



CERIS - CIVIL ENGINEERING RESEARCH AND INNOVATION FOR SUSTAINABILITY

Scientific Report 2020

Programmed Research for 2021

EXECUTIVE BOARD

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**TÉCNICO
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DECIVIL
DEPARTAMENTO DE ENGENHARIA
CIVIL, ARQUITECTURA E GEORRECURSOS

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SUMMARY

CERIS - Civil Engineering Research and Innovation for Sustainability - is a research unit that operates in the Built and Natural Environment sector. In 2020, CERIS had 112 PhD members, 77 PhD collaborators and 169 Collaborators without PhD, and covered the following domains, with different levels of depth and breadth: Construction, Environment, Geotechnics, Hydraulics, Regional and Urban Planning, Structures, Systems and Management, Transport Systems and Water Resources.

CERIS was formally created in 2015 to integrate three research centres of Instituto Superior Técnico (IST), namely CEHIDRO, Centre of Hydraulics, Water Resources and Environment, CESUR, Centre for Urban and Regional Systems, and ICIST, Institute of Structural Engineering, Territory and Construction. CERIS is hosted by the Department of Civil Engineering, Architecture and Georresources (DECivil) of IST, Universidade de Lisboa (UL). CERIS is a unit of the National Science and Technology System registered with Fundação para a Ciência e a Tecnologia (FCT), the Portuguese research-funding agency, under the reference UID 04625.

This is the sixth report on the scientific activity of CERIS after its creation. It is the second report after the 2017 FCT evaluation, in which CERIS emerged as the only research centre in Civil Engineering classified as Excellent. This result, while a recognition of the relevance of CERIS in the international context, expresses a threat of underestimation of the role of Civil Engineering in strengthening the Portuguese economic fabric.

This report provides information relevant to map CERIS' position in the national and international contexts, addressing issues on organization and operation, particularly in what concerns the integration of scientific objectives and the promotion of internal cooperation, and contextualizing the 2020 performance indices.

To that effect, this report is organized in four main parts. The first focuses on the unit description, including an overview of CERIS and a description of its internal organization, governance structure, technical and administrative staff and supporting laboratory facilities. The second part refers to research objectives, namely the general objectives of CERIS and the specific objectives of the research groups. The third part reports and discusses the main achievements in 2020. Global figures are presented in terms of publications in ISI/Scopus journals, concluded PhD theses and research and consultancy funding. The last part describes the programmed research for 2021 of each research group.

The main points the Executive Board wishes to stress are the following:

- 1) In terms of governance and operation, the merging of centres with different cultures and practices has been demanding, as expected, but is no longer considered an obstacle to the fulfilment of CERIS' mission and objectives. The engagement of an expert in management of Science and Technology should provide the definitive boost to CERIS by articulating the installed expertise, the funding opportunities and the new avenues for promotion of CERIS products made available by social networking and specialised platforms.

- 2) In what regards the breadth and scope of the research, the activities reported by the research groups indicate the need to focus on a less disperse set of topics and actions, in line with the proposed thematic strands and work areas.
- 3) In 2020, CERIS researchers maintained their levels of national and international visibility. They participated in the organization of 29 international and 5 national events and in the scientific committees of 98 international and 31 national events. Members of CERIS have been invited to deliver 30 lectures and short courses, including 2 key-note lectures. Membership of editorial boards remained strong (129 roles), including 2 Editors-in-Chief and 16 Associate Editors in ISI-Scopus journals, as well as the participation in technical committees for drafting codes and standards (42 national and 39 international). While these numbers show that CERIS have international projection, it should be pointed out that the number of Editor in Chief and Associate Editor in high impact journals (Q1 and Q2 ISI-indexed journals) is under the ambition. All the indicators related to participation in conferences, organization of scientific events and invited lectures should be contextualized: 2020 was a very atypical year due to the Covid-19 pandemic. These numbers are well below the CERIS potential. The number of competitive individual grants attributed to CERIS senior researchers is also low.
- 4) Publication in ISI/Scopus journals had a meaningful increase relatively to 2019 (from 302 to 364 papers). The number of papers in Q1 and Q2 ISI-indexed journals also increased (from 229 to 271 papers). In 2020 3.3 ISI or SCOPUS papers were published per CERIS member, a significative increase relatively to the previous years. These numbers show a consolidated improvement relatively to 2013, when 2.0 ISI/SCOPUS papers were published per CERIS member. The number of ISI-indexed Q1 and Q2 papers per researcher with PhD increased to 1.43. The number of other papers indexed in ISI or SCOPUS per researcher with PhD was increased from 0.40 to 0.49. The ratio for publication in international conference proceedings per researcher with PhD decreased from 1.7 in 2019 to 0.8 in 2020. This indicator was strongly affected by the Covid-19 pandemic.
- 5) The number of PhD theses concluded in 2020 was 32, 28 of which in IST-UL doctoral programs or in other institutions related to CERIS. The number of supervised doctoral students whose PhD thesis are to be concluded after 2020 was 233, including 125 registered in IST-UL, 5 at UBI, and 10 at FCT-UN. There is a slight increase of ongoing PhD theses relatively to 2019. The ratios per CERIS member (0.29 concluded theses and 2.1 supervised or co-supervised active doctoral theses in 2020) are still close to target values. The distribution of PhD students is heterogeneous in terms of scientific areas and number of students per supervisor.
- 6) The involvement of CERIS in doctoral programs has contributed to the overall trend for improvement in what concerns PhD theses and publications. It should be noticed that three PhD programmes are coordinated by IST-UL, two are in joint participation with other Portuguese universities and four under international consortia, namely through the Portugal-MIT and the IST-EPFL Lausanne Joint Doctoral Initiative. Six of these courses are FCT funded until 2021, mainly through doctoral grants.
- 7) The results summarized above are inextricably linked with research and contract funding in the recent past. Maintaining or improving the 2020 performance in the near future may be influenced by the after effects of the economic crisis, by policies on regional funding that impair the Lisbon area and by the grading CERIS has been awarded in the 2017-18 FCT evaluation of the Portuguese research units.

It is expected that the FCT grading will provide leverage to CERIS in public competitions and competitive bidding.

- 8) It may be the case that the impact of the economic crisis (between 2011-2014 Portugal was under the supervision of FMI and European Union through the Portuguese Adjustment Plan) on the capacity of CERIS to secure consultancy projects still endures. Funding from contracted research attained a local minimum in 2013 with 785 k€ worth of industry contracts. Between 2014 and 2017 there was a recovery and funding stabilized around an average of 1190 k€ (with a slight dip in 2016). However, consultancy funding decreased again in 2018 and fell to an all-time low of 500 k€ in 2019. Reduction of public investment in research may still be the root cause of these low values but the possibility that the market has adapted to the crisis by lowering the net value of the consultancy work provided by CERIS should be considered. If this is the case, it is probable that the industry contracts will not return to the values prior to 2010 in the foreseeable future.
- 9) Funding from research contracts including strategic funding from FCT steadily decreased between 2013 and 2017 but remained above 1.25 M€. In 2018, the research funding increased to 2.02 M€ (the best result since 2009), which was seen as the outcome of the success of CERIS researchers in the 2017 FCT tender for projects in all scientific domains. If that was the case, the increase was related to the initial transfer of funds from FCT to CERIS project managing institutions. However, in 2019, research funding hit an all-time low - 1.21 M€, recovering to 1.45 M€ in 2020. The cause for this strong reduction is not evident. It may simply express a lag in subsequent payments by FCT or some difficulties in budget execution mainly in relation with human resources, in which case a recovery is expected in the next years. However, this reduction may also be indicative of a less positive performance in securing other types of funding, namely EU-funded projects.
- 10) The 2020 incoming funds (ca. 2.16 M€) is rather unbalanced, with R&D funding about 2.1 times the consultancy funding. It is worth mentioning that this ratio has been highly variable in the last few years – research and consultancy funding have converged from 2013 to 2017, as the latter increased and the former decreased. In 2017 parity was approximately achieved. In 2018, research funding increased to about twice consultancy funding, a result that was mostly attributed to the good performance of CERIS in securing research funding. In 2019, the unbalance was 2.4, the largest recorded in spite of the reduction of research funding. In 2020 both R&D and consultancy funding increased and this ratio tended towards a greater balance.

1. UNIT DESCRIPTION

This section presents an overview of the CERIS research unit and defines the positioning of CERIS in the National Science and Technology System. The second part of the section defines the organization of CERIS, profiles its research, technical and administrative staff and identifies the supporting laboratory facilities and the main instruments used by CERIS to promote knowledge transfer activities. The section closes with the definition of the criteria used to analyse the scientific profiles and the performance indices presented in Sections 2 and 3.

1.1 General description

Statutorily, CERIS - Civil Engineering Research and Innovation for Sustainability - is a research unit of Instituto Superior Técnico (IST), University of Lisbon (UL), hosted by the Department of Civil Engineering, Architecture and Georresources (DECivil) and integrated in IST-ID, the Association of Instituto Superior Técnico for Research and Development. IST-ID is a private non-profit institution, which primarily aims at carrying out Science and Technology activities, fostering knowledge transfer and promoting the involvement of national and foreign researchers in RD&I activities and projects in their areas of expertise.

Although CERIS was formally created in 2015, through government dispatches 7822/2015 and 12360/2015, its formation as an RD&I unit registered (number 04625) with Fundação para a Ciência e a Tecnologia (FCT), the Portuguese research-funding agency, was proposed in the framework of the 2008-2012 evaluation of the National Science and Technology System, as the merge of three centres of DECivil, namely: CEHIDRO (Centre of Hydraulics, Water Resources and Environment), CESUR (Centre for Urban and Regional Systems) and ICIST (Institute of Structural Engineering, Territory and Construction). Their integration in CERIS enhances a comprehensive thematic coverage, in depth and scope, and promotes synergies in the inherently multidisciplinary Built and Natural Environment sector, which they previously addressed in a non-integrated manner.

At the end of 2020, CERIS benefited from the expertise of 112 PhD members, 77 PhD collaborators (this distinction is explained below) and 169 non-PhD collaborators. CERIS has no parallel in the national context in what regards size and scope, and has the profile and the critical mass needed to attain a strong international presence in the sector. This key-driver for the creation of CERIS was set on a wider vision of the national research system and results from discussions initiated in 2010 on national and international prospects. It was based on the ASCE report 'The Vision for Civil Engineering in 2025' and framed by three key documents: 'Europe 2020', 'Horizon 2020' and 'Portugal 2020'.

The mission and objectives of CERIS and the policy guidelines address the needs of the sector in research and knowledge transfer. They are set under the guiding principle of basing research and innovation on PhD programs while exploiting the diversity of profiles of its members. This diversity is instrumental to promote the different forms of knowledge transfer practiced by CERIS, ranging from continuous training and skills development to direct support to public institutions and industrial and service companies. The merging of the founding centres into CERIS is supported by new policies on membership, work organization and

restructuring of their research lines into thematic strands that directly derive from national and EU directives. Their research is typically based on mathematical modelling, experimentation and fieldwork.

1.2 Organization

The organic structure of CERIS meets the recommendations set by IST and FCT. It consists of the President, the Executive Board, the Scientific Council, the External Advisory Committee and the research units, as presented in Figure 1.

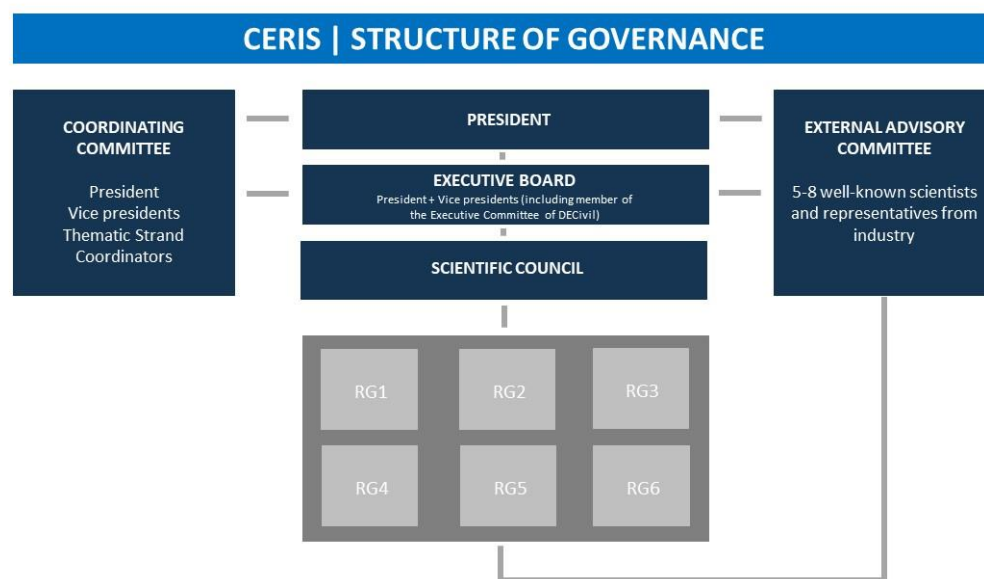


Figure 1| Structure of governance in 2020

The President of CERIS is responsible for the overall CERIS management. He/she is assisted by the Executive Board and, whenever necessary, by the Scientific Council Advisory Board. He/she chairs the Executive Board, as well as the meetings of the Scientific Council Plenary and Advisory Board.

The Executive Board assesses assists and promotes the policies on cooperation through coordination and is composed of five members: the President of CERIS, Vice Presidents that guarantee the representativeness of all research groups and a member of the Executive Board of DECivil. In the current Executive Board (Table 2), Eduardo Júlio, RG6, (the president) is responsible for administrative, financial and project management matters, and for the definition of the strategic plan. João Correia, RG5, is in charge of scientific affairs, Carlos Tiago, RG6, is responsible for the laboratories, José Silvestre, RG5, is responsible for the promotion of R&D initiatives and internationalization, Carlos Cruz, RG5, is responsible for PhD activities, image, communication and dissemination and Manuel Pinheiro, RG2, is in charge of the articulation with industry.

The Scientific Council is composed of researchers that comply with curricular selection criteria, mainly set

on scientific production. Yearly, the Scientific Council approves scientific reports and plans, as well as financial reports and budgets. It may delegate competences on the Advisory and Executive Boards, but it ultimately rules all relevant matters of CERIS. The Scientific Council Advisory Board includes the members of the Executive Board and the Coordinators of Thematic Strands. Its main competence is to design and supervise the strategic program of CERIS. The thematic strands structure the scientific activity developed by the 6 research groups. Their coordinators in 2020 are identified in Tables 3 and 4.

Table 2| Executive Board

Position	Researcher
CERIS President	Eduardo Júlio
CERIS Vice Presidents	Carlos Cruz
	Carlos Tiago
	João Correia
	José Silvestre
	Manuel Pinheiro

Table 3| Thematic Strands

Domain	Coordinator
Product Development in Civil Engineering Industries	Fernando Branco
Risk and Safety in Built and Natural Environments	Dídia Covas
Rehabilitation of Built and Natural Environments	António Gago
Response to Natural and Societal Changes	João Abreu e Silva

Table 4 | Research Groups

Group	Designation	Coordinator
RG1	Hydraulics	António Pinheiro
RG2	Environment and Water Resources	José Saldanha Matos
RG3	Systems and Management	Rui Cunha Marques
RG4	Transportation Systems	Filipe Moura
RG5	Studies on Construction	Augusto Gomes
RG6	Structures and Geotechnics	Luís Guerreiro

The External Advisory Committee of CERIS consists of well-known scientists and representatives from the industry with a recognized knowledge and experience of the challenges faced by institutions with similar missions and objectives. Besides advising on strategic planning and on long-term perspectives, its main competence is to periodically assess the quality and the relevance of the scientific activity of CERIS, the adequacy of its organization, the quality of the scientific environment, the level of internationalization of its activities and its performance in the transfer of knowledge and technology and dissemination. The current composition of the External Advisory Committee is defined in Table 5.

Table 5 | External Advisory Committee

Advisor	Institution
Alessandro Damiani	Former Director DG Research, European Commission Italy
Anton Schleiss	École Polytechnique Fédérale de Lausanne Switzerland
Kypros Pilakoutas	University of Sheffield UK
Michael Forde	University of Edinburgh UK
Rita Moura	Portuguese Construction Technology Platform Portugal
Werner Rothengatter	Karlsruhe Institute of Technology Germany

1.3 Research staff

According to CERIS rules and regulations, researchers are classified as *collaborators*, *members* and *integrated members*. Members are PhD researchers that meet the productivity criteria set by the Scientific Council of CERIS. Typically, collaborators are PhD students and specialists employed by firms and public services and agencies. This designation also includes PhD researchers that did not meet the productivity criteria set by the Scientific Council in each year. Integrated members are selected amongst PhD members to identify the core team of the unit, as requested by FCT in 2013.

The productivity criteria are based on the research component of the system of academic evaluation set by IST for each three-year period of evaluation, which basically values publication of papers (and the number of citations), supervision of PhD theses, coordination and participation in concluded competitive research projects and knowledge transfer. In 2015, the Scientific Council of CERIS decided to set the minimum requirement to be proportional to the grade of Excellent in the IST system of evaluation.

The current minimum requirements were increased by 30% in 2016 and again by 10% in 2017. Presently, and assuming that no other scientific activity is reported, a PhD researcher would reach the 2020 membership conditions publishing in a Quartile 1 (Q1) ISI journal an average of 1.1 single-author paper per year, or an average of 1.3 (1.6) two-(three-) author papers per year. The grading of the academic evaluation system strongly encourages publication in journals with high impact factors.

In this report, members of the Scientific Council are referred to as 'Members'. They all hold a PhD title. The terms 'PhD researchers' or the synonym 'Researchers with PhD' combines members and collaborators with PhD. PhD researchers may be permanent staff in their institutions, may be hired as researchers, for instance under DL57, or may hold post-doc scholarships.

The term 'non-PhD collaborator' includes all collaborators that do not hold a PhD. The term 'PhD students' combines PhD students registered in IST-UL (identified as CERIS-IST PhD students) with PhD students registered in other institutions (identified as External PhD Students). Note that 'PhD students' is not a subgroup of 'non-PhD collaborator'. There are PhD students that are not non-PhD collaborators; they may be collaborators in other research centres or state laboratories.

The 2020 distribution of researchers is summarized in Table 6. They include academic staff of UL and of

eighteen other universities and polytechnics¹, besides private companies and foundations.

Table 6 | Profile of research staff

Type	Permanent	Non-permanent		Total
		Contract	Scholarship	
Members	89	23	0	112
Collaborators with PhD	25	24	28	77
Collaborators without PhD	0	0	169	169

1.4 Administrative and technical staff

In 2020, CERIS, CERENA and CITUA shared with DECivil the support of administrative staff, namely accounting services and secretariat, and technical staff assigned to computational and experimental laboratories.

The accounting service is guaranteed by the central services of IST. CERIS has one administrative staff (Dra. Ana Soares Ramos, hired by IST) dedicated to the activities of the Directive Board and 9.5 administrative staff dedicated to RG affairs. These 10 employees (one part-time with CITUA) are hired by IST (8) and IST-ID (2). Informatics services, including assistance to the Laboratory of Computational Mechanics, are guaranteed by an external consultant (Filipe Aparício, which provides services to DECivil e CERIS). Technical staff assigned to CERIS laboratories is summarized in Table 7, amounting to 5 employees, of which 3 hired by IST, 1 by IST-ID and 1 by ADIST.

Table 7 | Laboratories and technical staff

Laboratory	Staff (no.)
Laboratory of Computational Mechanics (LMC)	1
Laboratory of Construction (LC) RG5	0.6+0.5
Laboratory of Geotechnics (LABGEO) RG6	0,4
Laboratory of Hydraulics and Environment (LHE) RG1,RG2	0.5
Laboratory of Strength of Materials and Structures (LERM) RG6	2

¹ Instituto Politécnico de Leiria, Instituto Politécnico de Setúbal, Instituto Superior de Engenharia de Coimbra, Instituto Superior de Engenharia de Lisboa, Kingston University London (UK), Universidade da Beira Interior, Universidade da Madeira, Universidade de Coimbra, Universidade de Évora, Universidade do Algarve, Universidade Estadual de Campinas (Brazil), Universidade Estadual do Mato Grosso, Universidade Federal de Minas Gerais (Brazil), Universidade Nova de Lisboa, University of Antwerp (Bélgica), University of Antwerp, University of East Anglia (UK), University of Western Australia (Australia).

Laboratory of Transport Infrastructures (LTI)	1
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This resource pooling arrangement seems to satisfy all parties involved, DECivil, CERIS, CITUA and CERENA. However, there have been difficulties caused by the IST policy of centralizing the management of internationally funded research projects.

The major difficulty CERIS faces in the present context is the inexistence of administrative and technical staff adequately trained in management of science and technology activities. It is envisaged that this limitation may be overcome, given context of the positive evaluation CERIS in the 2017 evaluation exercise, by hiring a dedicated science manager.

Another difficulty CERIS faces, endured by its founding centres well before the merge and caused by a long-established freeze on hiring, is the inadequacy of the pool of technical staff assigned to the operation of its computational and experimental laboratories, as shown in Table 7. This staff is complemented by the DECivil Laboratories Coordinator, supported by a joint supervisor for the Structures, Construction and Geotechnics laboratories (LERM, LC and LABGEO). A good part of the day-to-day operation is supported by PhD researchers and students, well beyond training needs.

1.5 Facilities

The research methods adopted by CERIS include mathematical and numerical modelling, laboratory experimentation and *in situ* studies. CERIS is equipped with up-to-date hardware and software and the experimental facilities are adequately equipped. The main difficulties in this context are the heavy and limitative constraints on procurement, acquisition/renovation and maintenance/calibration of equipment caused by Government austerity measures.

Experimental research and PhD projects are supported by the laboratories identified in Table 7. In some cases of some researchers and for joint projects, CERIS take advantage of the experimental facilities of LNEC, Laboratório Nacional de Engenharia Civil (national laboratory of civil engineering), which is located within 3 km of IST and institutional collaboration is duly protocolled. Of course, the opposite also occurs.

1.6 Instruments for transfer of knowledge

Specialized consultancy and advanced training are the two main ways CERIS promotes knowledge transfer. CERIS members offer a large and diversified set of specialization courses through FUNDEC, the advanced training instrument of DECivil, a private partnership with the major companies operating in the Civil Engineering sector created in 1995. Consultancy is regulated in terms of conflicts of interest and unfair competition and can be directly contracted with CERIS or through FUNDEC or IST.

1.7 Analysis of the scientific activity

The analysis of the activity in 2020 presented in this report is set within the framework of the statutory objectives of CERIS and centred on the content of the research, the organization of the research and the evolution of scientific productivity indicators.

Content of the research is addressed in Section 2, where the thematic strands that structure the research activity are defined, as well as their main work areas. The areas of activity of the research groups in 2020 are also summarized to support the analysis of three key aspects in a new unit merging centres that used to operate independently: the 2020 profiles of the research groups, their organization and the existing and planned forms of internal cooperation. The identification of these aspects should sustain internal policies on membership and internal funding initiatives to promote cooperation and focusing of the research.

