other lignocellulosic products are suspected of causing health problems due to their toxicity, in this project we propose to advance in the development of retardants of natural origin. Finally, line C is proposed on a scale not of the material but of the building, combining acoustic and fire behaviour aspects to propose designs of façade elements that fulfil a double function. On the one hand, and continuing with previous investigations of the previous SBES project, work will be done on limiting the spread of fire through wooden façades, introducing elements that adequately combine noncombustible elements of certain shapes, dimensions and location. On the other hand, it will be sought that these elements fulfil the function of reducing the reflections of incident urban sound, thus increasing acoustic absorption and reducing reverberation. This will be achieved by properly choosing the type of material and its geometry.	GIICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
31748133	Barcelona Ciutat Fràgil	14/05/2021	Serra Permanyer, Marta;Llorente Diaz, Marta;Rodríguez Pedret, Carmen;Azara Nicolas, Pedro;Ramon Graells, Antoni;Roselló Nicolau, Maribel;Crespo Cabillo, Isabel;Oyon Barales, Jose Luis;Castiella Palou, Maria Isabel;Pons Peregot, Olga;Laguillo Menéndez, Manolo;Britian Varea, Carlos;Gratacos Batlle, Ricardo;Povedano Revilla, Marina;Golds-pongratz, Kathrin;Bestraten Castells, Sandra Cinta;Schürch, Tiziano	'Barcelona ciutat fràgil' és un projecte de recerca de la Universitat Politècnica de Catalunya (UPC) finançat per la Generalitat de Catalunya. El seu objectiu és estudiar espais fràgils de la ciutat de Barcelona especialment relacionats amb la pandèmia de COVID-19. Per espais fràgils, el projecte entén el propi de persones en situació de vulnerabilitat o l'espai on es manifesten fenòmens socials que no reben atenció mèdica, són espontànies i generalment no es registren o corren risc de desaparició. □ El projecte ha generat una cartografia de la ciutat fràgil, un mapeig alternatiu de l'afectació de la pandèmia a la ciutat de Barcelona que es pot superposar al mapa de la ciutat convencional. Aquest es concreta en aquesta pàgina web a mode de difusió del treball i les seves reflexions, un seminari internacional i la producció d'un llibre i articles de recerca. Ha tingut una durada de 18 mesos finalitzant al novembre de 2022. □ El projecte descobreix i fa visible l'espacialitat oculta de la ciutat durant el període del primer estat d'alarma, i per fer-ho proposa la construcció d'un mapeig que mostri els esdeveniments i les pràctiques de l'espai que no transmet l'estadística, que representi els espais vulnerats especialment vinculats a la marginalitat i a la fragilitat de la vida, i que reconsideri els espais ja reconeguts com a llocs més complexos on les vivències es desenvolupen de maneres imprevisibles, tot marcant la consciència i la memòria de l'espai i de l'imaginari privat i compartit. A la vegada, el projecte explora els espais de la fragilitat reconeixent realitats que no sempre representen experiències negatives, sinó que tenen poder per crear sentit i transformar l'entorn urbà, pràctiques específiques creatives, pòtiques transformadores que les representem com a esdeveniments diferents però allhora, com a exercici de resiliència i resistència. Per a fer-ho es treballa des de tres àmbits concrets: els espais de cura, espais de mort i dol, espais de solitud i experiències de por; els espais de socialitat i creativitat; i els espais de vincle amb el medi natural i paisatgístic. □ A la vegada, es genera un informe de propostes i mesures preventives que des de l'arquitectura i l'urbanisme identifica línies d'actuació generals, sectorials i específiques pels espais més vulnerats per les fragilitats detectades. □ El projecte sorgeix d'una idea inicial del grup de recerca Arquitectura, Ciutat i Cultura, dirigit per la professora Marta Llorente Diaz, i està coordinat per la professora lectora Marta Serra Permanyer (IP), ambdues del Departament de Teoria i Història de l'Arquitectura i Tècniques de Comunicació de la UPC. L'equip està format per setze persones investigadores de diferents grups de recerca.	ACC - Arquitectura, Ciutat i Cultura. Realitat i Transformació de l'Espai Urbà Contemporani

35087427	Arquitectura, Ciutat i Cultura. Realitat i transformació de l'espai urbà contemporani	01/01/2021	Lorente Diaz, Marta; Azara Nicolas, Pedro; Oyon Bañales, Jose Luis; Ramon Graells, Antoni; Rodriguez Pedret, Carmen; Rosselló Nicolau, Maribel; Serra Permanyer, Marta		ACC - Arquitectura, Ciutat i Cultura. Realitat i Transformació de l'Espai Urbà Contemporani