The information summarized in Section 3 covers a wide range of research activity indicators, namely on theses and publications, visibility and recognition of the research, and research and consultancy contracts. The analysis of the 2020 results is set on the evolution in time (since 2013 in all indicators) of the number of researchers, of the capacity to secure research and consultancy funds and of two main activity indicators, namely completed PhD theses and publication of papers in ISI/Scopus-indexed journals.

Performance of research units is usually assessed in terms of production rates per team member, which implies a clear definition of the population of the research team, namely Members and PhD researchers.

The production rates are presented in terms of Members and in some instances in terms of PhD researchers to stress the importance of the internal policies on membership. Those rates are presented in global terms and at unit level.

The same information at group level is available in Annex C. The diversity of the profiles of PhD collaborators can be high within a group and across groups, ranging from non-academic experts to young PhD researchers; therefore, the analysis at group level would imply an effort in detailing and justifications that could easily fall into individual assessment, well out of the scope of this report.

2. RESEARCH OBJECTIVES

This section defines the institutional objectives of CERIS and the thematic strands that anchor the research activity. It is also used to characterize the areas of activity of CERIS research groups in 2020, as it is essential to assess the relevance and viability of the strategic and operational objectives.

Thematic strands have been defined in sufficiently broad terms and cover priority work areas. Their relevance in content and the adequacy of internal expertise should guide the progressive realignment of the activities planned at group level through the periodic reassessment of strategic and operational objectives and of the supporting internal seeding programs.

2.1 Institutional objectives

The research objectives of CERIS are set to comply with its statutory mission: “To create and disseminate scientific knowledge and to promote innovation in the Built and Natural Environment sector through the active involvement in fundamental and applied research, at both national and international levels, and to enhance higher education and research training”. To accomplish its mission, CERIS operates under a set of objectives and organizes its activity in thematic strands selected according to national and European policy guidelines.

CERIS coordinates, under the same host institution, knowledge and skills in the Built and Natural Environment sector under the following objectives: (i) to promote quality research based on PhD programs; (ii) to transfer its expertise by providing specialized training, services and consulting; (iii) to ensure a wide dissemination of its results.

To attain its main objective, the policy of CERIS is to organize the PhD programs in the framework of national and international networks and consortia and to integrate doctoral theses in competitive research funding projects. CERIS also benefits from the direct participation of IST in international networks and programs set up to promote the mobility of students and researchers.

In what regards on-going specialized training, CERIS participates in international initiatives promoted by IST and cooperates with national professional associations. To develop mutually beneficial relationships with industrial and engineering firms, central and local administration and with governmental agencies, CERIS focuses on the formulations of public and private policies and on innovation programs that address specific needs of the sector, namely through the Portuguese Technological Platform for Construction, the Portuguese Water Partnership and the Sustainable Habitat Cluster.

CERIS values the dissemination of research results through the best-ranked journals and the best-established conferences. They have a decisive impact on recognition and visibility and, consequently, on the engagement in contracted research and the recruiting of young researchers. The partnerships mentioned above play an important role in knowledge transfer initiatives and are instrumental to enable a closer relationship with public and private institutions.

2.2 Research groups

The research groups in 2020 are numbered as shown in Table 8.

Table 8 | Research Groups

Before	Designation
RG1	Hydraulics
RG2	Environment and Water Resources
RG3	Systems and Management
RG4	Transportation Systems
RG5	Studies on Construction
RG6	Structures and Geotechnics

2.3 Thematic strands

The interdisciplinary knowledge in the field of the Built and Natural Environment addresses issues centred on the Construction Industry, namely structural rehabilitation, safety and security and innovation regarding eco-efficient materials, solutions and technologies, and encompasses subjects such as urban and regional planning and management, mobility of people and freight, environment and water resources planning, management and policy, and water services, including drinking water distribution, sewage treatment and hydraulic infrastructure. Moreover, they include dimensions that cut across several areas, such as strategic environment assessment, systems modelling and optimization, as well as decision processes, relevant public policies and governance issues.

In this context, and taking into consideration national and European policy guidelines, the following thematic strands (TS) have been established in 2013 to structure the activities of CERIS:

- TS1: Product Development in Civil Engineering Industries;
- TS2: Risk and Safety in Built and Natural Environments;
- TS3: Rehabilitation of Built and Natural Environments;
- TS4: Response to Natural and Societal Changes.

Product Development in Civil Engineering Industries embraces research activities whose main purpose is to improve the competitiveness of civil engineering industries, by developing innovative products and procedures, and by improving the efficiency of existing ones. The applied research to be conducted focuses on the development of projects with a strong emphasis on "idea to business", implying a robust involvement of industrial partners and making use of the interdisciplinary nature of CERIS. The deepening of existing collaborations with Industry is encouraged. The Portuguese Technological Platform

for Construction (PTPC), whose university-industry work groups are already developing proposals for a wealth of new projects, is an important partner in this context.

Risk and Safety in Built and Natural Environments focuses on the reduction of risk to people, the environment, and natural and built heritage that may be affected by the occurrence of extreme events, either natural, such as floods, droughts, earthquakes, wind storms, and tsunamis, or due to man's activities, such as accidental pollution, deficient structures and infrastructures, blasts and fires. Both environmental hazards and manmade hazards may have devastating effects on the built and on the natural environment, namely on natural resources. Hazard and risk assessment, as well as the development of structural and non-structural safety measures is a major societal challenge in a rapidly changing world, with people concentrating in large urban centers and with growing exploitation of limited natural resources.

Rehabilitation of Built and Natural Environments stands out as the new paradigm of the construction sector. New knowledge and skills, gathered through interdisciplinary activity, are needed to respond to current demands. The main goals include reducing risks and ensuring safety, as well as promoting more efficient life cycle management of energy and natural resources, as a means to foster both urban cohesion and the protection of natural and cultural heritage. This thematic strand seeks to mobilize activity within the CERIS research groups in the field of rehabilitation, and to promote synergies between them to carry out research at the forefront of existing knowledge.

Response to Natural and Societal Changes addresses issues related to the characterization, mitigation and adaptation to natural and societal changes, as they induce stress or even ruptures in the “business as usual” approach to the built and natural environment, especially in what concerns the relevant policies, procedures and design and operation of infrastructures for a sustainable interaction between man and nature. Climatic change is of great importance as a driver, forcing adaptation measures in virtually all areas of economic activity and social life, and aggravating all the pre-existing problems caused by social and economic changes.

2.4 Research areas

The main areas of work selected in each thematic strand are the following, as defined by their coordinators:

Product Development in Civil Engineering Industries

- (i) Development of eco-efficient, high-performance and durable cementitious materials and products, for both new construction and rehabilitation.
- (ii) Advanced composite materials and products for civil engineering applications.
- (iii) Development of components, devices and software to improve the seismic performance of civil infrastructure.
- (iv) Sensors, intelligent systems and knowledge-based management infrastructure systems, in what concerns improved safety, maintenance and management procedures.

- (v) Improvement of products and project efficiency, including procedures for life cycle analysis, procedures for conflict management and negotiation, analysis of private and public values and use of e-business and e-procurement platforms.
- (vi) Development of synergic management to sustainable tourism destination - Lidera destinations (to improve product efficiency and performance).
- (vii) Improvement of natural treatment systems, through pilot facilities, to define best procedures when facing seasonal interruptions and to determine maximum load capacity.

Risk and Safety in Built and Natural Environments

- (i) Risk assessment of natural and man-made hazards, mainly to support of decision making on the allocation of budgets for safety improvement works.
- (ii) Engineering expertise for improving safety of people and the environment, namely the development of solutions and techniques for improving construction robustness and resilience, as well as for the structural protection, strengthening and rehabilitation.
- (iii) Prevention, preparedness and management of risk considering natural hazards and climate change scenarios, in what concerns non-structural measures related with management, elaboration of risk prevention, preparedness plans and operational and management procedures.

Rehabilitation of Built and Natural Environments

- (i) Enhancement of the spatial functionality, energy efficiency and structural performance of civil infrastructures, including the improvement of seismic and fire resistance.
- (ii) Study of deterioration processes and development of advanced inspection and monitoring techniques aiming at enhancing both durability and safety of civil infrastructures.
- (iii) Development of urban management models to establish financing systems of urban rehabilitation and public investments, and flexibility and efficiency of the existing transport network infrastructure and management.
- (iv) Rehabilitation of natural and transformed water bodies, namely rivers, lakes, reservoirs and aquifers, and improvement of the flexibility and efficiency of the existing water infrastructure and management systems, mainly in what concerns water supply and wastewater services.

Response to Natural and Societal Changes

- (i) Understanding the complexity of natural and societal changes, mainly in what regards adaptation and resilience, competition and mitigation, path dependence, emergence, self-organization and metabolic mechanisms.
- (ii) Improving governance, seeking better integration of policies, new flexible planning and management tools, searching for new methods, tools and devices for efficiency, economy and equity, concerning energy, resources and the used materials.
- (iii) Enhancing the tools to respond adaptively to natural and societal changes, in what concerns information and communication technologies, computation and network systems, providing the platform for designing more intelligent and interconnected tools, and smarter buildings, infrastructures and services.

The main areas of work selected in each thematic strand reflect the number of research groups involved in core and complementary topics, as shown in Table 9. This information is complemented in the next section with data on existing and expected forms of cooperation at group level.

Table 9 |Groups participating in thematic strands

Thematic strand	RG1	RG2	RG3	RG4	RG5	RG6
Product Development	✓		✓	✓	✓	✓
Risk and Safety	✓	✓	✓	✓		✓
Rehabilitation	✓	✓	✓	✓	✓	✓
Response to Changes	✓	✓	✓	✓		

2.5 Activity of research groups

The following description describes, for each research group, its main areas of research and relative topics addressed in 2020, as defined by their coordinators. A description of the main achievements of each RG can be consulted in Annex C.

RG1| Hydraulics

11 Members | 8 PhD collaborators | 41 non-PhD collaborators

The activity of RG1in 2020 was organized in the following major topics:

a) Pressurized water systems

Numerical and experimental analysis of hydraulic transients in pressurized pipes (RS); Condition assessment of water and wastewater assets (RS); Water mixing and renewal processes in water storage tanks (RS); Water-use and energy efficiency in urban water systems (RS); Energy recovery in water services and the use of pumps as turbines (PD).

b) Fluvial hydraulic structures

Development of mitigation strategies and pre-cast shelters for fish downstream of powerhouses with hydropeaking operation (RS); Numerical and experimental modelling of different flood release and related hydraulic structures (RS; RNBE); Study of the hydraulics of PKW weirs combined

with spillways (RS, RNBE); Study of the pressure field and slab stability in a plunge pool lined with concrete slabs (RS).

c) River restoration and management

Monitoring tools, based on physically-based computational models, for water and sediment quality in rivers and estuaries (RNBE); Risk management in the valleys downstream of dams (RS; RNSC); Environmental flows determination procedures and hydropower station operation rules to reduce ecological risk downstream of dams (RS, RNBE); River restoration and development of fish passes for low height river obstacles to improve ecological connection along regulated rivers (PD; RNBE; RNSC).

d) Environmental fluid mechanics

Laboratorial investigation of rough-wall open-channel turbulence (RNBE); CFD simulation of solid-fluid interactions in turbulent flows (RNBE); Laboratory investigation and mathematical simulation of transport of dissolved substances (RS, RNBE); Heat and mass transport in wetlands (RNBE).

e) Sediment transport and river morphodynamics

Hydrodynamics of river confluences in equilibrium (RS; RNBE); Hydrodynamics of river diversions in equilibrium (RS; RNBE); Sedimentation in shallow retention reservoirs: experimental study; Mathematical modelling of shallow-flows with mobile beds. Application to long term channel morphology evolution, dam-breaching, dam-break flows and overland tsunami propagation (RS); Mathematical simulation (Eulerian and Lagrangian) of transport processes (RS); Development of stabilization techniques for rivers meanders in equilibrium (RNBE).

f) Coastal morphodynamics and coastal and port structures

Assessment of the vulnerability to flooding of the built environments on low-lying areas of estuaries, due to extreme ocean storm surges events and climate action (RNBE; RNSC); Modular port facilities in rivers for bulk cargo; (RNBE); Morphological modelling of beach morphology in the presence of coastal structures. (RS); Tidal energy in estuaries; (RNBE)

RG2 | Environment and Water Resources

11 PhD members | 5 PhD collaborators | 24 non-PhD collaborators

The activity of RG2 is focused on the following topics:

- Hydrology and water resources, including trend detection in hydrologic time series and modelling; drought analysis, and flood analysis, including joint probability cumulative distribution functions, empirical copulas and non-stationary models; development of rainfall-runoff models; artificial

intelligence techniques applied to hydrologic modelling including artificial neuronal network; development of daily runoff modelling in very large watersheds based on satellite data; development of regionalized impact scenarios for the water sector and climate change impact assessments; and risk assessment study on flash floods and debris

- Water services, covering water supply, sanitation and water pollution control, the following themes were included: dynamic simulation of the hydraulics and environmental performance of wastewater systems; wastewater transformations along sewer lines (in-sewer processes), with emphasis on improving the current knowledge on the influence of turbulence (drop falls) and ventilation on the release of hydrogen sulphide gas through laboratory and field experimentation; research on organic and microbiological processes in constructed wetlands WWTP.
- Water policy formulation and governance, including extensive work in the establishment of principles for good water governance and its application under different circumstances, namely in Portugal, Brazil, and Cabo Verde. The definition of indices for assessing water governance is pursuing with review and analysis of previous attempts reported in the literature
- Environmental issues, including the themes of assessment and analysis of climate change impacts on natural and man-made water resource systems, sustainable governance, and the environmental management applied to sustainable construction
- Hydrogeology and groundwater services, including: groundwater pollution and risk assessment; groundwater and ecosystems; aquifer recharge and discharge; water and climate change; decision support systems for water catchment management and development of effective methods for risk-based environmental decision-making.

RG3 | Systems and Management

12 PhD members | 8 PhD collaborators | 24 non-PhD collaborators

RG3 has relevant results in specific topics as:

- 1) Regulatory and contracting policies, pricing and performance assessment, including: Efficiency and productivity of public services and infrastructure; Regulatory governance and substance; Tariffs and pricing of public utilities and transportation; Economics of water and waste services; Governance models in local government
- 2) Decision-making and systems design, operations and management and project management, including: Decision aiding and MCDA methods; Logistics and supply chain management; Systems modelling and optimization; Procurement models of PPPs; Infrastructure contract management; Risk assessment and management.
- 3) Information modelling and technologies, including: Ground deformation measure with advanced SAR interferometric methods; 3D city information models and its application; Spatial analysis problems; Building information modelling and systems interoperability; Construction innovation and information management; E-business and e-procurement in construction.



RG4 | Transportation Systems

12 PhD members | 8 PhD collaborators | 29 non-PhD collaborators

RG4 research focused on the following three main topics:

- a. Road, Airport and Rail Infrastructure Systems, including methodologies and models to predict degradation and improve maintenance, renewal and investment decisions within the different transport infrastructure systems and across them (integrated asset management) and Retrofitting transport systems: changing and adapting “old to like-new” transport systems to meet new performance standards while extending the existing ones
- b. Transport Systems Planning and Operations, including transport systems and policies for an ageing society
- c. Strategy and Policy in Transport Systems, including new types of integration of public and private transportation modes and services (among each type and across the types) as vehicle-sharing systems including the modelling and testing of demand response transportation, multi-modal systems, shared-taxis, car-sharing, bike-sharing and freight services supported by new types of business models and by the development of appropriate ITS tools

RG5 | Studies on Construction

34 PhD members | 24 PhD collaborators | 38 non-PhD collaborators

RG5 developed research projects in the following domains:

- a) Innovative applications of materials such as GFRP, CFRP and GRC: breakthroughs in concrete and mortars technology were experimentally validated; mortars and concrete formulations with nanomaterials were performed; studies on energy efficiency of different materials, building components and construction systems such as active and glazing facades, shading devices and green roofs and walls were conducted; risk informed quality, safety and environmental management in construction related research was included in various national and international actions, including normative work;
- b) New theories on sustainability and construction: the use of traditional techniques and materials (earth, wood, stone, brick), implementation of selective demolition and recycling maximization (namely recycled aggregates in concrete and mortars production), and strategies of passive design and acclimatization;
- c) Life-cycle management systems (inspection, diagnosis, maintenance and rehabilitation); conservation of historical building heritage (within various European research projects); other projects included sensors in structures, technological innovation and assessment of complex structures; The summary of the main achievements are indicated in the above table;
- d) Seismic rehabilitation of masonry buildings; experimental and numerical analysis of timber-framed masonry walls subjected to monotonic and cyclic loading; reinforcement of timber-framed masonry walls with elastoplastic dampers, reinforced render or steel plates. Experimental and numerical analysis of ordinary masonry walls subjected to in-plane and out-of-plane loading.

Seismic reinforcement of ordinary masonry walls with carbon fibre reinforced render or with transverse hinge connectors.

RG6 | Structures and Geotechnics

32 PhD members | 25 PhD collaborators | 14 non-PhD collaborators

The research activity of RG6 for 2020 was planned to focus on six major research areas:

1) Mechanics, Modelling and Analysis of Structures;

Dynamic instabilities and algorithms for the numerical analysis of the mechanical behaviour of non-smooth structures with frictional or elastoplastic components; Modelling of moving loads on beams on nonlinear foundations.

2) Earthquake Engineering and Seismology;

History of construction and structural behaviour and construction techniques of traditional masonry tile vaults; Assessment of existing structures (e.g. dynamic characterization, seismic vulnerability and seismic risk assessment); Update and improve a model for quick evaluation of the potential seismic performance of masonry and reinforced concrete buildings based on its application to existing buildings; Structural rehabilitation (e.g. seismic strengthening techniques, passive protection); Development of tools to improve preparedness and community resilience, aiming to reduce the seismic risk through non-structural elements (Dissemination of a Practical Guide, a Short Guide for Students, a Portfolio of Solution and a Earthquake Awareness Campaign “Move, Protect and Secure” - the campaign is composed by a main short length film, accompanied by four teaser-spots); Seismic design of new masonry constructions.

3) Structural Concrete;

Advanced cementitious materials; (High-performance ordinary and prestress reinforcement; Enhanced durability; Sustainable and eco-efficient solutions; Modelling and design models (e.g. stress-fields models, FEM-based software with embedded strong discontinuities, concrete reinforced with embedded fibres); Assessment of existing structures (e.g. reliability, structural robustness, monitoring, seismic vulnerability); Structural rehabilitation (e.g. repairing and strengthening techniques, seismic strengthening, passive protection); Prefabrication and innovation.

4) Steel and Composite Structures;

GBT formulations to perform buckling, post-buckling and vibration analyses of isolated members and structural systems (e.g. continuous beams or simple frames) prone to local, distortional and global deformations; In-depth investigations on the non-linear behaviour, ultimate strength and design of cold-formed steel open-section and tubular members experiencing coupling phenomena involving local and/or distortional buckling; Novel rational approaches for the design of cold-formed and hot-rolled steel angle columns; Development and implementation of (iv₁) a displacement-based finite element for the linear analysis of curved members (circular axis), (iv₂) a

finite element formulation for the bifurcation analysis of composite steel-concrete beams; In-depth investigations on steel sub-assemblages with bolted and welded dissipative fuses; Proposal of design rules for composite structural members and parts; Applications to steel and composite bridges.

5) Bridge Design

Buckling resistance of steel plated girders considering M-V interaction with high compression forces (application to cable-stayed bridges); Curved steel plates on bridge deck beams: Post buckling behaviour and ultimate strength; The use of high strength steels in bridge deck; Fatigue assessment of composite steel-concrete cable-stayed bridge decks; Higher order beam theory (developments and applications to steel structures and bridges analysis); Analysis of the distortion effect on the dynamic behaviour of high-speed railway bridges; Analysis of substructures of offshore wind turbines.

6) Geotechnics.

Dynamic characterization of soils from small to large strains, including liquefaction; Studies on the elastic response measured in resonant column and using bender elements; Characterization of the chemo-hydro-mechanical behaviour of clayey and treated soils considering their structure and degree of saturation; Characterization of soils treated with jet grouting and bacteria; Numerical analysis of geotechnical structures involving strong soil structure interaction (e.g tunnels, retaining structures, piles and thermoactive structures); Studies on soils decontamination techniques (e.g. electro osmosis).

3. MAIN ACHIEVEMENTS

Because research in CERIS is statutorily based on doctoral training, this section opens with the identification of the doctoral programs staffed by members of CERIS in 2020. The second part of this section summarizes the 2020 activity indicators and the third part describes the time evolution of the main indicators. Section 3 closes with the summary of the 2020 research group results.

3.1 Doctoral programs

Besides five Master courses promoted by IST, CERIS researchers are presently engaged in PhD courses leading to eight Doctoral degrees. Students and their supervisors can either select structured, thematic PhD programs or select a combination of PhD-level subjects offered by IST or any other school of UL, or by other universities under protocolled agreements.

The doctoral degrees and the structured PhD programs CERIS is engaged with are listed in Table 10, which includes information on coordination and funding, mostly allocated to doctoral grants. Four PhD programs are offered under international protocols and three under national consortia. One PhD program is IST-interdepartmental and another is jointly promoted by schools of UL.

Table 10 | Participation in doctoral programs

Doctoral degree	Structured PhD programs	Observations
Civil Engineering(F. Branco) ⁽¹⁾	Eco-Construction and Rehabilitation (Coordinator: J. de Brito) ^(1,2)	Consortium of 5 universities and LNEC
	Analysis and Mitigation of Risks in Infrastructures (R. Bento) ^(1,2)	Consortium of 4 universities and LNEC
	Environmental Hydraulics and Hydrology (A.H. Cardoso) ^(1,2)	IST-EPFL initiative and LNEC
Climate Change and Sustainable Development Policies (J.S. Matos) ⁽¹⁾	Climate Change and Sustainable Development Policies ^(1,2)	Consortium of 3 universities (involving 7 schools)
Earth-Resources		
Environment Engineering		Involves 4 IST departments
River Restoration and Management (A. Pinheiro) ⁽¹⁾	River Restoration and Management ⁽³⁾	Involves 4 UL schools
Transportation Systems (L.P. Santos) ⁽¹⁾	Transportation Systems ^(1,2)	Portugal-MIT initiative

⁽¹⁾Coordinated by CERIS members; ⁽²⁾Funding until 2021; ⁽³⁾Funding until 2020.

CERIS also participates in a structured PhD program on Computational Engineering, originally funded through the Portugal-U. Texas (Austin) initiative. It is not listed in Table 10 because the participation of CERIS is marginal.

3.2 Activity indicators

The main scientific outputs of CERIS in 2020 are presented in Table 11. They include:

- (i) 32 concluded PhD theses (24 and 2, respectively developed by CERIS-IST PhD students registered in IST and FCT-UNL) and 233 in progress beyond 2020;
- (ii) 65 concluded MSc theses;
- (iii) 11 authored books, 15 edited books and 27 book chapters;
- (iv) 364 papers published in journals included in ISI Web of Knowledge or Scopus databases, plus 49 papers in international and national peer-reviewed journals (non-ISI, non-SCOPUS);
- (v) 152 papers published in international conference proceedings;
- (vi) 36 papers published in national conference proceedings.

The list of PhD theses published in 2020 can be seen in Annex A. The list of papers published in 2020 can be seen in Annex B.

Table 11 | 2020 activity indicators: theses and publications

ACTIVITIES			RG1	RG2	RG3	RG4	RG5	RG6	CERIS
MSc Theses concluded in 2020			3	4	11	13	21	17	65
PhD Theses		Concluded	4	3	5	4	9	8	32
		To be concluded after 2020	28	22	25	39	80	57	233
Publications	Papers in peer-reviewed journals	International peer-reviewed journals (WoS AND Scopus)	54	24	25	17	134	74	313
		Peer-reviewed journals (non ISI OR non Scopus)	6	4	8	6	17	14	51
		Peer-reviewed journals (non ISI AND non Scopus)	9	7	3	5	14	14	49
	Papers in proceedings	International	19	20	11	19	48	38	152
		National	2	0	0	0	31	4	36
	Books	Entire	1	0	2	0	6	11	11
		Chapters	1	5	4	12	8	3	27
		As editor	1	0	0	0	10	6	15
	Reports		Scientific	0	4	0	0	38	0
Consultancy/others			5	1	3	5	25	9	45

The number of MSc Theses dissertations concluded in 2020, 65, is significantly lower than the one of 2019, 173. This abrupt reduction is due to the change in the deadline for the delivery of dissertations, from October to December 2020, as a consequence of the Covid-19 pandemic. It is expected that this value recovers in the following years.

In 2020 the number of papers published in proceedings of international conferences (152) was unusually scarce due the restrictions enforced as a consequence of the Covid-19 pandemic. For instance, in 2019 this value was 311. It is expected a recovering of this value in the following years.

The effects of the Covid-19 pandemic clearly affected the number of papers published in proceedings of international conferences. However, they do not compromise the number of papers published in international ISI or SCOPUS indexed journals, which increased from 302 in 2019 to 364 in 2020.

Some years back, the relation between the number of papers published in international ISI or SCOPUS indexed journals and the number of papers published in proceedings of international conferences was of the order of 1 (journal paper) -to-4 (conference papers). Due to the emphasis placed on the publication in international journals, this relation has been experiencing a trend towards a balance: in 2019 this ratio was 97%. However, due to the facts pointed out in the previous paragraph, in 2020 the number of papers published in international ISI or SCOPUS indexed journals (313) largely surpasses the number of papers published in proceedings of international conferences (152). It is expected that the pre-pandemic equilibrium will be recovered in the following years. The evolution of the number of papers is discussed below, in section 3.5.

The indicators frequently used to assess national and international visibility are summarized in Table 12, namely:

- (i) Editor in Chief of ISI or SCOPUS indexed journals (2);
- (ii) Associate Editor of ISI or SCOPUS indexed journals (16);
- (iii) Membership of editorial boards of ISI or SCOPUS indexed journals, including Guest or Issue Editor (129);
- (iv) Participation in organizing committees of international conferences (29);
- (v) Participation in organizing committees of national conferences (5).

Other indicators that reflect the visibility and recognition of the scientific activity of CERIS members are:

- (i) 2 key-note lectures in international conferences;
- (ii) 6 recognition awards (national and international);
- (iii) Refereeing for 22 international and 32 national funding agencies.

These numbers show that CERIS members and collaborators have international projection. However, it should be pointed out that the number of Editor in Chief and Associate Editor in high impact journals (Q1 and Q2 ISI-indexed journals) is relatively low. The number of the key-note lectures in international conferences is well below CERIS potential, as this was significantly affected by the Covid-19 pandemic. The number of competitive individual grants attributed to CERIS researchers with PhD is also relatively low.

Table 12| 2020 activity indicators: visibility and recognition of the research

ACTIVITIES			RG1	RG2	RG3	RG4	RG5	RG6	TOTAL
Collecti-ve guidan-ce scienti-fic work	Editor-in-Chief	WoS/Scopus-indexed Journals	0	0	0	1	1	0	2
		Other journals	0	0	1	0	0	0	1
	Associate Editor	WoS/Scopus-indexed Journals	2	0	2	1	6	5	16
		Other journals	0	2	1	0	0	1	4
	Issue Editor/Guest editor/Membership Editorial Boards	WoS/Scopus-indexed Journals	16	8	9	26	34	36	129
		Other journals	2	5	2	4	36	23	72
	Membership in Scientific Committees	International	7	8	5	7	43	28	98
		National	1	1	0	0	16	13	31
	Drafting of codes, Recommendations	International	0	1	0	0	9	29	39
		National	1	0	0	11	16	14	42
Organisation of scientific events		International	6	1	0	0	6	16	29
		National	1	1	1	0	0	2	5
Awards		International	0	0	0	0	1	5	6
		National	0	0	0	0	0	0	0
Refereeing for funding agencies		International	2	0	0	8	7	5	22
		National	0	0	0	5	18	9	32
Invited lectures		Key note lectures in international conferences	0	1	0	0	1	0	2
		Other	1	2	1	10	3	11	28

The information presented in Table 13 summarizes the 2020 initiatives to obtain funding through competitive research and consultancy. As shown below in Figure 8, in 2020 the budget secured through competitive research projects (1.46 M€) was nearly 2.1 times the budget secured through consultancy (approximately to 0.70 M€). While funding secured through specialized consultancy and industry-funded projects has slightly increased in 2017, it fell again in 2018 and in 2019, the latter being an all-time low, followed by a slight recover in 2020. The large number of consultancy projects (81 finalized in 2020) is not indicative of a consolidated recovery in industry funding but rather of the small dimension of the average CERIS consultancy project. It may also be the case that the market has adapted to the crisis by lowering the net value of the consultancy work provided by CERIS.

Table 13| 2020 activity indicators: research and consultancy contracts

ACTIVITIES			RG1	RG2	RG3	RG4	RG5	RG6	TOTAL
Competitive research projects	International research grants	Started in 2020	0	0	0	0	0	2	3
		Active in 2020	2	6	3	2	3	5	27
	National research grants	Started in 2020	1	2	1	0	2	0	6
		Active in 2020	12	6	6	4	27	16	66
Competitive individual research grants (PhD, Post-doc, sabbatical, etc)		Started in 2020	1	1	0	0	3	4	9
		Active in 2020	4	0	2	0	7	9	22
Consultancy projects finalized in 2020			10	7	10	12	28	14	81

The indicators presented in Table 14 (Other initiatives) justify the following clarifications: a) Models typically are laboratory test-rigs; b) The software applications listed are limited to those accessible in the internet for public use; c) Registration as a national patent must be ensured before submission to international registration in the annual, internal calls promoted by IST.

Table 14 | 2020 activity indicators: other initiatives

ACTIVITIES		RG1	RG2	RG3	RG4	RG5	RG6	TOTAL
Models		0	0	0	0	0	0	0
Software applications		1	0	0	0	0	2	3
Pilot plants		0	0	0	0	0	0	0
Prototypes		0	0	0	0	0	0	0
Patents	International	0	0	0	0	0	0	0
	National	0	0	0	0	0	0	0

Carrying out dissemination and outreach is becoming an imperative to promote CERIS visibility and to expand the field of opportunities to apply CERIS members' expertise. These initiatives are expected to impact positively on the capacity of CERIS researchers to form fruitful partnerships and to attract high quality PhD students. The number of outreach and dissemination initiatives is listed in Table 15.

Table 15 | 2020 Dissemination to a broad audience and Outreach

ACTIVITIES	RG1	RG2	RG3	RG4	RG5	RG6	TOTAL
Other actions (e.g. scientific dissemination to a broad audience, social media)	4	0	0	1	1	2	8

The databases from which the information in Tables 11 to 15 will be embedded in the CERIS website.

3.3 Evolution in the number of researchers

The evolution in the number of Members and PhD researchers is presented in Figure 2 and Figure 3, respectively. The increase in 2015 mainly reflects the integration in ICIST of academic staff of U. Nova de Lisboa, and the internal reclassification of PhD members and collaborators. The number of PhD researchers remained stable afterwards. However, an increase in the internal numerical criterion for selection of members in 2017 offset the increase of members that occurred in 2016. In 2018 there was a slight decrease of both, mostly because of the departure of the former RG to form a new Architecture and Urban Planning research Centre. The number of Members remained stable in 2020 while the number of PhD members and collaborators increased from 184 to 189.

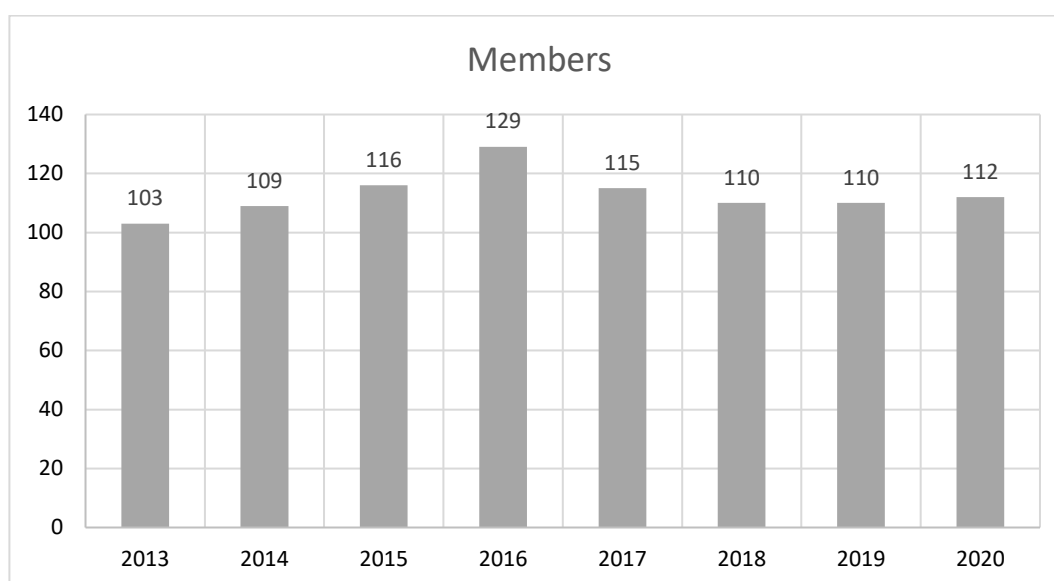


Figure 2 | Evolution of Members

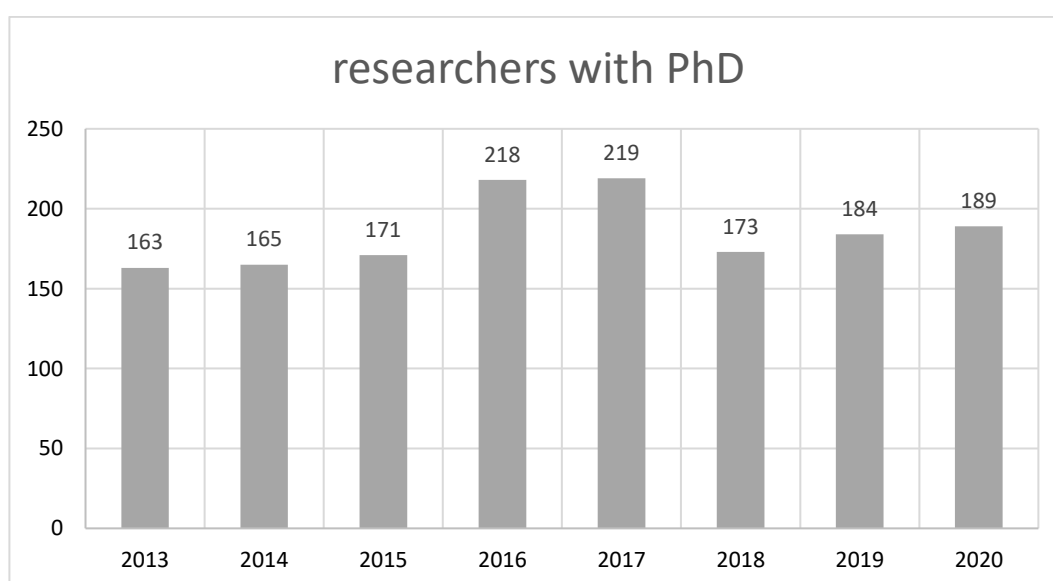


Figure 3 | Evolution of PhD researchers (Members and PhD collaborators)

The evolution of the number of researchers - combining Members, PhD collaborators and non-PhD researchers (PhD students and scholarships) - is presented in Figure 4. During the period of the economic crisis there was a stagnation of this number. However, from 2015 to 2017 a quite significant increase occurred, which is explained by three main reasons: (i) the fulfilment of the last calls of the various FCT funded doctoral programmes, most of which led by CERIS; (ii) an increase of international PhD students, namely from Brazil; (iii) a more exact collection of the data concerning PhD supervision by CERIS researchers, namely of external students.

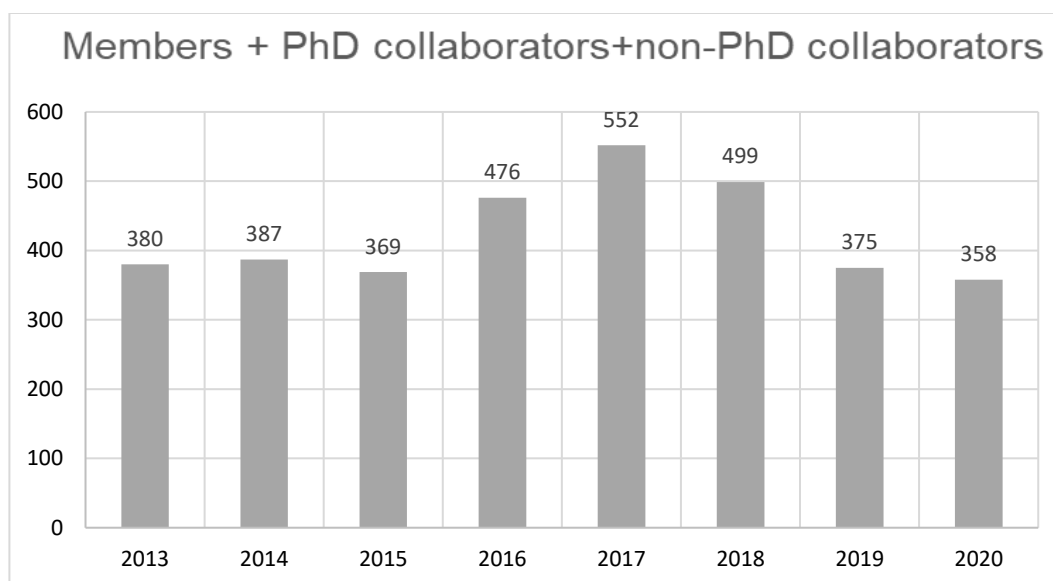


Figure 4 | Evolution of the Members and PhD collaborators and non-PhD collaborators

In 2018 the observed decrease of non-PhD collaborators is mostly explained by the departure of the RG group of Architecture and Urban Planning. In 2019 there was a sharper decrease of the number of non-PhD collaborators. This may be associated to the ending of some FCT funded PhD programs.

3.4 Evolution of research and consultancy funding

The aspects of the national economic scenario that are relevant in the present context are the following:

- (i) Austerity policies started to be implemented in 2010-2011 and induced an economic recession in 2013-2014 followed by a weak recovery after 2015;
- (ii) Public investment in RD&I, which had peaked in 2009, steadily decreased afterwards;
- (iii) Local and regional authorities and public agencies also suffered budget cuts in the same period;
- (iv) From 2007-2008 onwards, the largest contractors in the Civil Engineering sector invested in the internationalization of their activity, as the national infrastructure approached completion;
- (v) The economic crisis virtually paralyzed the Construction sector throughout this period, with a recent recovery based on the rehabilitation sector.

In the 2008-2012 evaluation period, the structure of the combined budget of the founding centres averaged 48% secured through research funding and 52% secured through consultancy funding. The latter form of funding combines all knowledge transfer activities, namely specialized consultancy and advanced on-going training. The decomposition of research funding was as follows: 21% allocated to the strategic program, the centre core funding yearly allocated by FCT; 52% secured through national competitions for research projects and research training programs (mostly promoted by FCT) and 27% through international competitions (mostly EU programs).

Figure 5 shows the evolution of total funding between 2013 and 2020. The local maxima of year 2014 was associated to strong results in the last FP7 calls for research projects in 2013 and 2014 but also by an increase in industry contracts in 2014. These results can be seen in Figure 6 and in Figure 7. Funding steadily decreased until 2017 mostly influenced by a reduction of the value of R&D projects.

In 2018 there was a recovery of the R&D funding, influenced by the success CERIS researcher in funding their research through FCT funded national projects. Consultancy, however, remained at low values, if compared with pre-2013 standards. Consultancy funding decreased again in 2019, falling to an all-time low of 500 k€ in 2019 (Figure 5 and Figure 7). Both R&D and consultancy funding have grown in 2020. Reduction of public investment in research may still be the root cause of these low values but the possibility that the market has adapted to the crisis by lowering the net value of the consultancy work provided by CERIS should be considered. If this is the case, it then is probable that the industry contracts will not return to the values prior to 2010 in the foreseeable future.

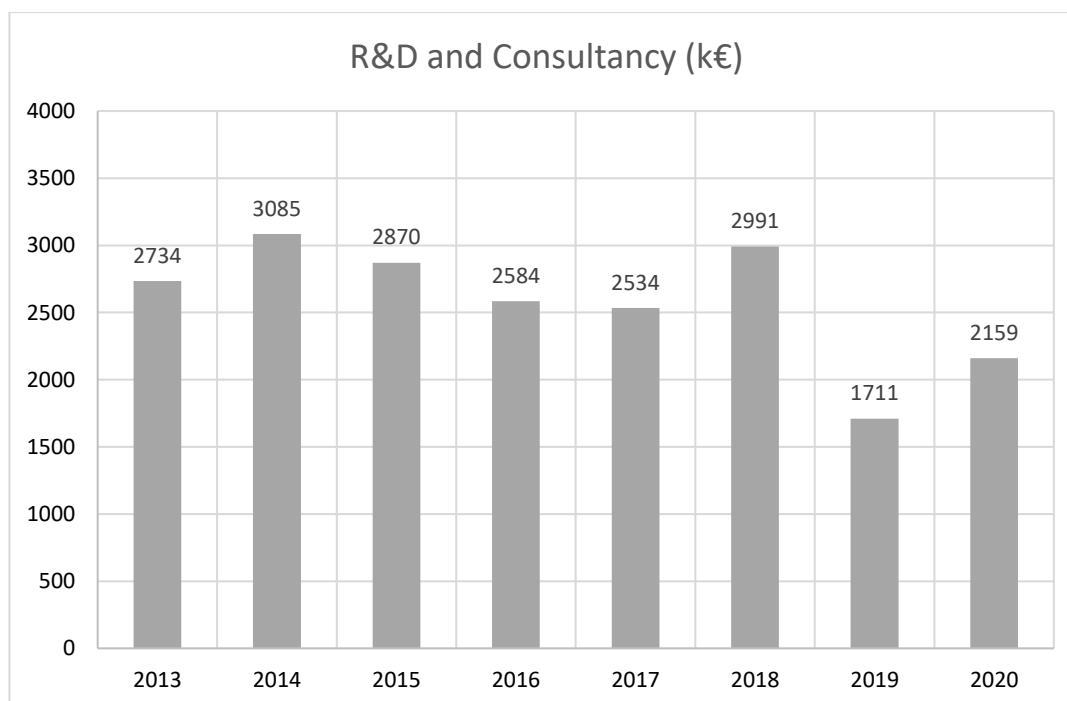


Figure 5 | Total annual CERIS funding (research and consultancy)

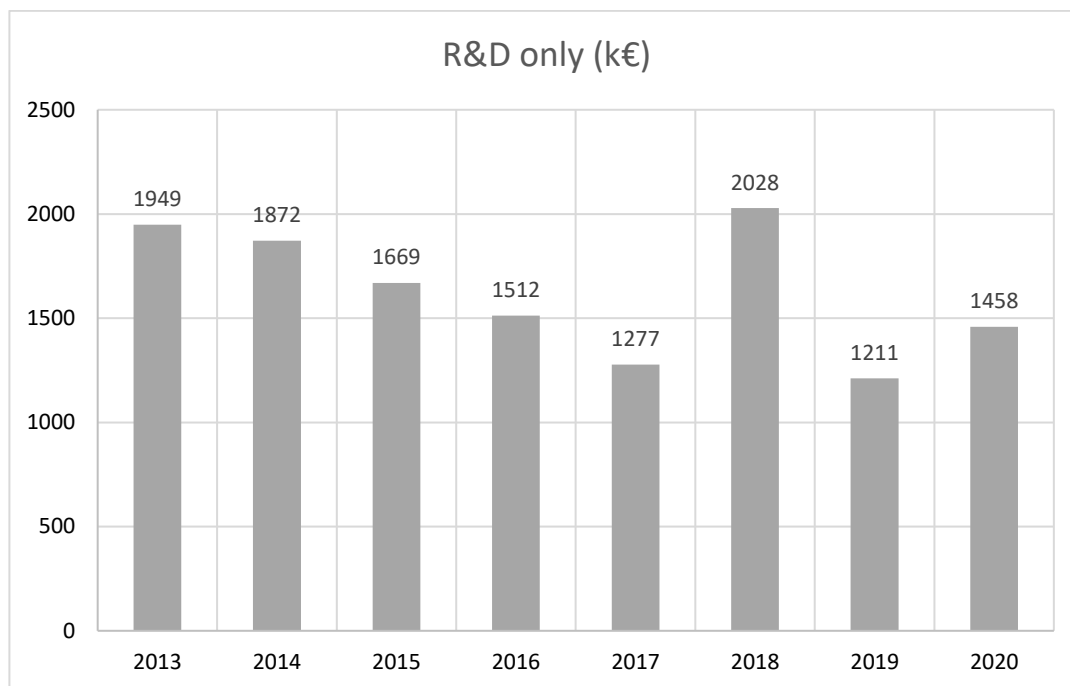


Figure 6 | R&D annual CERIS funding

While funding from R&D contracts steadily decreased between 2013 and 2017, it remained above 1.25 M€. In 2018, the research funding increased to 2.02 M€ (the best result since 2009), which was seen as the outcome of the success of CERIS researchers in the 2017 FCT call for projects in all scientific domains. If that was the case, the increase was related to the initial transfer of funds from FCT to CERIS project managing institutions. However, in 2019, research funding hit an all-time low - 1.21 M€ (Figure 6). The cause for this strong reduction is not evident. It may simply express a lag in subsequent payments by FCT, which case a recovery is expected in the next years. This reduction may also be indicative of a less positive performance in securing other types of funding, namely EU-funded projects.