35169015	Construcción una escuela bioclimática de 3 aulas EPP Manandougou, en la región de Bafing (Costa de Marfil)	01/01/2021	Hormias Laperal, Emilio	Desde el gobierno de Costa de Marfil, se han impulsado proyectos para la construcción de nuevas escuelas y comedores, debido a que las infraestructuras educativas primarias son insuficientes. En muchos casos, el gobierno no puede asumir la construcción total de la escuela. En este contexto, aparecen edificaciones precarias, debido a la falta de recursos de la población local. Estas edificaciones suelen derrumbarse en la época de lluvias, ni tampoco disponen de letrinas. Con el fin de mejorar estas condiciones, desde ONG SUMUM trabajamos conjuntamente con la administración pública de Costa de Marfil y contrapartes locales, para terminar la construcción de las escuelas y que no sea la población local quien las asume. Así conseguimos unas mejores condiciones para alumnos, profesores y familiares, mejorando también la asistencia de los niños y niñas. Además, gracias a la reciente incorporación a ONG SUMUM de un equipo de arquitectos jóvenes, se mejorarán las condiciones arquitectónicas de las escuelas. La población de Manandougou ha sido escogida como prioritaria debido al nivel de pobreza y difíciles comunicaciones de la región. Por tanto, se realizará la construcción de la escuela, que forma parte de un proyecto más global que tiene como objetivos principales el desarrollo socioeconómico de la zona y el empoderamiento de las mujeres.	
30163125	Co-diseny i co-fabricació de solucions de millora de la qualitat de vida en comunitats del Raval	21/12/2020	Ravetllat Mira, Pere Joan; Vima Grau, Sara; Cornado Bardón, Cossima; Domenech Rodríguez, Marta; Bosch González, Montserrat; Rosell Amigo, Juan Ramon; Tous Monedero, Victoria; Pisasek Vinocur, Gonzalo; Brull Palou, Julia; Colín I Ramió, Isaac	Aquest projecte s'adreça al repte de millorar les condicions de vida de comunitats i persones residents al barri del Raval. Un barri que concentra simultàniament una gran densitat de població, en bona part en risc de pobresa i exclusió residencial, i un parc edificat antic i degradat, que no compleix les condicions mínimes exigibles si bé amb un alt valor històric que n'augmenta el cost i la complexitat de rehabilitació. La proposta consisteix en el co-diseny d'un Catàleg de micro-projeccions que permetin millorar les condicions de ventilació i il·luminació d'espais interiors, l'accessibilitat, l'eficiència energètica, així com fomentar hàbits d'ús saludables. Proposem la co-fabricació de vuit prototips (integrals o específics en alguna d'aquestes línies) que puguin executar-se en col·laboració amb el teixit associatiu i la població resident. L'eficiència de les propostes rau en la recerca de solucions de baix cost, desmuntables i reciclables, i en l'apoderament de les persones veïnes en la gestió, transformació i millora del seu espai habitable i comunitari mitjançant tècniques senzilles i processos d'auto-construcció assistida. L'impacte de la proposta es basa, d'una banda, en la seva naturalesa "bottom-up" fonamentada en les capacitats, formació i participació del teixit productiu local i la població resident, i de l'altra, en la seva voluntat expansiva i escalable, entenent els prototips com propostes "plug-in" d'aplicació en casos pilot i replicables a la resta del barri i de Ciutat Vella. En aquest sentit, el projecte busca posar en valor la capacitat de l'escala més petita de la intervenció socio-arquitectònica, tot explorant els límits de les intervencions constructives senzilles i eficients que no requereixen de sistemes d'alt cost, de licències urbanístiques ni d'acords propietat-inquilins, i que per tant poden autopogestionar-se, construir-se i replicar-se des de les comunitats i unitats de convivència a curt i llarg termini.	REARO - Rehabilitació i Restauració Arquitectònica
30450166	Design and construction on environmental high performance Hybrid Engineered Timber Buildings	01/09/2020	Haurie Ibarra, Laia; Lacasta Palacio, Ana Maria; Palumbo Fernandez, Mariana; Gaspar Fabregas, Kátia; Segues Aguasca, Edgar; Giraldo Forero, Maria Del Pilar; Avelaneda López, Alina	Immediate actions need to be taken to reach the sustainability target for 2050 of the European Commission for reduction of greenhouse gas emissions and net zero carbon (CO2) emissions. The HybridTim project meets the huge need for solving sustainability issues and creating sustainable solutions for the design, construction and related sectors to tackle future environmental challenges. It promotes sustainable, environmentally friendly design and construction of hybrid timber buildings. The majority of today's buildings are designed and constructed in concrete and steel, producing large amounts of greenhouse gases, i.e. carbon dioxide (CO2), into the atmosphere and contributing to climate change and