The imbalance between research and consultancy funding in 2018 was high: 68% of the budget was sourced through research funding and 32% through consultancy funding, that is the latter was about 45% of the former (see Figure 8 and Figure 9), as high as in 2013. Yet, the 2019 budget (ca. 1.71 M€) has deepened this trend, with R&D funding about 3.4 times the consultancy funding. It is worth mentioning that this ratio has been highly variable in the last few years – research and consultancy funding have converged from 2013 to 2017, as the latter increased and the former decreased. In 2017 parity was approximately achieved. In 2018, research funding increased to about twice consultancy funding, a result that was mostly attributed to the good performance of CERIS in securing research funding. In 2019, the unbalance is the largest recorded in spite of the reduction of research funding. This trend was inverted in 2020 and the ratio returned to the figures of 2018.

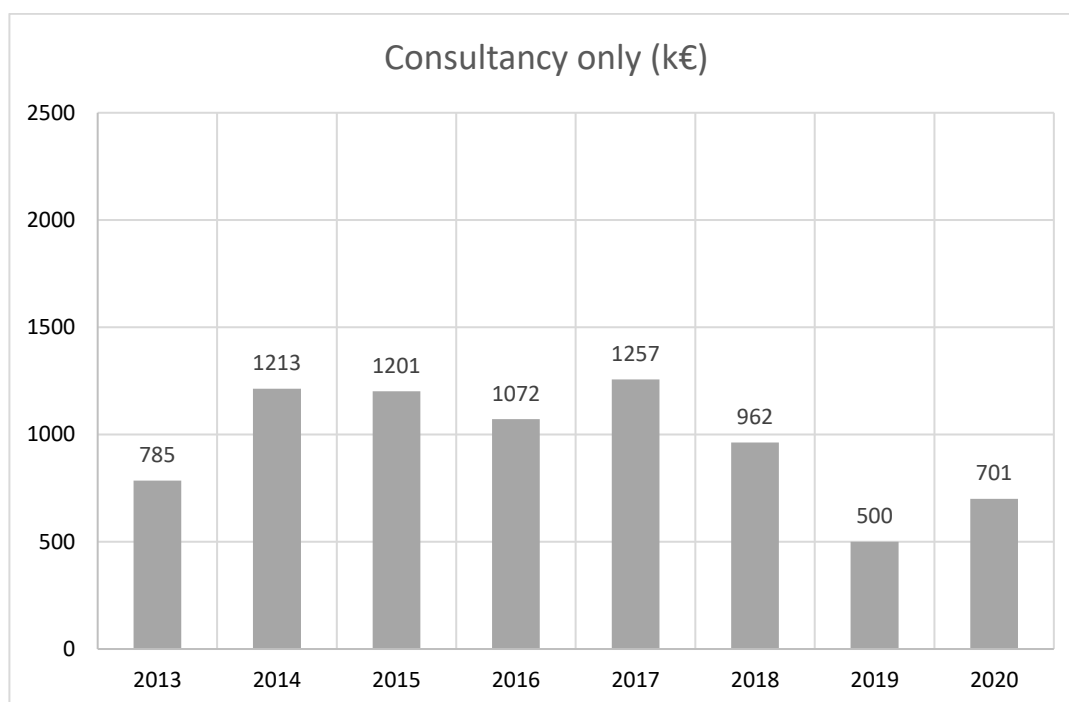


Figure 7 | Consultancy annual CERIS funding

The break out of funding in research and in consultancy shown in Figure 8 reflects the austerity measures taken throughout the 2010-2014 period. The results in 2014-2017 combine two effects: a stagnation of the economy (with an oscillation in 2015), the research funding losses caused by the last evaluation of CERIS and by the P2020 calls limitations for entities from the Lisbon region, and also by the irregularity of the disclosure of the results of applications to FCT funded projects. It should be noticed that R&D funds due to EU-funded projects has not increased (not shown in graphics).

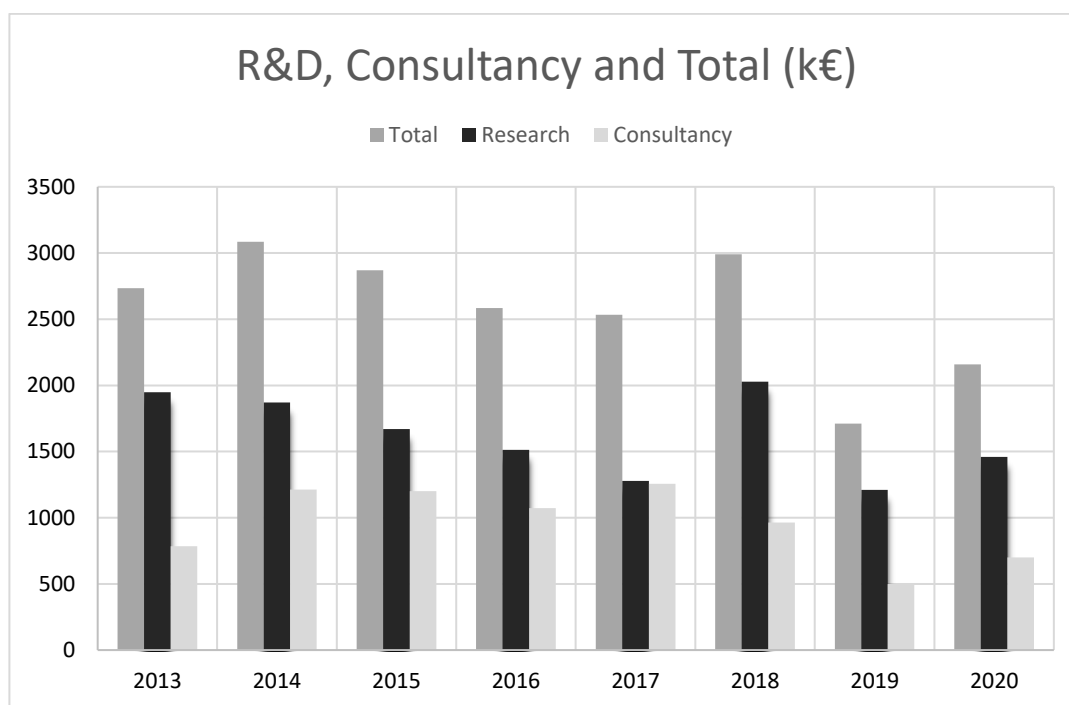


Figure 8 | Annual funding in research and in consultancy

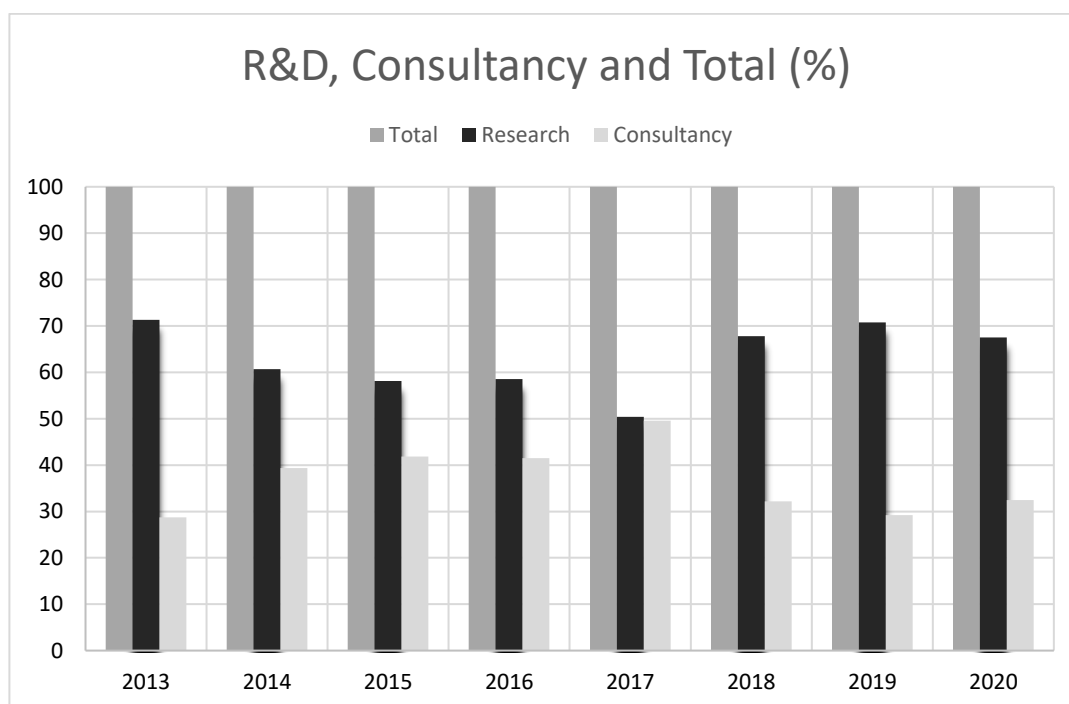


Figure 9 | Percentage of annual funding in research and in consultancy

As the number of PhD researchers (combining PhD members and PhD collaborators) did not substantially change in the period under analysis, a similar pattern is found in Figure 10, which illustrates the evolution of the capacity of PhD members to secure either forms of funding. In 2019, the average total funding was

16 k€ per CERIS member, an all-time low, which subsequently slight recover, being 19 k€ per CERIS member in 2020.

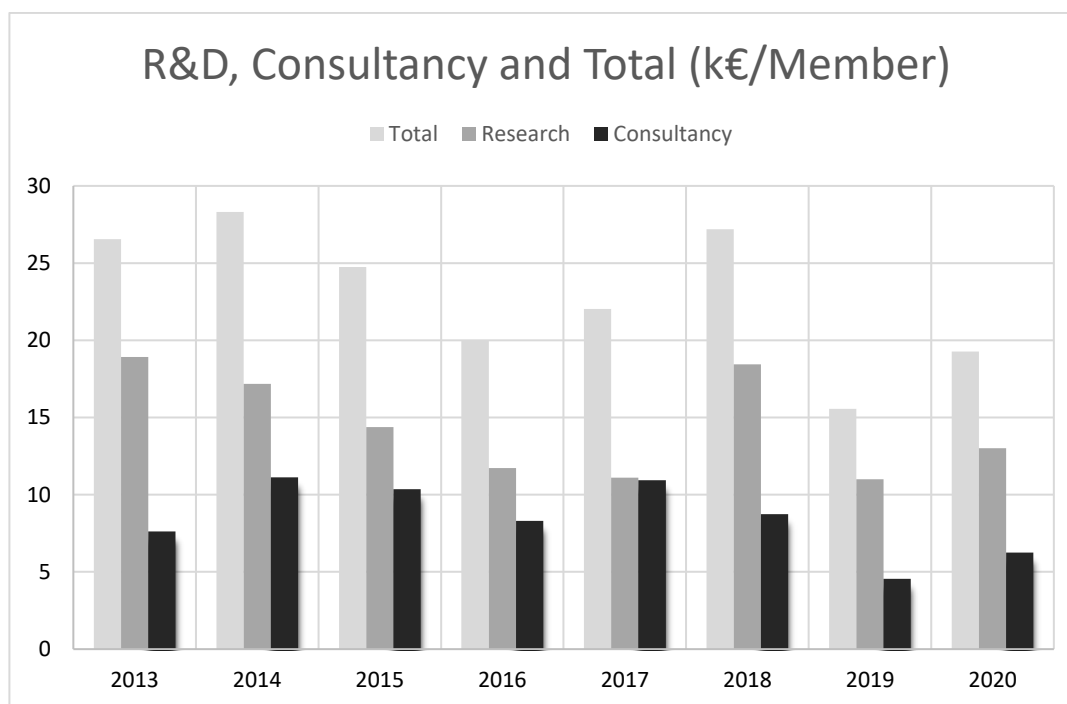


Figure 10 | Total annual funding per PhD researcher and per PhD member

3.5 Evolution of the main activity indicators

The evolution of the number of completed PhD theses is shown in Figure 11. The number of completed PhD theses in 2020 (32) follows a contraction trend initiated in 2015. Contrary to the MSc dissertations, this particular indicator does not seem to be strongly affected by the Covid-19 pandemic. This should reflect the relevance of the PhD programs headed by CERIS researchers. The oscillations are associated with differences in completion caused by PhD programs with dissimilar requirements in mandatory courses and, consequently, in breadth and depth of the research project. They are also affected by the cuts in the national program for PhD grants, which were attenuated by the engagement of CERIS in independently funded international bilateral consortia (namely through the Portugal-MIT and Portugal-U. Texas Programs) and FCT-funded PhD programs.

The ratios per PhD researcher (0.17 concluded theses, as seen in Figure 12, and 1.23 supervised or co-supervised active doctoral theses in 2020) are still close to target values.

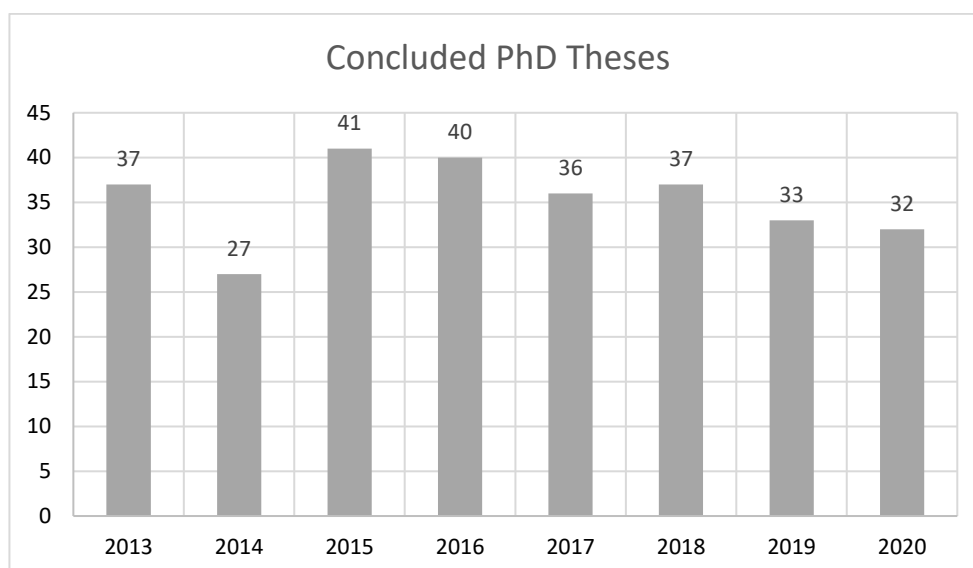


Figure 11 | Concluded PhD theses

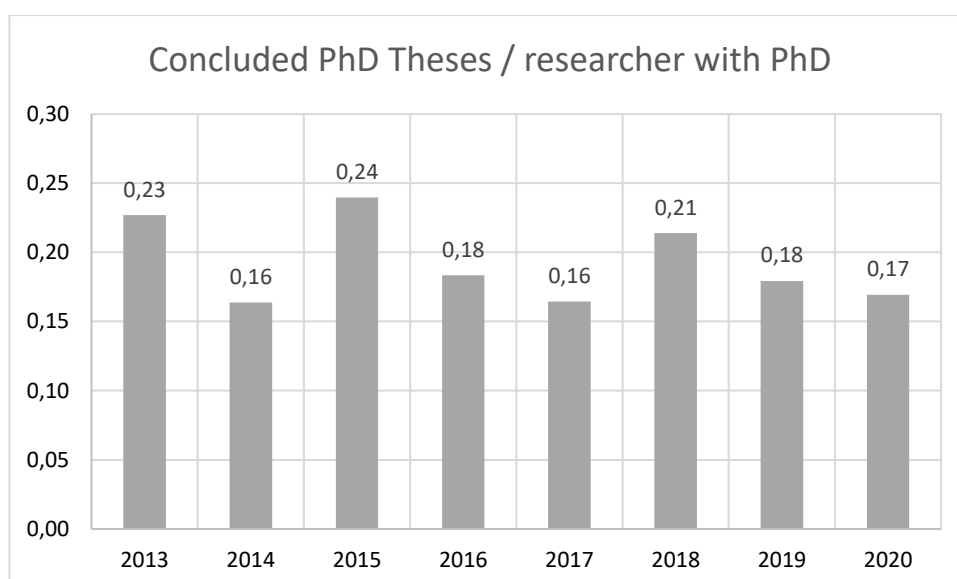


Figure 12 | Concluded PhD theses per researcher with PhD

The success in securing PhD contracts under FCT-funded doctoral programs is one of the key reasons why CERIS kept improving the main activity indicators under otherwise adverse conditions. CERIS succeeded in coordinating five and participating in another PhD program selected for funding in an internationally evaluated national competition held by FCT. No remotely similar rate of success was registered in the area of Engineering.

The evolution of the total number of papers published by CERIS researchers is presented in Figure 13. The plot shows a consistent increase in the scientific activity from 2013 and a stabilization plateau in 2015. In 2018 there is an evident increase in all indicators – bulk number of papers, papers per PhD researcher and papers per member. This may be attributed to cumulative effect of the increase in completed PhD theses and the incorporation of highly productive young researchers at post-doc level. In 2020 there is a

slight increase relatively to 2019 (from 302 to 313 papers). The number of papers in Q1 and Q2 ISI-indexed journals was substantially increased (from 229 to 271 papers, see Figure 14).

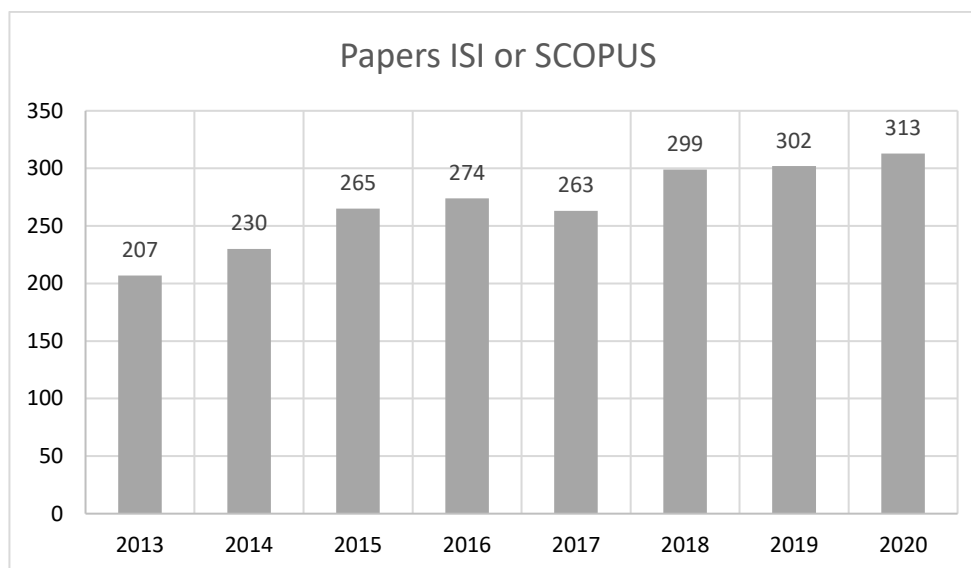


Figure 13 | Papers published in international journals (ISI and Scopus)

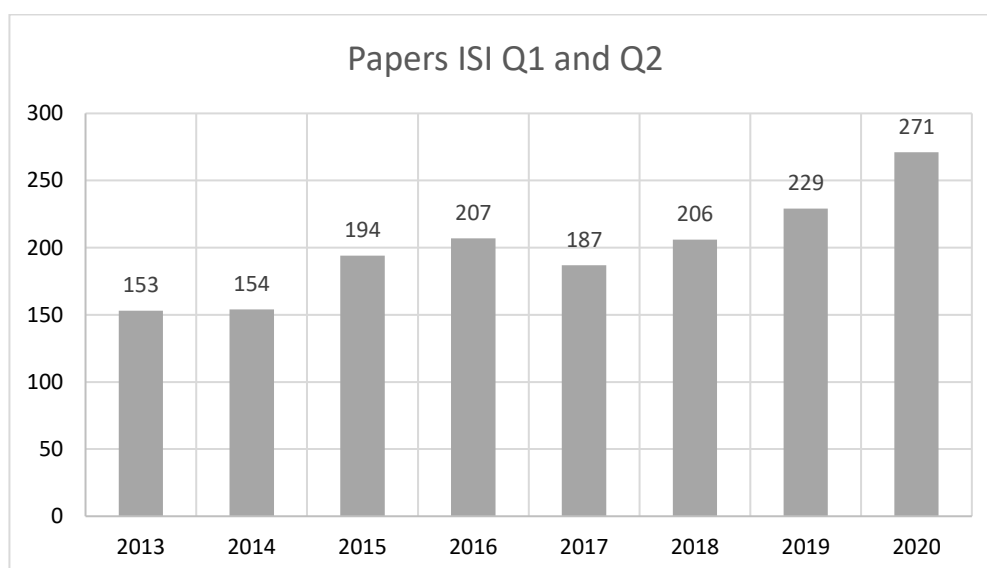


Figure 14 | Papers published in international Q1 or Q2 ISI journals

The publication ratios per member and per PhD researcher are presented in Figure 15 and in Figure 16, respectively. In 2020, 3.3 ISI or SCOPUS papers were published per CERIS member, reflecting a significant increase relatively to 2019 (2.7 papers per member, see Figure 15). There is also an increase in papers per PhD researcher (Figure 16). These numbers show a consolidated improvement relatively to 2013, when 2.0 ISI/SCOPUS papers were published per CERIS member.