global warming. Experts agree that CO2 absorbing timber is an ideal construction material, when grown in sustainable managed forests, for reducing greenhouse gas emissions. Use of engineered wood combines a potential for prefabrication and rapid construction with lower embodied energy and potential delay of carbon emissions during the building's lifetime. Timber is being used more and more in the construction sector, both in the EU and worldwide. Future sustainable hybrid timber buildings will be designed and constructed with sustainable engineered timber components, but some amount of steel and concrete construction materials will remain because buildings must satisfy structural, fire prevention, moisture absorption and economic requirements. Timber is best used in combination with other materials, taking advantage of the attributes of each material. Utilizing the high strength to weight ratio of timber, hybrid construction can combine engineered timber with concrete and/or steel to create cost-effective and sustainable building systems. Using the combination of wood, concrete and steel provides a sustainable solution to building structures as well as potential to improve building performance and design. Architects and engineering companies have already started designing hybrid timber buildings of up to 30 or even more stories. It is assumed that hybrid timber buildings will be the buildings of the future. However, now EU higher education mostly focuses on design and construction of buildings in steel and concrete and only in 1 to 4 storey buildings in timber. Therefore, in order to satisfy the needs of the labour market, it is necessary to prepare students with innovative applied skills in the area of design, construction and onsite construction management of hybrid timber buildings. To educate new generation of students in sustainable design and construction of hybrid engineered timber buildings, it's necessary to develop and integrate an innovative multi-disciplinary BSc/BA study module at participating and other HEIs, based on project based learning, learning by doing and blended learning approaches. Project HybridTim aims to fulfill the future demands in higher education of students in design and construction of high environmental performance hybrid engineered timber buildings by trans-disciplinary innovative student-centered learning approaches. OBJECTIVES: To develop and deliver new trans-disciplinary module on design and construction of engineered hybrid timber buildings, which meets the needs of the HEIs and labour market representatives. To improve competencies of students and teachers in problem solving and teamwork, innovative thinking, motivation, awareness of cross-professional project input and project management by using project based learning, learning by doing and blended learning approaches. To educate all participants (students, teachers, entrepreneurs) in the field of the engineered hybrid timber construction. To ensure open awareness of the project results to local, national, EU level and international target groups.	GCITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
36627700	Fast urban responses for new inclusive spaces and habitat	01/07/2020	Galindo, Julián; Mayorga Cárdenas, Miguel Y.; Ferrer, Xavier; Berigueto Alcántara Alcántara, Fanny; Esther Rodríguez, Inmaculada; Bordonau, Josep; Estrada Romeu, Miquel	The project will increase local digital fabrication capacities and its application will promote the expansion of public space thanks to the pilot network of prototype mobile urban elements. The main activity challenge will be to mitigate the overcrowding of urban public space for use by pedestrians and cyclists in order to reduce contagion of COVID-19 in urban public spaces. At the same time, the FURNISH project expects to increase universal accessibility of public spaces for use by pedestrians and cyclists and reduce vehicular traffic. The overall challenge is to increase local resilience during the COVID-19 crisis by enlarging safely in the use of urban public space. As this project intends to create a common workspace based on collaboration, all teams will take part in a series of virtual workshops led by the consortium members, so that the seven projects benefit from awareness of one another and access to the other teams' expertise. The seven teams will produce several prototypes of mobile urban elements that will be placed in cities all around Europe. This process will create an open-source repository of knowledge related to urban planning, mobility, social behavior, temporary space design, and urban elements, which can be adapted for replication anywhere in the world. The project will increase local digital fabrication capacities and its application will promote the expansion of public space thanks to the pilot network of prototype mobile urban elements. The methodology can be replicated in other sites, thanks to the online platform to disseminate an open source portfolio for the application of tactical urbanism and local digital fabrication to rapidly expanding public space in emergency circumstances.	LUB - Laboratori d'Urbanisme de Barcelona