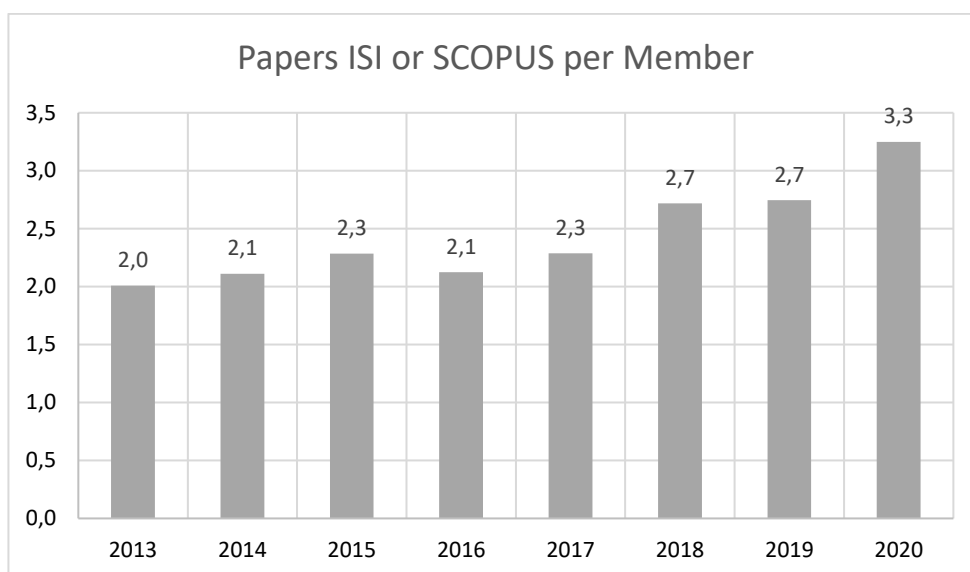


Figure 15 | Publication in ISI/Scopus journals per member

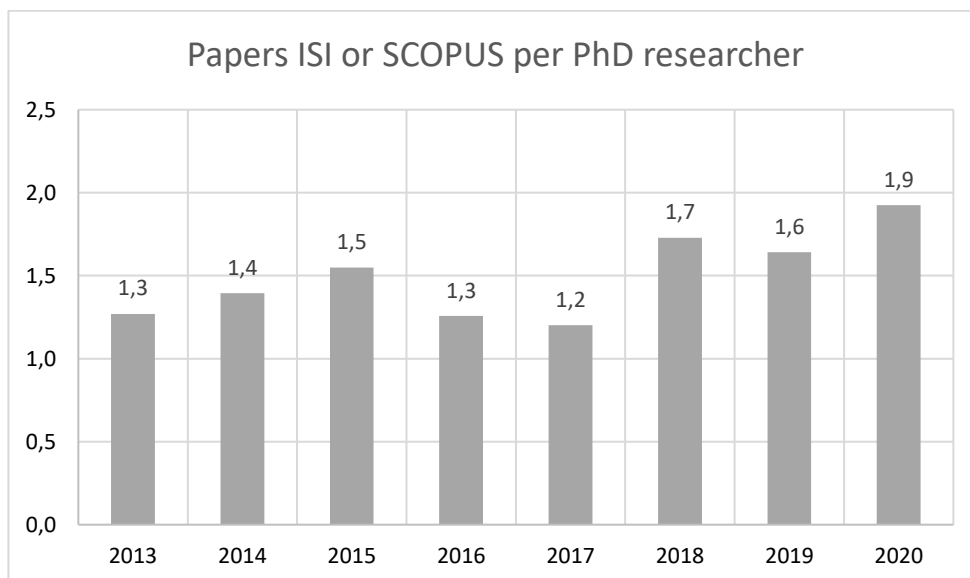


Figure 16 | Publication in ISI/Scopus journals per PhD researcher

The number of ISI-indexed Q1 and Q2 papers per researcher with PhD was increased from 1.24 to 1.43 (Figure 17). The number of other papers not indexed in ISI or SCOPUS per researcher with PhD was increased from 0.40 to 0.49 (Figure 18). The ratio for publication in international conference proceedings was 0.8 per researcher with PhD. Publications in international conference proceedings decreased from 312 in 2019 to 152 in 2020 (not shown in the charts).

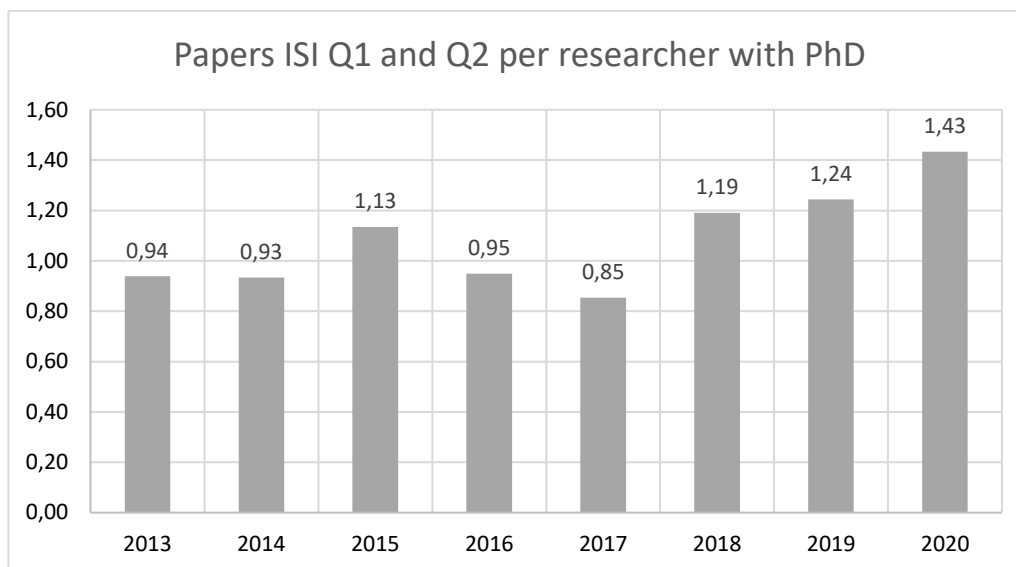


Figure 17 | Publication in Q1 or Q2 ISI journals per PhD researcher

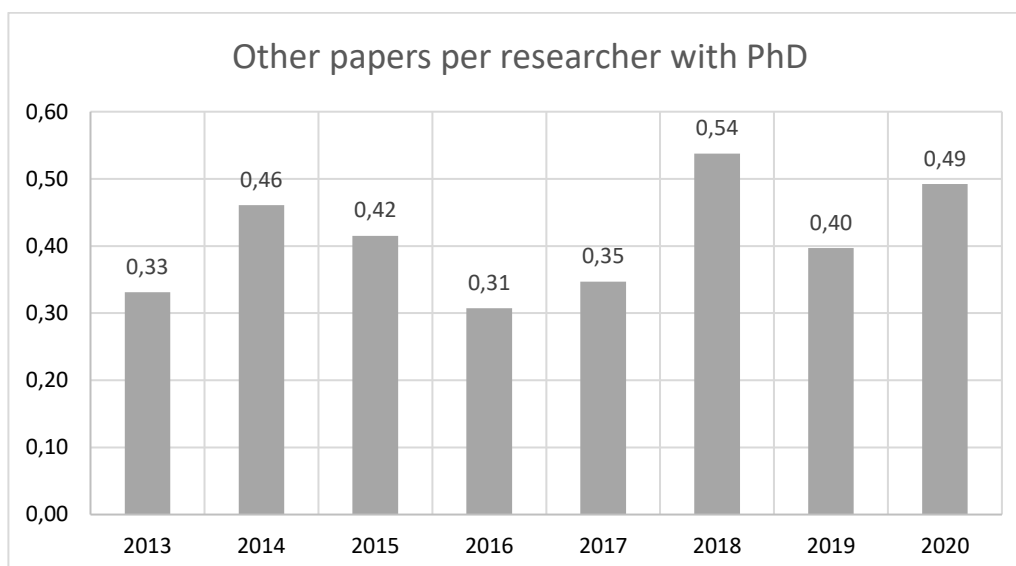


Figure 18 | Publication in other (Non Q1 and non Q2) ISI or SCOPUS journals per PhD researcher

Figure 19 depicts the distribution of the papers published in ISI journals per quartile of impact factor. In the 2013-2017 period about 50% of the papers were published in Q1 journals. This number was relatively stable during this period. In 2019 this figure was 49% and in 2020 this percentage was reduced to 37%. Moreover, 74% of the papers were published in Q1 and Q2 journals, attesting the relatively high average quality of the journal publications of CERIS members.

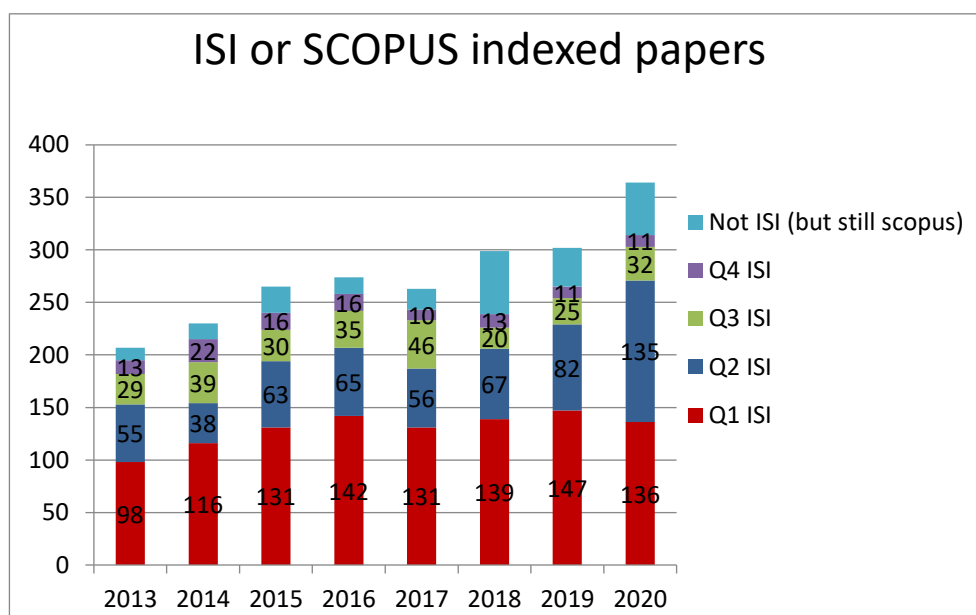


Figure 19 | Distribution of papers published in ISI journals per quartile (Q1 to Q4) of impact factor

Figure 20 shows the number of papers in ISI or SCOPUS journals per PhD researcher. In 2020, on average, each researcher published 1.43 paper in Q1 or Q2 ISI-indexed journals.

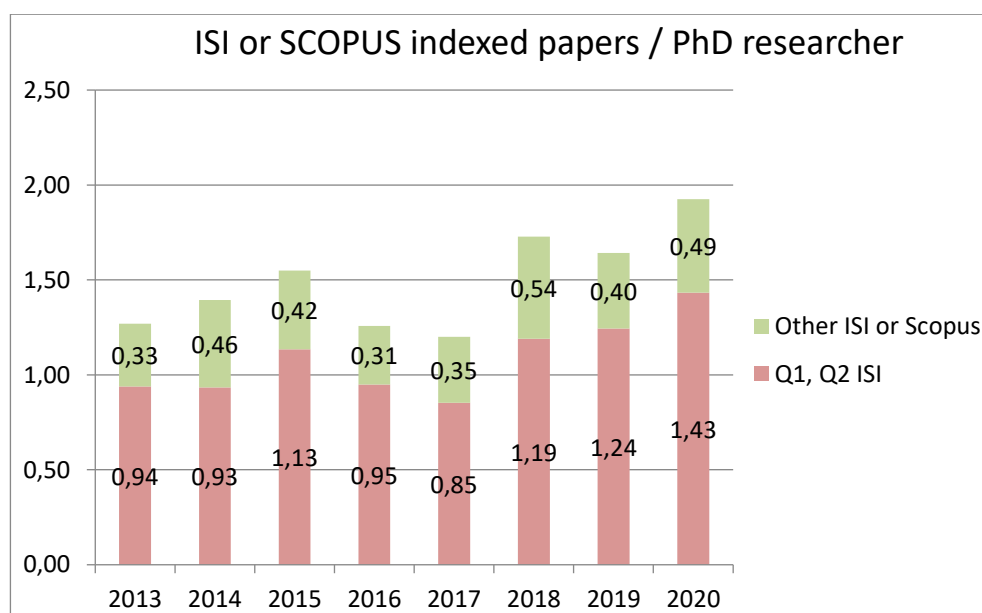


Figure 20| Distribution of papers per PhD researcher published in ISI or SCOPUS journals per quartile (Q1 to Q4) of impact factor

The analysis of this data suggests the following two comments:

- (i) the Covid-19 pandemic lead to a significative reduction in publications in international conference proceedings, as many events were cancelled, postponed or the online format was

- considered less attractive by the researchers;
- (ii) the dissemination of some of these works was redirected by the researchers to journal publications, leading to a meaningful increase in non Q1 ISI indexed journal publications (from 155 in 2019 to 228 in 2020). There was a marginal reduction in Q1 ISI indexed journal publications (from 147 in 2019 to 136 in 2020).

3.6 Research group results

The contribution of the research groups to the activity indicators presented above is presented in Annex C.

4. FUTURE RESEARCH

The CERIS activities planned for 2021 are a natural follow-up of the research carried out in 2020, as summarized in Section 2.4. The proposed activity, as submitted by the coordinators of the research groups, will benefit from the internal program to promote cooperation in research, as framed by the thematic strands and the work areas presented in Sections 2.2 and 2.3.

RG1 | Hydraulics

The RG activities in 2021 will be a natural follow-up of the research carried out in 2020. These activities will cover research objectives that include different cross-cutting issues with branches in the four thematic strands: Product development in Civil Engineering industries (PD); Risk and safety in natural and built environments (RS); Rehabilitation of natural and built environments (RNBE); Response to natural and societal changes (RNSC).

The RG activities for 2021 will be organized according to major research topics as follows:

a) Pressurized water systems

- Methodologies and software tools for the assessment and enhancement of water-use and energy efficiency in water supply systems (e.g., water and energy auditing, leak detection and location, optimization of pump scheduling, use of variable speed pumps, microturbines and pump-turbines) (PD).
- Development of reliability analyses and risk management tools for different types of water and wastewater infrastructures (RS).
- Safety and risk analyses and establishment of design criteria in pressurized pipe systems based on the development of advanced 1D/2D transient solvers, CFD modelling of pressurized flows and data collection in experimental facilities and real-life systems, fluid structure interaction (RS).

b) Fluvial hydraulic structures

- Development of mitigation strategies and pre-cast shelters for fish downstream of powerhouses with hydropeaking operation (RS).
- Numerical and experimental modelling of different flood release and related hydraulic structures (RS; RNBE).
- Study of the hydraulics of PKW weirs combined with spillways (RS, RNBE).
- Study of the pressure field and slab stability in a plunge pool lined with concrete slabs (RS).

c) River restoration and management

- Monitoring tools, based on physically-based computational models, for water and sediment quality in rivers and estuaries (RNBE).



- Risk management in the valleys downstream of dams (RS; RNSC).
- Environmental flows determination procedures and hydropower station operation rules to reduce ecological risk downstream of dams (RS, RNBE).
- River restoration and development of fish passes for low height river obstacles to improve ecological connection along regulated rivers (PD; RNBE; RNSC).

d) Environmental fluid mechanics

- Laboratorial investigation of rough-wall open-channel turbulence (RNBE).
- CFD simulation of solid-fluid interactions in turbulent flows (RNBE).
- Laboratory investigation and mathematical simulation of transport of dissolved substances (RS, RNBE).
- Heat and mass transport in wetlands (RNBE)

e) Sediment transport and river morphodynamics

- Hydrodynamics of river confluences in equilibrium (RS; RNBE).
- Hydrodynamics of river diversions in equilibrium (RS; RNBE).
- Sedimentation in shallow retention reservoirs: experimental study.
- Mathematical modelling of shallow-flows with mobile beds. Application to long term channel morphology evolution, dam-breaching, dam-break flows and overland tsunami propagation (RS).
- Mathematical simulation (Eulerian and Lagrangian) of transport processes (RS).
- Development of stabilization techniques for rivers meanders in equilibrium (RNBE).

f) Ocean waves, coastal morphodynamics and coastal and port structures

- Studying extreme events like freak waves, near the coast, to improve navigation safety and support the offshore wind energy production industry (moored or floating) (RS; RNBE).
- Assessment of the vulnerability to flooding of the built environments on low-lying areas of estuaries, due to extreme ocean storm surges events and climate action (RNBE; RNSC).
- Life-cycle cost analysis of coastal and port structures (RNBE).
- Modular port facilities in rivers for bulk cargo;
- Morphological modelling of beach morphology in the presence of coastal structures. (RS).
- Turbulent transport processes in rivers and estuaries: experimental research on interaction between transported quantities (sediment, pollutants, nutrients, etc.) and turbulence (RS; RNBE).

- Air entrainment in wave breaking - laboratory experiments, infra-gravity waves – generation mechanisms and practical applications

RG2 | Environment and Water Resources

The group RG2 will continue to focus on research activities in the areas of the environment and water resources, with the objective of developing approaches, methodologies and tools that cut across these areas, improving knowledge and capabilities to manage natural and built environments in a sustainable way.

The research objectives will cover different cross-cutting issues related with the thematic strands defined for CERIS, with the main activities focused on “Natural and Societal Changes”, and on “Risk and Safety in Natural and Built Environments”, with more limited contributions to the other two thematic strands.

In the near future, the E&WR will continue concentrating its activities in the following major topics:

- a) Hydrology and water resources: characterisation and modelling of hydrologic variables and processes, including extreme event analysis, planning and management of water resources, and water policy formulation;
- b) Assessment and analysis of climate change impacts on natural and man-made systems, with special emphasis on water resource systems, including the formulation of measures and policies for promoting adaptation and mitigation;
- c) Water governance indicators: the establishment of a sound set of indicators for water governance that reflect the i) existing framework conditions, ii) recent evolution, and iii) impact on society, for all principles and overarching goals of water governance;
- d) Sewer systems, including water quality along the lines and in in-sewer processes;
- e) Integrated sustainable wastewater solutions, including hydraulic and environmental performance of treatment systems such as constructed wetlands, and sanitation approaches and solutions for low income countries;
- f) Environmental management of natural and built environments and approaches to the transition of cities to greener economies, including, sustainable infrastructures and construction, energy efficiency, eco-efficiency, mobility, with special emphasis on life-cycle analysis, certification procedures and sustainability criteria;
- g) Monitoring and aquifer testing and assessment of groundwater pollution and Ecosystems in groundwater;
- h) Numerical and stochastic groundwater modelling and Geophysics and SSD applied to hydrogeology and groundwater management.
- i) Application of NBS in groundwater management.

- j) Drone images acquisition by using several bands, namely visible bands, near infrared and thermal images obtained at low altitude, for the delimitation of recharge zones and aquifer discharge by mapping the soil moisture and its relationship with land use (project DRONEWATER funded by FCT, PTDC/CTA-OHR/32360/2017).

RG3| Systems and Management

In line with the activity developed in the previous period, the planned research activities of the group can be placed under 3 major domains:

1. Regulatory and contracting policies, pricing and performance assessment;
2. Decision-making and systems design, operations and management and project management;
3. Information modelling and technology. Furthermore, closer coordination with CERIS strategy and the general orientations stemming from its thematic strands will be promoted. The horizontal character of the S&M group skills and competences creates opportunities for synergetic cooperation and interactions with other CERIS research groups and to make relevant contributions closely linked to the objectives of all the thematic strands.

Regarding Strand 1, the group will be focused on the improvement of the processes and infrastructure projects through the development of better models for project management and the procurement of goods, services and works. Particularly, the group has an extensive work developed in the scope of public-private partnerships arrangements with several models and contributions for the literature and the empirical world. Therefore, in the coming years new solutions will be proposed to achieve higher levels of efficiency and effectiveness of these two activities widely recognized as critical to achieving successful results in infrastructure and other civil engineering areas.

The team in particular has a remarkable tradition of open and comprehensive search for understanding new societal problems. Many of these challenges are directly related to the performance of complex organizations serving communities and cities. The S&M research group will promote the development of:

- a) models of complex organizations providing public goods or services, such as water supply, waste schooling, logistics and health networks;
- b) regulatory frameworks and adaptive approaches to propose better pricing and performance evaluation systems, allowing for benchmarking and rankings, particularly in infrastructure and other public services.

In Strand 2, the study of risk in any natural or built environment requires modelling complex systems, namely urban networks, designed to guarantee the fulfillment of societal needs expressed in terms of information, energy, water, mobility and supplies of a wide spectrum of goods and services. The group will pursue the development of advanced tools to design and to optimize such complex systems,

increasing safety and resilience. The group particularly will provide contributions in the development of models applied to Civil Engineering using as multicriteria decision analysis (MCDA), logistics and supply chain, systems modelling and optimization, contracts and project management in infrastructure.

Concerning the Strand 3, the main research scope are the areas of Geographical Information Science and Information and Communication Technologies applied to Geomatics, Building Information Modelling and Information Technology in Construction. The contribution of the members leads to a more effective sustainability, greater economy in the construction and energy efficiency and on streamlining the process of implementation of the project, based on innovative tools used in the field of Civil Engineering.

The activity of the group will be mostly focused on emergent areas of the H2020 program. The Geomatics research main subjects will be focused on: disaster-resilience; satellite imagery in the detection and mapping of vertical displacements and natural hazards; Interferometry via persistent scatters in the detection and measurement of ground subsidence; development of methodologies for volcanic hazard and risk mapping; Information for disaster mapping and management; geoid undulation at local and regional scales; ground deformation with advanced SAR methods; applications of spatial analysis, namely in location problems for meters in supply networks, measurement of walkability scores; and 3D virtual city models – GeoBIM environment.

The focus of the Information Technology in Construction will be mainly digital construction: e-business and e-procurement platforms to support construction project lifecycle; research on innovative approaches to e-business in construction, where social networks and collaborative work play a central role; intelligent buildings; building Information modelling (BIM); construction information management and optimization to improve buildings performance; BIM implementation in projects and organizations; and Asset Information Model (AIM).

RG4 | Transportation Systems

The RG4, in 2021, will pursue the objectives described in section II.1 using the means and the routes offered by EU (Horizon 2020) and national (Portugal 2020 and FCT) financed research projects, by the research involved in each going on PhD works integrated on the doctoral program in Transportation Systems, by the innovation, the technology and the development transfer to society and industry, by supporting the training professional programs set with several stakeholders on the transportation and infrastructure systems, and by the improvement of the results achieved within the international networks already established and the ones to enhance if the opportunity comes.

RG5| Studies on Construction

The general objectives of the group for 2021 are:



- To develop research projects in the general domains of Construction Materials, Technology and Management Innovation; Sustainable Construction; Monitoring, Rehabilitation and Conservation of the Built Heritage. An effort will be made to concentrate efforts in increasingly less wide and more specific fields to produce relevant results in national and international forums (measured in a significant increase in the number and impact factor of papers in peer reviewed international journals, the supervision of PhD Theses and the approval of national and international research grants): advanced materials and technologies also focusing on nanomaterials - establish international cooperation and be a national leader in the field of composites (GFRP and GRC); concrete and mortars technology - proceed with PhD and MSc studies under way (in strong collaboration with LNEC) and improve the Mortars Section of the Construction Laboratory; risk informed quality, safety and environmental management in construction - increase the already large international cooperation via technical committees and international conferences; sustainability and deconstruction strategies and technology - proceed with PhD and MSc studies under way and be a national and international reference in the field of recycled aggregates for concrete and mortars production; building physics and passive design - continue the very good results in the near past and expand its potential through studies on energy efficiency and acoustics of innovative materials, components and construction systems; building acclimatization and mechanical systems - continue collaboration with the Mechanics and Physics Departments of IST Department of IST, strategically important in terms of sustainable construction in terms of energy-saving; inspection, diagnosis, maintenance and rehabilitation systems - proceed with PhD and MSc studies under way and be a national and international reference in the field of inspection and diagnosis systems; conservation of historical building heritage - continue and strengthen national and international cooperation projects, namely within the Construction Technological Portuguese Platform (PTPC);
- To continue participating in national and international committees, participating / organizing national and international conferences, teaching in Graduation and Post-Graduation courses in the field of construction (namely in the recently awarded FCT Doctoral Program Eco Construction and Rehabilitation, launched in 2014 and participate in academic events and performing consultancy work.