30600822	Structuración de una filial para la Valorización transfronteriza de las cañas de maíz y de giraSol para la Construcción	01/06/2020	Palumbo Fernandez, Mariana; Lacasta Palacio, Ana Maria; Haurie Ibarra, Laia; Rodriguez Cantalapiedra, Inmaculada; Avelaneda López, Alina; Navarro Ezquerria, Antonia	The SAVASCO project aims to structure a cross-border construction sector based on maize and sunflower stems. Today, insulating building materials are in fact mainly derived from non-renewable raw materials of mineral or petroleum origin, whose extraction and transformation induce major environmental impacts, particularly in terms of greenhouse gas emissions, greenhouse and energy consumption. However, the physical characteristics of some agricultural waste such as corn stalks and sunflower give them thermal insulation performance and hygric regulation sought to formulate building materials. In addition, these biobased raw materials have many environmental advantages: they are renewable, local and constitute carbon sinks. Thus, the main objective of SAVASCO would be to contribute to the development, on the cross-border territory, of an innovative and sustainable economic sector in the building sector. Cross-border cooperation has created a consortium of laboratories and companies with complementary skills to achieve the following results: - development of low-cost rod collection and transformation processes. - the multiphysical, environmental and economic characterization of the plant aggregates produced. - the formulation, implementation and characterization of the use and environmental performance of innovative building materials developed. - the construction of two instrumented cells valued as tools for research, training and communication from a constructive solution mostly biobased. - the identification and networking of the various actors in the sector (agricultural cooperatives, designers, craftsmen, construction companies, material distributors, research laboratories and training organizations). El projecte ha estat cofinançat al 65% pel Fons Europeu de Desenvolupament Regional (FEDER) a través del Programa Interg V-A Espanya-França-Andorra (POCTEFA 2014-2020). L'objectiu del POCTEFA és reforçar la integració econòmica i social de la zona fronterera Espanya-França-Andorra. La seva ajuda es concentra en el desenvolupament d'activitats econòmiques, socials i mediambientals transfrontereres mitjançant estratègies conjuntes a favor del desenvolupament territorial sostenible.	GCITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
26427956	SMART Rehabilitation 3.0	01/11/2019	Bosch González, Montserrat; Rosell Amigo, Juan Ramon; Onecha Perez, Belen; Cornado Bardón, Cossima; Onecha Perez, Belen	El Proyecto SMART REHABILITATION 3.0 pretende mitigar o corregir el desajuste entre oferta educativa y realidad social dando respuesta a la "Estrategia de construcción 2020", con la definición de un Perfil profesional de "Experto en rehabilitación" y la creación de unos currículos homogéneos, validados a nivel europeo y en el marco de la creación superior. El objetivo fundamental del Proyecto es invertir la actual tendencia del sistema de educación superior mejorando la capacitación especializada, haciendo al sector más atractivo para el joven estudiantado universitario, y anticiparse a las necesidades de cualificación profesional que faciliten la movilidad transnacional. Ello debe hacerse desde la innovación y la digitalización, incorporando las últimas tecnologías, tanto en herramientas formativas como en el conocimiento de los sistemas constructivos más innovadores a aplicar en rehabilitación y aprovechar la oportunidad para incorporar el mundo digital en la etapa formativa y profesional con el uso del BIM. El Consorcio constituido para la elaboración del Proyecto está formado por 7 miembros pertenecientes a 5 países europeos. El coordinador del Proyecto es una organización experta en temas de rehabilitación y con gran experiencia en la gestión de proyectos internacionales. Cuatro universidades aportan su capacidad y experiencia académica para el desarrollo del Proyecto e implementación de los resultados en el marco apropiado. Una organización profesional aporta su conocimiento en el desarrollo de herramientas digitales y una asociación europea de profesionales del sector asume la coordinación de la diseminación de los avances y resultados del Proyecto.	GCITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
27245377	Smart rehabilitation 3.0 innovating professional skills for existing building sector	01/11/2019	Bosch González, Montserrat; Rosell Amigo, Juan Ramon; Onecha Perez, Belen; Cornado Bardón, Cossima; Bosch Prat, Mireia; Crespo Sánchez, Eva; Martí Muñoz, Jordi; Tsiouti, Andri		GCITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
23640375	Knowledge Alliance for Sustainable Mid-Rise and Tall Wooden Buildings	01/11/2018	Haurie Ibarra, Laia; Rodríguez Cantalapiedra, Inmaculada; Lacasta Palacio, Ana Maria; Monton Lecumberri, Joaquin; Avelaneda López, Alina; Gaspar Fabregas, Kátia; Palumbo Fernandez, Mariana; Giraldo Forero, Maria Del Pilar; Segues Aguasca, Edgar	El projecte Knowledge Alliance for Mid and Tall Sustainable Wooden Buildings (KnowWood) és un projecte finançat pel programa Erasmus+ dins de les accions KA2: Cooperació per a la innovació i l'intercanvi de bones pràctiques. Aliances pel coneixement. El projecte compta amb la participació d'11 entitats de 5 països diferents: Canadà, Dinamarca, Espanya, Lituània i Regne Unit. El projecte té com a finalitat impulsar la construcció amb fusta d'edificis de mitja i gran alçada. Un dels nostres objectius és analitzar i donar resposta a les necessitats formatives del sector de la construcció amb fusta. Per a això, durant el projecte es desenvoluparan mòduls formatius orientats a la construcció en alçada amb fusta.	GCITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
21901783	Desarrollo sostenible de cementos activados alcalinamente a partir de escorias de incineración de residuos municipales	01/01/2018	Rosell Amigo, Juan Ramon; Navarro Ezquerria, Antonia; Ramirez Casas, Judith		GCITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació

21995807	La revolució del entorn cotidià obrero y popular: vivienda y espacio urbano en el distrito de Nou Barris de Barcelona, 1950-1975	01/01/2018	Oyon Bañales, Jose Luis; Rosselló Nicolau, Maribel; Guardia Bassols, Manuel	<p>The major transformation that took place between the start of the 1950s and the 1970s in the main Spanish cities was particularly sudden and decisive in working class, suburban neighbourhoods. Numerous social studies have focused on this major change, which shaped an essential part of the current city and completely revolutionised the daily life of the city's working class. However, in general these studies have not considered the spatial dimension of these processes. Some approaches, from the perspective of architecture and urban development, have centred on aspects that affect the design of the city and dwellings. They have tended to associate the housing shortfall, demographic growth and the shanty town problem, which is visible and mappable, and then study the responses offered through changes in urban management and the implementation of large-scale operations: housing estates. Although the study of current urban fabrics reveals a wide range of housing processes and physical forms of construction in these neighbourhoods, and highlights the breadth and complexity of the transformation (cohabitation, substandard housing, and access to property in redeveloped urban areas, among others). In general, these approaches overlook the close ties between changes in the urban space and transformations in the domestic space, the radical revolution in daily life, and the close relationship with processes of social construction of the neighbourhood. As a result, few connections have been established between social and spatial approaches, or these have been weak and circumstantial.</p> <p>This project is designed to form a bridge between these two research areas: space and society. The Nou Barris district was selected as the case study. This is a neighbourhood that is particularly representative of Barcelonas working-class suburbs during the period in question.</p> <p>The project forms part of and is designed to strengthen some of the teams research areas. Although the team is small, it has considerable experience. The objective is to tackle a key period and problem from the perspective of urban history and history of architecture, to build bridges beyond what are strictly the limits of the discipline. The project is based on examining the state-of-the-question and available map resources, and then extracting data and drawing up documentary sources in a series that have been worked on at other times by team members. Due to the selection of documentary sources and the order in which they are addressed, as well as the cross-referencing of data, the results will contribute to establishing connections between physical and social construction of the city.</p> <p>There are several reasons for addressing the subject now. First, the work of members of the research team has illustrated the relevance of the area and the possibilities of a well-documented and essentially relational approach. Second, there are still many personal accounts available on this disruptive process of change, which are extremely useful to document the experience of the transformation of daily life. In addition, knowledge of processes in this major transformation could form a point of reference in the analysis of current changes in other suburbs involving other people.</p>	ACC - Arquitectura, Ciutat i Cultura. Realitat i Transformació de l'Espai Urbà Contemporani