RG6 | Structures and Geotechnics

As in previous years, in 2021, it is planned that the members of the RG6 continue working in the same major research topics of the area, taking into account most relevant issues according to reference international organizations and the current priorities of the country.

An effort will be made to promote a deeper and effective collaboration between RG members, as well as between these and internationally renowned researchers, to deliver relevant contributions to the sector and increase the participation in research projects funded by the European Union. The main general

purpose is to improve the construction sector competitiveness, supporting the development of economical and eco-efficient materials and products, as well as new technologies to design, build and maintain high-quality and long-lasting structures. This embraces (i) the development of industrialized cementitious materials, geomaterials and products, (ii) the development and implementation of advanced computational tools for geotechnical and structural assessment, safety verifications (new and existing structures and their foundations) and design of strengthening solutions, (iii) the health monitoring and life-cycle management of structures and their foundations, and (iv) the develop of tools for the analysis and mitigation of risks in infrastructures.

Other more general objectives are the increase of the group internationalization and the links to industry, namely through:

- a) improvement of the competitive funding capacity in international and national research projects calls
- b) participation in national and international standardization committees,
- c) organization of academic national and international events,
- d) participation in national and international Graduation and Post-Graduation courses (namely FCT Doctoral Programs) in the field of Structures and Geotechnics,
- e) expert consultancy work to partially fund research and provide practical applications to the results of research,
- f) collaboration with design offices.

5. CLOSURE

CERIS merged in 2015 three research centres of DECivil, namely CEHIDRO (Centre of Hydraulics, Water Resources and Environment), CESUR (Centre for Urban and Regional Systems) and ICIST (Institute of Structural Engineering, Territory and Construction).

Their integration in CERIS was designed to exploit a comprehensive thematic coverage, in depth and scope, promoting synergies in the multidisciplinary sector of Built and Natural Environment. Indeed, CERIS was created to address the main issues identified in key documents on the prospects of the sector and to respond thus to recommendations to enhance strengths and to overcome weaknesses identified by the external advisory boards and the international evaluation panels of its founding centres when they operated independently.

In 2020, CERIS counted on the expertise of 189 PhD researchers and 169 non-PhD researchers, having the profile and the critical mass needed to sustain a leading national position and to attain a strong international presence in the sector. The feasibility of these central objectives was confirmed in the first four years of formal operation of CERIS, which also confirmed the need to face the challenges and solve the difficulties foreseen in the discussions that led to its creation.

CERIS is classified by FCT as the only 'large research unit' in the area of Civil Engineering. In terms of day-to-day operation, one set of difficulties relates to inherited weaknesses in technical staff in what regards the operation of laboratories and, especially, the creation of an administrative structure competent in the management of Science and Technology. As the merging of the centres must yield an improved use of human resources, CERIS should use its own resources to engage and train the necessary technical staff in preparation of the announced waiving of the current freeze on recruiting.

The discussion that led to the creation of CERIS was mainly focused on the dual challenge of respecting the identity of the founding centres while actively promoting internal cooperation in a new unit rich in synergies in the main areas of Built and Natural Environment. The first four years of operation have shown that loss of identity is not an issue and confirmed that the core challenge of the merge was the progressive realignment of the activity of the research groups in the framework of the main work areas of the common thematic strands. It was not expected, and it should not be expected that groups with long-established areas of operation would immediately readjust and start new forms of cooperation. Previous commitments must be met and new opportunities cannot be lightly discarded. Moreover, it takes time and sustained internal proactive policies to prove that individual- and group-level performances directly benefit from cooperation.

The number of CERIS Members and the number of PhD collaborators has marginally increased in 2020 and the number of non-PhD collaborators has decreased. This is mostly because PhD programs centered at CERIS are in their last stages. The number of concluded PhD theses remained stable. However, it is necessary to be attentive, in the next years, to the impact of end of FCT-funded PhD programs.

In spite of the reduction of the number of non-PhD researchers, the number of the sum of Q1 and Q2 ISI-indexed journal papers increased, as well as the number of papers per researcher. This can be attributed

to the success of PhD programs led by CERIS members and to the high productivity of early career researchers, most of them with no tenure contracts. The quality of the papers has stabilized, being 74% of all papers published in ISI or Scopus journals belonging to Q1 or Q2 ISI percentiles

International recognition remained high in 2020, with a fair number of Editor in Chief and Associate Editor roles. However, this has not materialized in stable cooperation leading to international projects.

In what concerns funding, 2020 results show a slight economic recovery both in consultancy and R&D activities of CERIS members. Both national and international research funding has increased from 2019 to 2020. FCT projects funding has increased 24% and EU funding has increased 546%. Although these are significant figures, this latter value mostly reflects the reduced EU funding obtained in 2019.

Other difficulties in securing funding are related to the discouraging conditions the universities located in the Lisbon area have to face when applying to Portugal 2020 calls. In addition, and as a direct consequence of the downgrading suffered in the 2013 evaluation, core funding was substantially reduced and the funding necessary to launch the internal cooperation program was denied.

The 2020 year was heavily marked in all activity sectors by the Covid-19 pandemic. Being a research center open to the society, Ceris was no exception to the rule. The most directly affected activities were laboratorial research (the facilities were closed or had severe access restrictions for most of the year), scientific events (most of them postponed, cancelled or took place in virtual mode), the conclusion of MSc dissertations (whose delivery date was postponed), consultancy and research that require *in-situ* presence and different types of collaborations with the most diverse entities that require face-to-face interaction. Resuming all these activities will not take place in the short term, but there are legitimate expectations that the recovery will take place in the medium term. It is with this prospect that CERIS should position itself and assume a mobilizing role that will allow it to lead research in Civil Engineering in the national context and encourage its internationalization.

Based on the high-level of the activities of CERIS in the 2013-20 period and the positive mark (Excellent) in the 2017 FCT evaluation, CERIS expects to regain the leading position in the Civil Engineering area. Such a result would be coherent with all main international scientific rankings where the University of Lisbon (in which CERIS is the only research unit in Civil Engineering) ranks 1st in the country in that subject.

ANNEX A – PHD THESES COMPLETED IN 2020

PhD theses completed in 2020

Student name	Supervisor	Co-Supervisor #1	Co-Supervisor #2	Title	PhD programme
Pedro Manuel Parreira Marcelino	Maria de Lurdes Baptista da Costa Antunes	Eduardo Manuel Cabrita Fortunato	Cristina Marta Castilho Pereira Santos GOMes	A New approach for the maintenance management of transportation infrastructures using machine learning	Engenharia Civil
Caroline Câmara Benevides	Jorge Manuel Lopes Baptista e Silva	Ana Paula Martins Falcão Flôr		A Utilização de Modelos SIG 3D na Melhoria do Processo de Planeamento e Gestão Urbana: O Caso de Estudo da Cidade de Fortaleza, Brasil	Engenharia do Território
Mayara Moraes Monteiro	João António de Abreu e Silva	Jorge Pinho de Sousa		Adaptation of transnational short-term residents: understanding the factors influencing residential location choice and travel behavior'	Sistemas de Transportes
Cassilda Mariza Alves Matos de Alpoim Motta Queiroz	Filipe Manuel Mercier Vilaça e Moura	Pedro Manuel Amador Rodrigues Celeste		Commuting to school by public transport: on the development of marketing strategies to change travel behaviour	Sistemas de Transportes
Kapila Silvino Sopa Chissama	Luís Guilherme de Picado Santos			Contribuição para a Validação Tecnológica dum SMA com Borracha	Sistemas de Transportes
Karol Bot	Laura Aelenei	Carlos Santos Silva	Maria da Glória Gomes	Design, testing and modelling of façade integrated photovoltaic systems	Sistemas Sustentáveis de Energia
Hugo Miguel Bento Rebelo	Corneliu Cismasiu			Development and study of a high performance protective solution against blast loads	Engenharia Civil
Dora Luísa Ferreira da Luz Roque	Ana Paula Martins Falcão Flôr	José Vieira de Lemos	Ana Maria Fonseca	Displacement Measurement Through InSAR Geodesy for Structural Health Monitoring	Engenharia Civil
Verena Goswein	José Dinis Silvestre	Fausto Freire	Guillaume Habert	Dynamic assessment of building stocks – Material selection at the urban scale	Engenharia Civil
Helga Sofia Andrade Pereira	Rui Domingos Ribeiro da Cunha Marques			Efficiency and incentives in irrigation	Engenharia e Gestão
Carlos Manuel Pinto Pereira	João Ribas Maranhã	Maria Rafaela Pinheiro Cardoso		Formulation of an advanced effective stress based constitutive model for unsaturated soils	Engenharia Civil
Lourenço Rocheta de Almeida Fernandes	Nuno Miguel Rosa Pereira Silvestre	João Pedro Ramôa Ribeiro Correia		Fracture behaviour of pultruded GRFP profiles: application to web-crippling phenomena	Engenharia Civil
Joana Maria Jorge Simões Pedro	Carlos Augusto Santos Silva	Manuel Guilherme Caras Altas Duarte Pinheiro		Geo-referenced sustainability assessment: a strategic framework for urban planning decisions	MIT Portugal Program Sustainable Energy Systems (IST)
Carlos Alexandre Cintra Vieira	Francisco Baptista Esteves Virtuoso			High Strength Steel Application in Bridges - Webs of Plate and Box Girder Road Bridges	Engenharia Civil
Catarina Correia de Araújo Brazão Farinha	Jorge Manuel Calço Lopes de Brito	Maria do Rosário da Silva Veiga		High-Performance Wall Rendering Cementitious Mortars with Industrial Wastes	Engenharia Civil
Pedro Gil Girão dos Santos	Luís Manuel Cortesão Godinho	João Pedro Ramôa Ribeiro Correia	Alfredo Manuel Pereira Geraldês Dias	Hybrid performance-based wood panels for a smart construction	Engenharia Civil
Nuno Miguel de Jesus Barreiras	Francisco Carlos da Graça Nunes Correia	Maria Rafaela de Saldanha Gonçalves Matos		Information systems for groundwater management and governance	Engenharia Civil

Student name	Supervisor	Co-Supervisor #1	Co-Supervisor #2	Title	PhD programme
Beatriz Rosa de Abreu Pereira Marques	António José Barreto Tadeu	João António Soares de Almeida	Jorge de Brito	Innovative Sustainable Solutions for Eco-Building Using Rice By-Products	Engenharia Civil
João Wandi Viegas Massunga	Jorge Manuel Calço Lopes de Brito	Fernando António Baptista Branco		Levantamento do estado de conservação do património edificado da cidade de Luanda, nos anos 60/70 do séc. XX	Engenharia Civil
Arash Ghazi	Carlos Tiago	Thierry Massart		Microstructural computational modeling of the mechanical behaviour of closed-cell foams: from tessellation-based to CT scan-based modeling	Engenharia computacional
Miguel Alexandre Ribeiro Moreira	António Alberto do Nascimento Pinheiro	Martin Schletterer	Isabel Maria Bento de Matos Boavida	Mitigation of hydropeaking impacts on fish: towards sustainable hydropower management	Restauro e Gestão Fluviais
David dos Santos Henriques	Rodrigo Gonçalves	Dinar Camotim		Modelação de vigas mistas aço-betão utilizando a teoria generalizada de vigas	Engenharia Civil
Luís Ricardo dos Santos Duarte de Vargas Salvador	António José Luís dos Reis			Modelação Numérica de Estruturas com Cabos: Regulação Geométrica	Engenharia Civil
Tiago Balieiro Cetrulo	Tadeu Malheiros	Rui Domingos Ribeiro da Cunha Marques	Instituto Superior Técnico	Modelo de análise de eficiência de operadoras de água adaptado à desigualdade no acesso	Ciências de Engenharia Ambiental
João Pedro Camões Lourenço	Jaime Alberto dos Santos	Arézou Modaressi		Numerical Modelling of Non-Displacement Piles in Sand. The Importance of the Dilatancy in the Resistance Mobilization	Engenharia Civil
Alba Valéria Brandão Canelas	Marcelo Giulian Marques	Jorge de Saldanha Gonçalves Matos		Pressões extremas atuantes nas proximidades das quinas dos degraus de vertedouros	Recursos Hídricos e Saneamento Ambiental
Mohsen Besharat	Helena Margarida Machado da Silva Ramos	Maria Teresa Fontelas dos Santos Viseu Sarrico Santos		Pressure Surge Control in Two-Phase Flows and Transient-Induced Compressed Air Energy Storage (TI-CAES) System	Engenharia Civil
Ana Isabel Mera Marques	João Paulo Janeiro Gomes Ferreira	Maria do Rosário da Silva Veiga	Paulo José O.X. Candeias	Reabilitação de Edifícios Antigos: Redução da Vulnerabilidade Sísmica Através do Reforço de Paredes	Engenharia Civil
João Nuno Noronha Ramos Vigário Pacheco	Jorge Manuel Calço Lopes de Brito	Carlos Manuel Chastre Rodrigues	Luís Manuel F. Evangelista	Reliability analysis of eco-concrete	Engenharia Civil
Oswaldo Jaime Moiambo	Filipa Maria Santos Ferreira	José Manuel de Saldanha Gonçalves Matos		Simulação Hidráulica da Desidratação de Lamas Fecais, Baseada em Estudos de Caso em Portugal e Moçambique	Engenharia do Ambiente
Fernando da Conceição Gonçalves Martinho	Luís Guilhemmer de Picado Santos	Francisco Manuel da Silva Lemos		Validação Laboratorial de Um Mástique Modificado Inovador para a Produção de Misturas Betuminosas Mais Sustentáveis	Engenharia de Materiais
Rodolfo Pienika	Helena Margarida Machado da Silva Ramos			Desarrollo de nuevas tecnologías para el aprovechamiento hidroenergético en mini y micro escala	Engenharia Civil



ANNEX B – PAPERS PUBLISHED IN 2020

Authors	Title of paper	Journal	Vol, (Number), pages, month	DOI	Type of journal	Impact factor Clar. Analytics (2020)	Quartil SCOPUS	Quartil WoS
Alizamir, M.; Kisi, O.; Adnan, R.M.; Kuriqi, A.	Modelling reference evapotranspiration by combining neuro-fuzzy and evolutionary Strategies	Acta Geophysica	V. 68, (1113-1126) , -.	10.1007/s11600-020-00446-9	WoS and SCOPUS	1,395	Q3	Q3
Cruz, C.O.; Sarmiento, J.M.	"Mobility as a Service" platforms: A critical path towards increasing the sustainability of transportation systems	Sustainability	V. 12, n.º 16, (6368) , August.	10.3390/su12166368	WoS and SCOPUS	2,576	Q2	Q2
Ilic, J.M.; Bento, R.; Cattari, S.	3D GIS representation for supporting seismic mitigation policies at urban scale: The case study of Lisbon	Journal of Cultural Heritage	V. 45, (265-278) , September-October.	10.1016/j.culher.2020.04.001	WoS and SCOPUS	2,553	Q2	Q2
Gymnopoulos, M.; Ricardo, A.M.; Alves, E.; Ferreira, R.M.L.	A circular cylinder in the main-channel/floodplain interface of a compound channel: effect of the shear flow on drag and lift	Journal of Hydraulic Research	V. 58, n.º 3, (420-433) , -.	10.1080/00221686.2019.1596987	WoS and SCOPUS	2,098	Q1	Q2
Dacol, V.; Caetano, E.; Correia, J.R.	A combined exponential-power-law method for interconversion between viscoelastic functions of polymers and polymer-based materials	Polymers	V. 12, (3001) , December.	10.3390/polym12123001	WoS and SCOPUS	3,426	Q1	Q1
Kurda, R.; de Brito, J.; Silvestre, J.D.	A comparative study of the mechanical and life cycle assessment of high-content fly ash and recycled aggregates concrete	Journal of Building Engineering	V. 29, (art. 101173) , May.	10.1016/j.jobe.2020.101173	WoS and SCOPUS	3,379	Q1	Q1
Areias, P.; Tiago, C.; Carrilho Lopes, J.; Carapau, F.; Correia, P.	A finite strain Raviart-Thomas tetrahedron	European Journal of Mechanics - A/Solids	V. 80, (art. 103911) , March-April.	10.1016/j.euromechsol.2019.103911	WoS and SCOPUS	3,786	Q1	Q1
Peres, N.; Gonçalves, R.; Camotim, D.	A GBT-based mixed finite element for curved thin-walled members with circular axis	Thin-Walled Structures	V. 146, (art. 106462) , January.	10.1016/j.tws.2019.106462	WoS and SCOPUS	4,033	Q1	Q1
Rodrigues, A.; Gonçalves, A.B.; Casquilho, M.; Gomes, A.A.	A GIS-based evaluation of the potential of woody short rotation coppice (SRC) in Portugal aiming at co-firing and decentralized co-generation	Biomass and Bioenergy	V. 137, (art. 105554) , June.	10.1016/j.biombioe.2020.105554	Non WoS; SCOPUS	3,551	Q1	
Lapi, M.; Secci, L.; Teoni, E.; Pinho Ramos, A.; Orlando, M.	A hybrid method for the calibration of finite element models of punching-shear in R/C flat slabs	Computers & Structures	V. 238, (art. 106323) , October.	10.1016/j.compstruc.2020.106323	WoS and SCOPUS	3,664	Q1	Q1
Oliveira, J.N.C.; Oliveira, F.S.B.F.; Freire, P.; Trigo-Teixeira, A.	A hybrid monitoring-modelling analysis on the storm induced sediment dynamics of a structure-controlled beach	Journal of Coastal Research	V. 95, SP1, (605-609) , -.	10.2112/SI95-118.1	WoS and SCOPUS	0,793	Q2	Q4
Magalhães, L.; Reis, V.; Macário, R.	A new methodological framework for evaluating flexible options at airport passenger terminals	Case Studies on Transport Policy	V. 8, n.º 1, (76-84) , March.	10.1016/j.cstp.2018.03.003	Non WoS; SCOPUS		Q2	
Martins, A.D.; Silvestre, N.; Bebiano, R.	A new modal theory for wrinkling analysis of stretched membranes	International Journal of Mechanical Sciences	V. 175, (art. 105519) , June.	10.1016/j.ijmecsci.2020.105519	WoS and SCOPUS	4,631	Q1	Q1
Dacol, V.; Caetano, E.; Correia, J.R.	A new viscoelasticity dynamic fitting method applied for polymeric and polymer-based composite materials	Materials	V. 13, n.º 22, (5213) , November.	10.3390/ma13225213	WoS and SCOPUS	3,057	Q2	Q2
Brito, M.; Canelas, R.B.; García-Feal, O.; Domínguez, J.M.; Crespo, A.J.C.; Ferreira, R.M.L.; Neves, M.G.; Teixeira, L.	A numerical tool for modelling oscillating wave surge converter with nonlinear mechanical constraints	Renewable Energy	V. 146, (2024-2043) , February.	10.1016/j.renene.2019.08.034	WoS and SCOPUS	6,274	Q1	Q1
Ribeiro, C.; Ramos, N.M.; Flores-Colen, I.	A review of balcony impacts on the indoor environmental quality of dwellings	Sustainability	V. 12, n.º 16, (6453) , -.	10.3390/su12166453	WoS and SCOPUS	2,576	Q2	Q2
Boano, F.; Caruso, A.; Costamagna, E.; Ridolfi, L.; Fiore, S.; Demichelis, F.; Galvão, A.	A review of nature-based solutions for greywater treatment: applications, hydraulic design, and environmental benefits	Science of The Total Environment	V. 711, (art. 134731) , April.	10.1016/j.scitotenv.2019.134731	WoS and SCOPUS	6,551	Q1	Q1

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Pisoeiro, J.; Rizzo, A.; Masi, F.								
Gonçalves, M.; Simões, N.; Serra, C.; Flores-Colen, I.	A review of the challenges posed by the use of vacuum panels in external insulation finishing systems	Applied Energy	V. 257, (art. 114028) , January.	10.1016/j.apenergy.2019.114028	WoS and SCOPUS	8,848	Q1	Q1
Tsarakakis, K.P.; Efthymiou, L.; Michopoulos, A.; Mavragani, A.; Anđelković, A-S.; Antolini, F.; Bacic, M.; Bajare, D.; Baralis, M.; Bogusz, W.; Burlon, S.; Figueira, J.; Genç, M.S.; Javed, S.; Jurelionis, A.; Koca, K.; Ryżyński, G.; Urchueguia, J.F.; Žlender, B.	A review of the legal framework in shallow geothermal energy in selected European countries: Need for guidelines	Renewable Energy	V. 147, Part 2, (2556-2571) , March.	10.1016/j.renene.2018.10.007	WoS and SCOPUS	6,274	Q1	Q1
Santos, M.B.; de Brito, J.; Silva, A.S.	A review on alkali-silica reaction evolution in recycled aggregate concrete	Materials	V. 13, n.º 11, (2625) , -.	10.3390/ma13112625	WoS and SCOPUS	3,057	Q2	Q2
Maji, S.; Hanmaiahgari, P.R.; Balachandrar, R.; Pu, J.H.; Ricardo, A.M.; Ferreira, R.M.L.	A review on hydrodynamics of free surface flows in emergent vegetated channels	Water	V. 12, (1218) , -.	10.3390/w12041218	WoS and SCOPUS	2,544	Q2	Q2
Vamvatsikos, D.; Bakalis, K.; Kohrangi, M.; Pyrza, S.; Castiglioni, C.A.; Kanyilmaz, A.; Morelli, F.; Startan, A.; D' Aniello, M.; Calado, L.; Proença, J.M.; Degee, H.; Hoffmeister, B.; Pinkawa, M.; Thanopoulos, P.; Vayas, I.	A risk-consistent approach to determine EN1998 behaviour factors for lateral load resisting systems	Soil Dynamics and Earthquake Engineering	V. 131, (art. 106008) , April.	10.1016/j.soildyn.2019.106008	WoS and SCOPUS	2,637	Q1	Q2
Lúcio, C.; Silva, C.M.; Sousa, V.	A scale-adaptive method for urban rainwater harvesting simulation	Environmental Science and Pollution Research	V. 27, (4557-4570) , -.	10.1007/s11356-019-04889-6	WoS and SCOPUS	3,056	Q2	Q2
Ferreira, D.; Marques, R.C.	A step forward on order- α robust nonparametric method: inclusion of weight restrictions, convexity and non-variable returns to scale	Operational Research	V. 20, (1011-1046) , June.	10.1007/s12351-017-0370-1	WoS and SCOPUS	1,759	Q2	Q3
Froio, D.; Rizzi, E.; Simões, F.M.F.; Pinto da Costa, A.	A true PML approach for steady-state vibration analysis of an elastically supported beam under moving load by a DLSFEM formulation	Computers & Structures	V. 239, (art. 106295) , October.	10.1016/j.compstruc.2020.106295	WoS and SCOPUS	3,664	Q1	Q1
Conde, D.S.; Canelas, R.B.; Ferreira, R.M.L.	A unified object-oriented framework for CPU+GPU explicit hyperbolic solvers	Advances in Engineering Software	V. 148, (art. 102802) , October.	10.1016/j.advengsoft.2020.102802	WoS and SCOPUS	3,884	Q1	Q1
Cardoso, R.; Pedreira, R.; Duarte, S.O.D.; Monteiro, G.A.	About calcium carbonate precipitation on sand biocementation	Engineering Geology	V. 271, (art. 105612) , June.	10.1016/j.enggeo.2020.105612	WoS and SCOPUS	4,779	Q1	Q1
Proença, M.; Neves e Sousa, A.; Garrido, M.; Correia, J.R.	Acoustic performance of composite sandwich panels for building floors: Experimental tests and numerical-analytical simulation	Journal of Building Engineering	V. 32, (art. 101751) , November.	10.1016/j.jobe.2020.101751	WoS and SCOPUS	3,379	Q1	Q1
Fernandes, P.; Pala, H.; Cavaco,	Admixture tuning for high-performance concrete for the production of novel precast pre-	Structural Concrete	V. 21, n.º 5, (1989-1998) , October.	10.1002/suco.201900090	WoS and SCOPUS	2,174	Q1	Q2