22024505	Soluciones sostenibles para envolventes de edificios	01/01/2018	Lacasta Palacio, Ana Maria; Haurie Ibarra, Laia; Monton Lecumberri, Joaquín; Rodríguez Cantalapiédra, Inmaculada; Bosch González, Montserrat; Ramírez Casas, Judith; Rosell Amigo, Juan Ramon; Correal Modol, Eduard; Palumbo Fernandez, Mariana; Niubo Eslava, Maria; Avellaneda Diaz-grande, Jaime	<p>The project Sustainable Building Envelope Solutions is a continuation of the Project MEDULA - Use of plant pith to improve building hygrothermal behaviour (BIA2014-52689-R). One of the aims of the present project is to achieve an integration of the bio-based thermal insulation panel developed in the MEDULA project into constructive systems that incorporate all the elements to guarantee a successful behaviour under real conditions.</p> <p>The final goal of the project is to minimize the environmental impact of the building sector. In order to achieve this objective, both, the energetic demand of buildings and the consumption of resources should be reduced.</p> <p>In this project we propose a strategy that attacks the problem to be solved from different perspectives. On the one hand, we maintain the research line on insulation systems with low environmental impact, low cost and totally biodegradable formulated from crop by-products.</p> <p>On the other hand, we have added a line to deepen the knowledge about green envelopes. Preliminary studies of the group in this area have shown some of the benefits of green envelopes in relation to the reduction of the energy demand of buildings, but they have also highlighted the need for applied research in each climate zone since the species and substrates employed have a great influence on the performance of the system. Throughout the project we will also investigate green envelopes that provide other benefits such as water treatment or food production.</p> <p>A global aspect in the project is to guarantee that the proposed systems, not only contribute to a more sustainable architecture, but also maintain fire safety performance. For this reason one of the topics of the project is the experimental characterization of fire behaviour of lignocellulosic materials and the computational simulation of fire propagation through the façades.</p>	GICITED - Grup Interdisciplinari de Ciència i Tecnologia en l'Edificació
19379953	Gamificación para la enseñanza del diseño urbano y la integración en ella de la participación ciudadana 3.0	30/12/2016	Redondo Domínguez, Ernest; Galindo González, Julián; Regal Marimón, Joaquín Manuel; Giménez Mateu, Luis; Franquesa Sánchez, Jordi; Corso Sarmiento, Juan Manuel; Gómez Escoda, Eulalia María; Crosas Armengol, Carles; Sánchez Riera, Alberto; Mendoza Ramírez, Hector; Moya Sala, Joaquim Narcis; Seve, Bruno Andrzej	<p>The project is a cross-sectional research at the intersection of computer science and urban policies in the cities of the future, where public participation is crucial. It fits the challenge defined in the Social changes and innovations theme, whose five main scientific and technical priorities perfectly match our gamification for urban design proposal.</p> <p>For the study of the working hypotheses, we have identified four main action areas: 1. focused on the training and interaction with students in an area with a substantial visual component as well as social impact such as Architecture, specially Urbanism in the design of urban public spaces. 2. The education of Multimedia Engineers, where gamified processes using ICTs will be designed and implemented. 3. Focused on the emotional component of the users of the project. The motivation and the degree of satisfaction on the use of ICTs and the gamified proposal of students, professionals, and general public. 4. The study and the improvement of public participation involvement in this kind of projects and proposals.</p> <p>Although some precedents of gamification and public participation in urban planning processes exist, there are none on urban design.