Authors	Title of paper	Journal	Vol, (Number), pages, month	DOI	Type of journal	Impact factor Clar. Analytics (2020)	Quartil SCOPUS	Quartil WoS
E.; Tiago, P.; Júlio, E.	stressed long-span girders for highway overpasses							
Maurý-Ramírez, A.; Flores-Colen, I.; Kanematsu, H.	Advanced coatings for buildings	Coatings	V. 10, n.º 8, (728) , -.	10.3390/coatings10080728	Non WoS; SCOPUS	2,436	Q2	
Valença, J.; Santos, B.; Araújo, A.; Júlio, E.	Aerial Crack View: Avaliação de Pontes de Betão Através de Processamento de Imagens Adquiridas com UAV	Construção Magazine	V. 95: 6-9, Janeiro-Fevereiro, 2020.		Non (WoS, SCOPUS) National			
Sena da Fonseca, B.; Ferreira Pinto, A.P.; Piçarra, S.; Montemor, M.F.	Alkoxysilane-based sols for consolidation of carbonate stones: Proposal of methodology to support the design and development of new consolidants	Journal of Cultural Heritage	V. 43, (51-63) , May-June.	10.1016/j.culher.2019.11.003	WoS and SCOPUS	2,553	Q2	Q2
Bashirinia, M.; Mamdoohi, A.R.; Abreu e Silva, J.	An alternative approach to centroids and connectors pattern: Random intra-zonal travel time	International Journal of Transportation Engineering	V. 7, n.º 3, (246-265) , -.	10.22119/IJTE.2018.144236.1427	Non (WoS, SCOPUS) International			
Mazzolari, A.; Contente, A.F.P.S.; Araújo, M.A.V.C.; Trigo-Teixeira, A.	An assessment of calibrated and non-calibrated wave propagation models: Application to the harbor of Póvoa de Varzim	Journal of Coastal Research	V. 95, sp1, 1195-1200, (26 May 2020)	10.2112/SI95-232.1	WoS and SCOPUS	0,793	Q2	Q4
Meninno, S.; Persi, E.; Petaccia, G.; Sibilla, S.; Armanini, A.	An experimental and theoretical analysis of floating wood diffusion coefficients	Environmental Fluid Mechanics	V. 20, (593-617) , June.	10.1007/s10652-019-09693-x	WoS and SCOPUS	1,512	Q2	Q3
Mendes, L.; Bernardino, A.X.; Ferreira, R.M.L.	An image generating tool for planar PIV and Optical Flow benchmarking	SoftwareX	Volume 12, July–December 2020, 100537	10.1016/j.softx.2020.100537	Non WoS; SCOPUS		Q2	
Pinto, M.M.S.C.; Ordens, C.; Condeso de Melo, M.T.; Inácio, M.; Almeida, A.; Pinto, E.; Silva, E.A.	An inter-disciplinary approach to evaluate human health risks due to long-term exposure to contaminated groundwater near a chemical complex	Exposure and Health	V. 12, (199-214) , -.	10.1007/s12403-019-00305-z	WoS and SCOPUS	4,762	Q1	Q1
Parracha, J.L.; Borsoi, G.; Faria, P.; Gomes, M.G.; Flores-Colen, I.; Veiga, R.	Análise do desempenho à água de ETICS e influência na condutibilidade térmica	Construção Magazine	V. 98, (12-16) , -.		Non (WoS, SCOPUS) National			
Couto, R.; Bento, R.; Gomes, R.C.	Análise sísmica de edifícios Pombalinos afetados por assentamentos do terreno	Revista Portuguesa de Engenharia de Estruturas	Série III, n.º 14, pp.85-96		Non (WoS, SCOPUS) National			
Chen, W.-B.; Zhou, W.-H.; Santos, J.A.	Analysis of consistent soil–structure interface response in multi–directional shear tests by discrete element modeling	Transportation Geotechnics	V. 24, (art. 100379) , September.	10.1016/j.targeo.2020.100379	WoS and SCOPUS	2,436	Q1	Q2
Micaelo, R.; Botella, R.; Pérez-Jiménez, F.; Sá da Costa, M.	Analysis of the ageing effect on the cyclic tension–compression loading behaviour of bitumen and mastics	Construction and Building Materials	V. 243, (art. 118275) , May.	10.1016/j.conbuildmat.2020.118275	WoS and SCOPUS	4,419	Q1	Q1
Ribeiro, F.; Sena-Cruz, J.; Branco, F.G.; Júlio, E.; Castro, F.	Analytical hybrid effect prediction and evolution of the tensile response of unidirectional hybrid fibre-reinforced polymers composites for civil engineering applications	Journal of Composite Materials	V. 54, n.º 2, (3205-3228) , -.	10.1177/0021998320911956	WoS and SCOPUS	1,972	Q2	Q3
Mohammed, A.; Rafiq, S.; Sihag, P.; Kurda, R.; Mahmood, W.; Ghafor, K.; Sarwar, W.	ANN, MSP-tree and nonlinear regression approaches with statistical evaluations to predict the compressive strength of cement-based mortar modified with fly ash	Journal of Materials Research and Technology	V. 9, n.º 6, (12416-12427) , November–December.	10.1016/j.jmrt.2020.08.083	WoS and SCOPUS	5,289	Q1	Q1
Maia, M.; Morais, R.; Silva, A.	Application of the factor method to the service life prediction of window frames	Engineering Failure Analysis	V. 109, (art. 104245) , January.	10.1016/j.engfailanal.2019.104245	WoS and SCOPUS	2,897	Q1	Q1
Aleixo, R.; Guerrero, M. ;	Applying ADCPs for long term monitoring of SSC in rivers	Water Resources Research	v. 56, Issue1, January	10.1029/2019WR026087	WoS and SCOPUS	4,360		Q1

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Nones, M.; Ruther, N.								
Nogueira, R.; Ferreira Pinto, A.P.; Gomes, A.	Artificial ageing by salt crystallization: test protocol and salt distribution patterns in lime-based rendering mortars	Journal of Cultural Heritage	V. 45, (180-192) , September-October.	10.1016/j.culher.2020.01.013	WoS and SCOPUS	2,553	Q2	Q2
Pandey, K.; Kumar, S.; Malik, A.; Kuriqi, A.	Artificial neural network optimized with a genetic algorithm for seasonal groundwater table depth prediction in Uttar Pradesh, India	Sustainability	V. 12, n.º 21, (8932) , November.	10.3390/su12218932	WoS and SCOPUS	2,576	Q2	Q2
Micaelo, R.; Freire, A.C.; Pereira, G.	Asphalt self-healing with encapsulated rejuvenators: effect of calcium-alginate capsules on stiffness, fatigue and rutting properties	Materials and Structures	V. 53, (art. 20) , -.	10.1617/s11527-020-1453-7	WoS and SCOPUS	2,901	Q1	Q1
Barreiro, J.; Lopes, R.; Ferreira, F.; Brito, R.; Telhado, M.; Matos, J.; Matos, R.	Assessing urban resilience in complex and dynamic systems: The RESCUE project approach in Lisbon research site	Sustainability	V. 12, n.º 21, (8931) , -.	10.3390/su12218931	WoS and SCOPUS	2,576	Q2	Q2
Meireles, I.; Sousa, V.	Assessing water, energy and emissions reduction from water conservation measures in buildings: a methodological approach	Environmental Science and Pollution Research	V. 27, (4612-4629) , -.	10.1007/s11356-019-06377-3	WoS and SCOPUS	3,056	Q2	Q2
Durão, V.; Silvestre, J.D.; Mateus, R.; de Brito, J.	Assessment and communication of the environmental performance of construction products in Europe: Comparison between PEF and EN 15804 compliant EPD schemes	Resources, Conservation and Recycling	V. 156, (art. 104703) , May.	10.1016/j.resconrec.2020.104703	Non WoS; SCOPUS		Q1	
Muralha, A.; Melo, J.F.; Ramos, H.M.	Assessment of CFD solvers and turbulent models for water free jets in spillways	Fluids	V. 5, (104) , -.	10.3390/fluids5030104	Non WoS; SCOPUS		Q2	
Vandewalle, D.; Antunes, V.; Neves, J.; Freire, A.C.	Assessment of eco-friendly pavement construction and maintenance using multi-recycled RAP mixtures	Recycling	V. 2020, n.º 5, (17) , -.	10.3390/recycling5030017	Non WoS; SCOPUS		Q2	
Lopes, B.; Arruda, M.R.T.; Almeida-Fernandes, L.; Castro, L.; Silvestre, N.; Correia, J.R.	Assessment of mesh dependency in the numerical simulation of compact tension tests for orthotropic materials	Composites Part C: Open Access	V. 1, (art. 100006) , August.	10.1016/j.comc.2020.100006	Non (WoS, SCOPUS) International			
Martinho, F.C.G.; Picado-Santos, L.; Capitão, S.D.	Assessment of warm-mix asphalt concrete containing sub-products as part of aggregate blend	International Journal of Pavement Engineering	V. 21, n.º 10, (1213-1222) , -.	10.1080/10298436.2018.1533135	WoS and SCOPUS	2,646	Q1	Q2
Pereira, C.; de Brito, J.; Silvestre, J.D.; Flores-Colen, I.	Atlas of defects within a global building inspection system	Applied Sciences	V. 10, n.º 17, (5879) , -.	10.3390/ap10175879	WoS and SCOPUS	2,474	Q2	Q2
Santos, R.A.; Flores-Colen, I.; Simões, N.V.; Silvestre, J.D.	Auto-responsive technologies for thermal renovation of opaque facades	Energy and Buildings	V. 217, (art. 109968) , June.	10.1016/j.enbuild.2020.109968	WoS and SCOPUS	4,867	Q1	Q1
Santos, T.; Gomes, R.; Faria, P.	Avaliação do envelhecimento natural e de tratamentos superficiais ecológicos em rebocos de terra	Conservar Património	V. 35, (31-44) , -.	10.14568/cp2019005	Non (WoS, SCOPUS) National			
Conevski, S.; Aleixo, R.; Guerrero, M.; Ruther, N.	Bedload Velocity and Backscattering Strength from Mobile Sediment Bed: A Laboratory Investigation Comparing Bistatic Versus Monostatic Acoustic Configuration	Water	V. 12, n.º 12, (3318) , December.	10.3390/w12123318	WoS and SCOPUS	2,544	Q2	Q2
Almeida, A.F.O.; Ramos, A.P.; Lúcio, V.; Marreiros, R.	Behavior of RC flat slabs with shear bolts under reversed horizontal cyclic loading	Structural Concrete	V. 21, n.º 2, (501-516) , April.	10.1002/suco.201900128	WoS and SCOPUS	2,174	Q1	Q2
Camotim, D.; Dinis, P.B.; Landesmann, A.	Behavior, failure, and direct strength method design of steel angle columns: Geometrical	Journal of Structural Engineering	V. 146, n.º 11, (-) , November.	10.1061/(ASCE)ST.1943-	WoS and SCOPUS	2,454	Q1	Q2

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	simplicity versus structural complexity			541X.0002742				
Almeida, A.F.O.; Alcobia, B.; Ornelas, B.; Marreiros, R.; Ramos, A.P.	Behaviour of reinforced-concrete flat slabs with stirrups under reversed horizontal cyclic loading	Magazine of Concrete Research	V. 72, n.º 7, (339-356), April.	10.1680/jm.acr.18.00209	WoS and SCOPUS	2,088	Q1	Q2
Lopes, R. F. R.; Rodrigues, J. P. C.	Behaviour of Restrained Concrete Filled Square Double-Skin And Double-Tube Hollow Columns in Case of Fire	Engineering Structures	v. 216, (art. 110736), August	10.1016/j.engstruct.2020.110736	WoS and SCOPUS	3,548	Q1	Q1
Stojnic I., Pfister M., Matos J.; De Cesare, G.; Schleiss, A.J.	Bemessung von klassischen Tosbecken unterhalb von Treppenschussrinnen ("Design examples of stilling basins downstream of stepped spillways")	Wasser Energie Luft	vol. 112, no. 3, pp. 165-170 (in German)		Non (WoS, SCOPUS) International			
Chastre, C.	Betão estrutural e um futuro mais sustentável	Construção Magazine	V. 96 (Março/Abril) : 28-29		Non (WoS, SCOPUS) National			
Carvalho, B.; Rondon, R.; Marques, R.	Better utility regulation through RIA? Merits and implications based on the Brazilian case	Utilities Policy	Volume 64, June, 101023	10.1016/j.jup.2020.101023	WoS and SCOPUS	1,835	Q1	Q3
Godinho, M.; Machete, R.; Ponte, M.; Falcão, A.P.; Gonçalves, A.B.; Bento, R.	BIM as a resource in heritage management: An application for the National Palace of Sintra, Portugal	Journal of Cultural Heritage	V. 43, (153-162), May-June.	10.1016/j.culher.2019.11.010	WoS and SCOPUS	2,553	Q2	Q2
MACHETE, R., GODINHO, M., PONTE, M., BENTO, R., FALCÃO, A.P., GONÇALVES, A.	BIM em Intervenções de Conservação e de Reabilitação do Património: uma aplicação ao Palácio Nacional de Sintra, BIM in Heritage Conservation and Rehabilitation Interventions: na Application to the National Palace of Sintra", Revista Portuguesa de Engenharia de Estruturas, Laboratório Nacional de Engenharia Civil, Série III, nº 13, 55-62.	Revista Portuguesa de Engenharia de Estruturas	Série III, nº 13, 55-62		Non (WoS, SCOPUS) National			
Machete, R.; Godinho, M.; Ponte, M.; Bento, R.; Falcão, A.P.; Gonçalves, A.	BIM em intervenções de conservação e reabilitação do património: Uma aplicação ao Palácio Nacional de Sintra	Revista Portuguesa de Engenharia de Estruturas	Série III, 13, 55-62, Jul. 2020		Non (WoS, SCOPUS) National			
Santos, R.; Costa, A.A.; Silvestre, J.D.; Vandenbergh, T.; Pyl, L.	BIM-based life cycle assessment and life cycle costing of an office building in Western Europe	Building and Environment	V. 169, (art. 106568), February.	10.1016/j.buildenv.2019.106568	WoS and SCOPUS	4,971	Q1	Q1
Freitas, E.; Louro, A.S.; Costa, H.; Cavaco, E.S.; Júlio, E.; Pipa, M.	Bond behaviour between steel / stainless-steel reinforcing bars and low binder concrete (LBC)	Engineering Structures	V. 221, (art. 111072), October.	10.1016/j.engstruct.2020.111072	WoS and SCOPUS	3,548	Q1	Q1
Mendes, D.; Pires-Silva, A.A.; Pinto, J.P.; Fortunato, A.B.	Bound and free infragravity wave energy over a bar	Ocean Engineering	V. 201, (art. 107128), April.	10.1016/j.oceaneng.2020.107128	WoS and SCOPUS	3,068	Q1	Q1
Andriolo, U.; Mendes, D.; Taborda, R.	Breaking wave height estimation from Timex images: two methods for coastal video monitoring systems	Remote Sensing	V. 12, n.º 2, (204), -.	10.3390/rs12020204	WoS and SCOPUS	4,509	Q2	Q2
Félix, R.; Cambra, P.; Moura, F.	Build it and give 'em bikes, and they will come: the effects of cycling infrastructure and bike-sharing system in Lisbon	Case Studies on Transport Policy	V. 8, n.º 2, (672-682), June.	10.1016/j.cstp.2020.03.002	Non WoS; SCOPUS		Q2	
Ramos, H.M.; Simão, M.; Pérez-Sánchez, M.; Fernandes, J.F.P.; Branco, P.; López-Jiménez, P.A.	Caracterização do comportamento de bombas a funcionar como turbinas: análise numérica e experimental	Águas & Resíduos	V. IV, n.º 7, (44-54), -.	10.22181/aer.2020.0705	Non (WoS, SCOPUS) National			

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Pedroso, M.; Flores-Colen, I.; Silvestre, J.D.; Gomes, M.G.; Silva, L.; Sequeira, P.; de Brito, J.	Characterisation of a multilayer external wall thermal insulation system. Application in a Mediterranean climate	Journal of Building Engineering	V. 30, (art. 101265) , July.	10.1016/j.jobe.2020.101265	WoS and SCOPUS	3,379	Q1	Q1
Rodrigues, H.; Sousa, R.; Vitorino, H.; Batalha, N.; Varum, H.; Fernandes, P.	Characterisation of Portuguese RC precast industrial building stock	Advances in Civil Engineering	V. 2020, (art. 7517205) , -.	10.1155/2020/7517205	WoS and SCOPUS	1,176	Q3	Q3
Santos, T.; Faria, P.	Characterization of earthen plasters – Influence of formulation and experimental methods	Gremium	V. 7, n.º 14, (-) , -.		Non (WoS, SCOPUS) National			
Marques, B.; Tadeu, A.; Almeida, J.; António, J.; de Brito, J.	Characterization of sustainable building walls made from rice straw bales	Journal of Building Engineering	V. 28, (art. 101041) , March.	10.1016/j.jobe.2019.101041	WoS and SCOPUS	3,379	Q1	Q1
Silva, A.; Nogueira, R.; Silva, A.	Classification model of low-strength mortars from drilling data	Construction and Building Materials	V. 246, (art. 118484) , June.	10.1016/j.conbuildmat.2020.118484	WoS and SCOPUS	4,419	Q1	Q1
Sousa, V.; Meireles, I.; Gonçalves, A.B.; Falcão, A.P.	Climate changes impacts in the upper Paiva River: today and in the future	Desalination and Water Treatment	V. 194, (343-357) , August.	10.5004/dwt.2020.25856	WoS and SCOPUS	0,854	Q3	Q4
Freire, P.; Oliveira, F.S.B.F.; Oliveira, J.N.C.	Coastal flooding process: Comparing different coastal typologies response to extreme hydrodynamic conditions	Journal of Coastal Research	V. 95, SP1, (797-802) , -.	10.2112/SI95-155.1	WoS and SCOPUS	0,793	Q2	Q4
Manta, D.; Gonçalves, R.; Camotim, D.	Combining shell and GBT-based finite elements: Linear and bifurcation analysis	Thin-Walled Structures	V. 152, (art. 106665) , July.	10.1016/j.tws.2020.106665	WoS and SCOPUS	4,033	Q1	Q1
Ferreira, J.; Pinheiro, M.D.; de Brito, J.	Comparação económica e ambiental entre a reabilitação do Palácio Condes de Murça e uma construção nova equivalente	Revista de Engenharia Civil	V. 58, (31-47) , -.		Non (WoS, SCOPUS) National			
Silva, B.A.; Ferreira Pinto, A.P.; Gomes, A.; Candeias, A.	Comparative analysis of the behaviour of integral water-repellents on lime mortars	Construction and Building Materials	V. 261, (art. 120344) , November.	10.1016/j.conbuildmat.2020.120344	WoS and SCOPUS	4,419	Q1	Q1
Hafez, H.; Kurda, R.; Cheung, W.M.; Nagarathnam, B.	Comparative life cycle assessment between imported and recovered fly ash for blended cement concrete in the UK	Journal of Cleaner Production	V. 244, (art. 118722) , January.	10.1016/j.jclepro.2019.118722	WoS and SCOPUS	7,246	Q1	Q1
Santos, T.; Gomes, M.I.; Silva, A.S.; Ferraz, E.; Faria, P.	Comparison of mineralogical, mechanical and hygroscopic characteristic of earthen, gypsum and cement-based plasters	Construction and Building Materials	V. 254, (art. 119222) , September.	10.1016/j.conbuildmat.2020.119222	WoS and SCOPUS	4,419	Q1	Q1
Dias, A.M.A.; Dias, A.M.P.G.; Silvestre, J.D.; de Brito, J.	Comparison of the environmental and structural performance of solid and glued laminated timber products based on EPDs	Structures	V. 26, (128-138) , August.	10.1016/j.istruc.2020.04.015	WoS and SCOPUS	1,839	Q1	Q2
Marques, A.I.; Candeias, P.X.; Ferreira, J.G.; Veiga, M.R.	Comportamento à tração de rebocos armados e sua eficácia no reforço ao corte de paredes de alvenaria	Revista da Associação Portuguesa de Análise Experimental de Tensões	V. 32, (49-57) , -.	http://www-ext.lnec.pt/APAET/pdf/Rev_32_A6.pdf	Non (WoS, SCOPUS) National			
Sena da Fonseca, B.; Ferreira Pinto, A.P.; Silva, D.V.	Compositional and textural characterization of historical bedding mortars from rubble stone masonries: Contribution for the design of compatible repair mortars	Construction and Building Materials	V. 247, (art. 118627) , June.	10.1016/j.conbuildmat.2020.118627	WoS and SCOPUS	4,419	Q1	Q1
Almeida-Fernandes, L.; Silvestre, N.; Correia, J.R.; Arruda, M.T.	Compressive transverse fracture behaviour of pultruded GFRP materials: experimental study and numerical calibration	Composite Structures	V. 247, (art. 112453) , September.	10.1016/j.compstruct.2020.112453	WoS and SCOPUS	2,436	Q1	Q2