</p> <p>Neither exists an experience involving formal and informal education processes of future architects. There is not a single example with such degree of realism in the definition of the virtual environment or visual immersion. In addition, none of them did evaluate scientifically the motivation and user satisfaction, or the effectiveness and efficiency in an academic setting of the integrative and collaborative urban design processes.</p> <p>The main hypothesis of the project is based in proving the following affirmation: The implementation of virtual gamified strategies in the field of urban design will provide an improvement in public participation since they are a more dynamic, realistic and agile collaborative environment, thanks to the augmented and immersive visual technologies. In addition, a secondary hypothesis is defined: gamified strategies for the comprehension of three dimensional space improve the spatial competences of non-expert users (general public) as well as students and professionals, providing a greater motivation in their use and a higher degree of satisfaction.</p> <p>The general objective of this work consists on promoting the use of digital technologies, in particular to evaluate the inclusion of serious games strategies and virtual reality in several areas of formal and informal teaching of collaborative urban design, in order to improve it, streamline it and increase its positive social impact.</p> <p>The other objectives of the project are: test and assess the teaching of urban design using collaborative design, immersive ICTs, gamification and public participation. Simulate, test and evaluate public participation in urban projects through online gamification. Produce possible patents on serious games in urban settings using virtual reality mobile multi-platforms. Improve public motivation, implication and satisfaction in urban decision making processes using ICTs.</p>	OURBIS - Quality of Urban Life: Innovation, Sustainability and Social Engagement
19380154	Materiales proyectados ligeros para refuerzo y la rehabilitación del patrimonio urbano.	30/12/2016	Pialarissi Cavalero, Sergio Henrique; Pons Valladares, Oriol; Chinchón Yepes, Jose Servando; Brufau Niubo, Roberto; Zamora i Mestre, Joan Lluís; Valls Del Barrio, Susana; Rosell Amigo, Juan Ramon; Barra Bizinotto, Marilda; Albareda Valls, Albert; de la Fuente Antequera, Alberto; Segura Pérez, Ignacio; Aponete Hernandez, Diego Fernando; Varga Fernandez, Celia; Blanco Álvarez, Ana	<p>The Spanish urban patrimony is formed by many buildings and auxiliary structures that are about to reach their design life. It is necessary to invest in their strengthening and restoration in order to recover their functionality and safety. One of the alternatives used with this purpose nowadays is the spraying of cementitious materials. Despite the great potential of the technique, its efficient applications is still limited. The available knowledge about the materials, the procedures and the structural design does not allow the execution of a single strengthening layer that fulfils all requirements established.</p> <p>In this context, the project MAPPU aims to achieve a substantial scientific and technologic advance in the strengthening with sprayed cementitious materials, increasing the global sustainability regarding the conservation of the urban patrimony.</p> <p>For that, 4 research lines should be addressed:</p> <ul style="list-style-type: none"> - Improvement of materials through the use of more sustainable sprayed lightweight concrete or mortar with low permeability and low shrinkage. - Development of models that take into account the specificities of the sprayed material in the optimized design considering creep and bond with existing steel reinforcement. -Improvement of quality control procedures used to evaluate the properties of the sprayed material (especially short term properties). -Proposal of durability models that allow an integrated design of the resulting structure considering both the previous structure and the restoration. <p>The main objective of the project is to propose a new strengthening methodology through spraying that should be more compatible with the boundary conditions and the requirements of each application. As a result, problems related with the deterioration of the materials and the safety of the structures would be reduced. Furthermore, new constitutive models that are not available for the design of the sprayed layer will be proposed, thus decreasing expenses of materials and the use of natural resources. Moreover, new method will be developed for the assessment of the evolution of mechanical properties of the sprayed material, enhancing the efficiency and the quality of the applications.</p>	EC - Ingeniería de la Construcción