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Besharat, M.; Coronado-Hernández, O.E.; Fuertes-Miquel, V.S.; Viseu, M.T.; Ramos, H.M.	Computational fluid dynamics for sub-atmospheric pressure analysis in pipe drainage	Journal of Hydraulic Research	V. 58, n.º 4, (553-565) , -.	10.1080/00221686.2019.1625819	WoS and SCOPUS	2,098	Q1	Q2
Tavares, J.; Silva, A.; de Brito, J.	Computational models applied to the service life prediction of External Thermal Insulation Composite Systems (ETICS)	Journal of Building Engineering	V. 27, (art. 100944) , January.	10.1016/j.jobe.2019.100944	WoS and SCOPUS	3,379	Q1	Q1
Ghazi, A.; Berke, P.; Tiago, C.; Massart, T.J.	Computed tomography based modelling of the behaviour of closed cell metallic foams using a shell approximation	Materials & Design	V. 194, (art. 108866) , September.	10.1016/j.matdes.2020.108866	WoS and SCOPUS	6,289	Q1	Q1
Roque, S.; Pederneiras, C.M.; Farinha, C.B.; de Brito, J.; Veiga, R.	Concrete-based and mixed waste aggregates in rendering mortars	Materials	V. 13, n.º 8, (1976) , -.	10.3390/ma13081976	WoS and SCOPUS	3,057	Q2	Q2
Rodrigues, M.C.M.; Oliveira, C.S.	Considering spatial memory to estimate seismic risk: the case of the Azores Archipelago	GEM - International Journal on Geomathematics	V. 11, (art. 16) , -.	10.1007/s13137-020-00152-0	Non WoS; SCOPUS		Q2	
Fernando F. S. Pinho; Pedro C. C. Lamas; Gonçalo C. O. Teotónio	Consolidation of soft sandstones used in ancient constructions. Application to a case study	International Journal of Architectural Heritage		10.1080/15583058.2020.1777596	WoS and SCOPUS	1,853	Q1	Q2
Oliveira, R.P.	Contributos para uma estratégia integrada de gestão do risco de aluviões na ilha da Madeira	Estudos Cindinicos, Riscos - Associação Portuguesa de Riscos, Prevenção e Segurança		10.34037/978-989-54942-9-3_9	Non (WoS, SCOPUS) National			
Farinha, C.; Maia, C.; Brito, J. de; Veiga, R.	Controlo da Fissuração de Argamassas de Revestimento através da Introdução de Resíduos de Fibras Têxteis", Construção Magazi-ne, n.º 98, Julho / Agosto de 2020, Porto, pp. 4-8.	Construção Magazine	V. 98, Julho / Agosto de 2020, Porto, pp. 4-8		Non (WoS, SCOPUS) National			
Taji, I.; Ghorbani, S.; Teymoori, R.J.; Hoseinpour, M.; Davoodi, A.; Sheibani, A.R.; Mohammadi, M.; de Brito, J.	Corrosion performance of steel rebars in the roof of a 65-year-old underground reinforced concrete water-storage tank	Journal of Performance of Constructed Facilities	V. 34, n.º 4, (-) , August.	10.1061/(ASCE)CF.1943-5509.0001481	WoS and SCOPUS	1,648	Q1	Q3
Meninno, S.; Canelas, R.; Cardoso, A.H.	Coupling check dams with large wood retention structures in clean water	Environmental Fluid Mechanics	V. 20, (619-634) , June.	10.1007/s10652-019-09711-y	WoS and SCOPUS	1,512	Q2	Q3
Moreira, M.; Costa, M.J.; Valbuena-Castro, J.; Pinheiro, A.N.; Boavida, I.	Cover or velocity: what triggers iberian barbel (Luciobarbus bocagei) refuge selection under experimental hydropeaking conditions?	Water	V. 12, n.º 2, (317) , -.	10.3390/w12020317	WoS and SCOPUS	2,544	Q2	Q2
Pinheiro, M.D.; Luís, N.C.	COVID-19 could leverage a sustainable built environment	Sustainability	V. 12, n.º 14, (5863) , -.	10.3390/su12145863	WoS and SCOPUS	2,576	Q2	Q2
Karimipour, A.; Ghalehnavi, M.; Chaboki, H.; Brito, J. de	Crack Width and Propagation in Recycled Coarse Aggregate Concrete Beams Reinforced with Steel Fibres	Applied Sciences	V. 10, n.º 21, (7587)	10.3390/ap10217587	WoS and SCOPUS	2,474	Q2	Q2
Picado-Santos, L.; Capitão, S.; Neves, J.M.C.	Crumb rubber asphalt mixtures: A literature review	Construction and Building Materials	V. 247, (art. 118577) , June.	10.1016/j.conbuildmat.2020.118577	WoS and SCOPUS	4,419	Q1	Q1
Ferreira, A.M.G.; Marignier, A.; Attanayaake, J.; Frietsch, M.; Berbellini, A.	Crustal structure of the Azores Archipelago from Rayleigh wave ellipticity data	Geophysical Journal International	V. 221, n.º 2, (1232-1247) , May.	10.1093/gji/ggaa076	WoS and SCOPUS	2,574	Q1	Q2
Durão, V.; Costa, A.A.; Silvestre, J.D.; Mateus, R.; Santos, R.; de Brito, J.	Current opportunities and challenges in the incorporation of the LCA method in BIM	The Open Construction & Building Technology Journal	V. 14, (336-349) , -.	10.2174/1874836802014010336	Non WoS; SCOPUS		Q3	

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Cabral, M.; Loureiro, D.; Covas, D.	Custos de intervenções de reabilitação em reservatórios apoiados de água	Águas & Resíduos	V. IV, n.º 7, () , -.	10.22181/aer.2020.0704	Non (WoS, SCOPUS) National			
Carriço, N., Ferreira, B., Barreira, R., Antunes, A., Grueau, C., Mendes, A., Covas, D., Monteiro, L., Santos, J., Brito, I.S.	Data integration for infrastructure asset management in small to medium-sized water utilities	Water Science and Technology	v. 82 (12): 2737–2744.	10.2166/wst.2020.377	WoS and SCOPUS	1,632	Q2	Q3
Teotónio, I.; Cabral, M.; Cruz, C.O.; Silva, C.M.	Decision support system for green roofs investments in residential buildings	Journal of Cleaner Production	V. 249, (art. 119365) , March.	10.1016/j.jclepro.2019.119365	WoS and SCOPUS	7,246	Q1	Q1
Milosevic, J.; Cattari, S.; Bento, R.	Definition of fragility curves through nonlinear static analyses: procedure and application to a mixed masonry-RC building stock	Bulletin of Earthquake Engineering	V. 18, (513-545) , -.	10.1007/s10518-019-00694-1	WoS and SCOPUS	2,602	Q1	Q2
Moiambo, O.; Mutevuie, R.; Ferreira, F.; Matos, J.	Desempenho hidráulico e evolução do teor em E. Coli em leitos de secagem de lamas fecais em Moçambique	Águas & Resíduos	V. IV, n.º 6, (-) , -.	10.22181/aer.2020.0605	Non (WoS, SCOPUS) National			
Amaral, S.; Caldeira, L.; Viseu, T.; Ferreira, R.M.L.	Designing experiments to study dam breach hydraulic phenomena	Journal of Hydraulic Engineering	V. 46, n.º 4, (-) , April.	10.1061/(ASCE)HY.1943-7900.0001678	WoS and SCOPUS	1,993	Q1	Q2
Aleixo, R.; Carvalho, E.; Lima, M.; Ferreira, Rui M.L.	Determinação dos campos de velocidades de escoamentos bifásicos usando PIV-PTV	Revista Recursos Hídricos	41(1):9-15	10.5894/rh41n1-ct1	Non (WoS, SCOPUS) National			
Santos, R.; Costa, A.A.; Silvestre, J.D.; Pyl, L.	Development of a BIM-based Environmental and Economic Life Cycle Assessment tool	Journal of Cleaner Production	V. 265, (art. 121705) , August.	10.1016/j.jclepro.2020.121705	WoS and SCOPUS	7,246	Q1	Q1
Sousa, R.; Sousa, H.; Silva, L.; Flores-Colen, I.; Pedrosa, M.	Development of a wall system made with thermally optimized masonry and super insulation mortar render	Masonry International	V. 12, (-) , -.		Non (WoS, SCOPUS) International			
Falsaperla, S.; Musacchio, G.; Ferreira, M.A.; Lopes, M.; Oliveira, C.S.	Dissemination: steps towards an effective action of seismic risk reduction for non-structural damage in the KnowRISK project	Annals of Geophysics	V. 63, (art. AC06) , -.	10.4401/ag-8394	WoS and SCOPUS	1,067	Q3	Q4
Santos, W.S.; Landesmann, A.; Camotim, D.	Distortional strength of end-bolted CFS lipped channel columns: Experimental investigation, numerical simulations and DSM design	Thin-Walled Structures	V. 149, (art. 106469) , March.	10.1016/j.tws.2019.106469	WoS and SCOPUS	4,033	Q1	Q1
Froio, D.; Rizzi, E.; Simões, F.M.F.; Pinto da Costa, A.	DLSFEM–PML formulation for the steady-state response of a taut string on visco-elastic support under moving load	Meccanica	V. 55, (765-790) , April.	10.1007/s10102-019-01047-7	WoS and SCOPUS	2,153	Q2	Q2
Robalo, K.; Soldado, E.; Costa, H.; Carvalho, L.; do Carmo, R.; Júlio, E.	Durability and time-dependent properties of low-cement concrete	Materials	V. 13, n.º 16, (3583) , -.	10.3390/ma13163583	WoS and SCOPUS	3,057	Q2	Q2
Nobre, J.; Bravo, M.; de Brito, J.; Duarte, G.	Durability performance of dry-mix shotcrete produced with coarse recycled concrete aggregates	Journal of Building Engineering	V. 29, (art. 101135) , May.	10.1016/j.jobe.2019.101135	WoS and SCOPUS	3,379	Q1	Q1
Miranda, L.; Caldeira, L.; Serra, J.; Gomes, R.C.	Dynamic behaviour of Tagus River sand including liquefaction	Bulletin of Earthquake Engineering	V. 18, (4581-4604) , -.	10.1007/s10518-020-00881-5	WoS and SCOPUS	2,602	Q1	Q2
Lima, J.; Faria, P.; Silva, A.S.	Earth plasters: The influence of clay mineralogy in the plasters' properties	International Journal of Architectural Heritage	V. 14, n.º 7, (948-963) , -.	10.1080/15583058.2020.1727064	WoS and SCOPUS	1,853	Q1	Q2
Matos, P.R.; Sakata, R.D.; Gleize, P.; de Brito, J.; Repette, W.L.	Eco-friendly ultra-high performance cement pastes produced with quarry wastes as alternative fillers	Journal of Cleaner Production	V. 269, (art. 122308) , October.	10.1016/j.jclepro.2020.122308	WoS and SCOPUS	7,246	Q1	Q1

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Boavida, I.; Dias-Redondo, M.; Fuentes-Pérez, J.F.; Hayes, D.S.; Jesus, J.; Moreira, M.; Belmar, O.; Vila-Martínez, N.; Palau-Nadal, A.; Costa, M.J.	Ecophysiology of river flow alterations and impacts on freshwater fish	Limnética	V. 39, n.º 1, (213-232) , -.	10.23818/li mn.39.14	WoS and SCOPUS	0,918	Q3	Q3
Boukhari, S.; Pinto, F.S.; Abida, H.; Djebbar, Y.; de Miras, C.	Economic analysis of drinking water services, case of the city of Souk-Ahras (Algeria)	Water Practice & Technology	V. 15, n.º 1, (10-18) , -.	10.2166/w pt.2019.08 2	Non WoS; SCOPUS		Q3	
Duarte, G.; Gomes, R.C.; de Brito, J.; Bravo, M.; Nobre, J.	Economic and technical viability of using shotcrete with coarse recycled concrete aggregates in deep tunnels	Applied Sciences	V. 10, n.º 8, (2697) , -.	10.3390/ap p10082697	WoS and SCOPUS	2,474	Q2	Q2
Ferreira, D.C.; Marques, R.C.; Pedro, M.I.; Amaral, C.	Economic inefficiency levels of urban solid waste management services in Portugal	Sustainability	V. 12, (4170) , -.	10.3390/su 12104170	WoS and SCOPUS	2,576	Q2	Q2
Camotim, D.; Dinis, P.B.; Gonçalves, R.	Editorial for Special Issue on ICTWS 2018	Thin-Walled Structures	V. 151, (art. 106709) , June.	10.1016/j.t ws.2020.10 6709	WoS and SCOPUS	4,033	Q1	Q1
Atiaga, O.; Nunes, L.M.; Otero, X.L.	Effect of cooking on arsenic concentration in rice	Environmental Science and Pollution Research	V. 27, (10757-10765) , -.	10.1007/s1 1356-019- 07552-2	WoS and SCOPUS	3,056	Q2	Q2
García-Fernández, C.C.; Alvarez-Fernandez, M.I.; Cardoso, R. Gonzalez-Nicieza, C.	Effect of environmental relative humidity in the tensile strength of layering in slate stone	Bulletin of Engineering Geology and the Environment	V. 79, (1399-1411) , -.	10.1007/s1 0064-019- 01619-7	WoS and SCOPUS	3,041	Q1	Q2
Borsoi, G.; Esteves, C.; Flores-Colen, I.; Veiga, R.	Effect of Hygrothermal Aging on Hydrophobic Treatments Applied to Building Exterior Claddings	Coatings	V. 10, n.º 4, (363) , -.	10.3390/co atings1004 0363	Non WoS; SCOPUS	2,436	Q2	
Ghorbani, S.; Sharifi, S.; Rokhsarpour, H.; Shoja, S.; Gholizadeh, M.; Rahmatabad, M.; de Brito, J.	Effect of magnetized mixing water on the fresh and hardened state properties of steel fibre reinforced self-compacting concrete	Construction and Building Materials	V. 248, (art. 118660) , July.	10.1016/j.c onbuildmat .2020.1186 60	WoS and SCOPUS	4,419	Q1	Q1
Almeida, J.; Faria, P.; Ribeiro, A.B.; Silva, A.S.	Effect of mining residues treated with an electrodialytic technology on cement-based mortars	Cleaner Engineering and Technology	V. 1, (art. 100001) , December.	10.1016/j.c let.2020.10 0001	Non (WoS, SCOPUS) International			
García-González, J.; Pereira, A.S.; Lemos, P.C.; Almeida, N.; Silva, V.; Candeias, A.; Juan-Valdés, A.; Faria, P.	Effect of surface biotreatments on construction materials	Construction and Building Materials	V. 241, (art. 118019) , April.	10.1016/j.c onbuildmat .2020.1180 19	WoS and SCOPUS	4,419	Q1	Q1
Correia, V.; Ferreira, J.G.; Tang, L.; Lindvall, A.	Effect of the addition of GGBS on the frost scaling and chloride migration resistance of concrete	Applied Sciences	V. 10, n.º 11, (art. 3940) , -.	10.3390/ap p10113940	WoS and SCOPUS	2,474	Q2	Q2
Bombar, G.; Cardoso, A.H.	Effect of the sediment discharge on the equilibrium bed morphology of movable bed open-channel confluences	Geomorphology	V. 367, (art. 107329) , October.	10.1016/j.g eomorph.2 020.10732 9	WoS and SCOPUS	3,819	Q1	Q1
Santos, M.B.; de Brito, J.; Silva, A.S.; Hawreen, A.	Effect of the source concrete with ASR degradation on the mechanical and physical properties of coarse recycled aggregate	Cement and Concrete Composites	V. 111, (art. 103621) , August.	10.1016/j.c emconcom p.2020.103 621	Non WoS; SCOPUS	6,257	Q1	
Ali, B.; Kurda, R.; Herki, B.; Alyousef, R.; Mustafa, R.; Mohammed, A.; Raza, A.; Ahmed, H.; Ul-Haq, M.F.	Effect of varying steel fiber content on strength and permeability characteristics of high strength concrete with micro silica	Materials	V. 13, n.º 24, (5739) , -.	10.3390/m a13245739	WoS and SCOPUS	3,057	Q2	Q2

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Santos, F.M.; Proença de Oliveira, R.; Di Lollo, J.A.	Effects of land use changes on streamflow and sediment yield in Atibaia River basin—SP, Brazil	Water	V. 12, n.º 6, (1711) , -.	10.3390/w12061711	WoS and SCOPUS	2,544	Q2	Q2
Ghazi, A.; Tiago, C.; Sonon, B.; Perke, P.; Massart, T.J.	Efficient computational modelling of closed cell metallic foams using a morphologically controlled shell geometry	International Journal of Mechanical Sciences	V. 168, (art. 105298) , February.	10.1016/j.ijmecsci.2019.105298	WoS and SCOPUS	4,631	Q1	Q1
Mor, A.; Speranza, M.G.; Viegas, J.M.	Efficient loading and unloading operations via a booking system	Transportation Research Part E: Logistics and Transportation Review	V. 141, (art. 102040) , September.	10.1016/j.trre.2020.102040	Non WoS; SCOPUS		Q1	
Boavida, I.; Caetano, L.; Pinheiro, A.N.	E-flows to reduce the hydropeaking impacts on the Iberian barbel (<i>Luciobarbus bocagei</i>) habitat. An effectiveness assessment based on the COSH Tool application	Science of the Total Environment	V. 699, (art. 134209) , January.	10.1016/j.scitotenv.2019.134209	WoS and SCOPUS	6,551	Q1	Q1
Almeida, J.; Craveiro, R.; Faria, P.; Santos Silva, A.; Mateus, E.P.; Barreiros, S.; Paiva, A.; Ribeiro, A.B.	Electrodialytic removal of tungsten and arsenic from secondary mine resources — Deep eutectic solvents enhancement	Science of The Total Environment	V. 710, (art. 136364) , March.	10.1016/j.scitotenv.2019.136364	WoS and SCOPUS	6,551	Q1	Q1
Madeira, F.C.; Fernandes, J.F.P.; Pérez-Sánchez, M.; López-Jiménez, P.A.; Ramos, H.M.; Costa Branco, P.J.	Electro-hydraulic transient regimes in isolated pumps working as turbines with self-excited induction generators	Energies	V. 13, n.º 17, (4521) , September.	10.3390/en13174521	WoS and SCOPUS	2,702	Q2	Q3
Silvestre, J.D.; Castelo, A.; Silva, J.J.B.C.; de Brito, J.; Pinheiro, M.D.	Energy retrofitting of a buildings' envelope: Assessment of the environmental, economic and energy (3E) performance of a cork-based thermal insulating rendering mortar	Energies	V. 13, (143) , -.	10.3390/en13010143	WoS and SCOPUS	2,702	Q2	Q3
Lemma, M.S.; Gervásio, H.; Pedro, J.O.; Rigueiro, C.; Silva, L.S.	Enhancement of the life-cycle performance of bridges using high-strength steel	Structure and Infrastructure Engineering	V. 16, n.º 4, (772-786) , -.	10.1080/15732479.2019.1662067	WoS and SCOPUS	2,620	Q1	Q2
Ali, B.; Ahmed, H.; Qureshi, L.A.; Kurda, R.; Hafez, H.; Mohammed, H.; Raza, A.	Enhancing the hardened properties of recycled concrete (RC) through synergistic incorporation of fiber reinforcement and silica fume	Materials	V. 13, n.º 18, (4112) , -.	10.3390/ma13184112	WoS and SCOPUS	3,057	Q2	Q2
Suwal, N.; Kuriqi, A.; Huang, X.; Delgado, J.; Młyński, D.; Walega, A.	Environmental flows assessment in Nepal: The case of Kaligandaki River	Sustainability	V. 12, n.º 21, (8766) , -.	10.3390/su12218766	WoS and SCOPUS	2,576	Q2	Q2
Ramos, H.M.; Carravetta, A.; McNabola, A.; Adeyeye, K.	Environmental Hydraulics Research	Water	V. 12, n.º 10, (2749) , -.	10.3390/w12102749	WoS and SCOPUS	2,544	Q1	Q2
Pinto, I.; Silvestre, J.D.; de Brito, J.; Júlio, M.F.	Environmental impact of the subcritical production of silica aerogels	Journal of Cleaner Production	V. 252, (art. 119696) , April.	10.1016/j.jclepro.2019.119696	WoS and SCOPUS	7,246	Q1	Q1
Gomes, R.; Silvestre, J.D.; de Brito, J.	Environmental life cycle assessment of the manufacture of EPS granulates, lightweight concrete with EPS and high-density EPS boards	Journal of Building Engineering	V. 28, (art. 101031) , March.	10.1016/j.jobe.2019.101031	WoS and SCOPUS	3,379	Q1	Q1
Gomes, R.; Silvestre, J.D.; de Brito, J.	Environmental, economic and energy life cycle assessment “from cradle to cradle” (3E-C2C) of flat roofs	Journal of Building Engineering	V. 32, (art. 101436) , November.	10.1016/j.jobe.2020.101436	WoS and SCOPUS	3,379	Q1	Q1
Kumar, M.; Kumari, A.; Kushwaha, D.P.; Kumar, P.; Malik, A.; Ali, R.; Kuriqi, A.	Estimation of daily stage–discharge relationship by using data-driven techniques of a perennial river, India	Sustainability	V. 12, n.º 19, (art. 7877) , -.	10.3390/su12197877	WoS and SCOPUS	2,576	Q2	Q2

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Santos, F.M.; Proença de Oliveira, R.; Mauad, F.F.	Evaluating a parsimonious watershed model versus SWAT to estimate streamflow, soil loss and river contamination in two case studies in Tietê river basin, São Paulo, Brazil	Journal of Hydrology: Regional Studies	V. 29, (art. 100685) , June.	10.1016/j.ejrh.2020.100685	WoS and SCOPUS	3,645	Q1	
Neves, M.C.; Nunes, L.M.; Monteiro, J.P.	Evaluation of GRACE data for water resource management in Iberia: a case study of groundwater storage monitoring in the Algarve region	Journal of Hydrology: Regional Studies	V. 32, (art. 100734) , December.	10.1016/j.ejrh.2020.100734	WoS and SCOPUS	3,645	Q1	
Abed, M.; de Brito, J.	Evaluation of high-performance self-compacting concrete using alternative materials and exposed to elevated temperatures by non-destructive testing	Journal of Building Engineering	V. 32, (art. 101720) , November.	10.1016/j.jobe.2020.101720	WoS and SCOPUS	3,379	Q1	Q1
Souza, J.; Silva, A.; Brito, J. de; Dias, J.; Bauer, E.	Evaluation of the Deterioration of Ceramic Claddings by Application of Artificial Neural Networks	Journal of Performance of Constructed Facilities	V. nº 34 (5), October	10.1061/(ASCE)CF.1943-5509.0001471	WoS and SCOPUS	1,648	Q1	Q3
Rodrigues, P.; Silvestre, J.D.; Flores-Colen, I.; Viegas, C.A.; Ahmed, H.H.; Kurda, R.; de Brito, J.	Evaluation of the ecotoxicological potential of fly ash and recycled concrete aggregates use in concrete	Applied Sciences	V. 10, (351) , -.	10.3390/ap10010351	WoS and SCOPUS	2,474	Q2	Q2
Valença, J.; Carmo, R.N.F.	Evaluation of the shear transfer mechanisms in reinforced concrete beams using photogrammetry	Structural Concrete	V. 21, n.º 1, (333-348) , February.	10.1002/suco.201800279	WoS and SCOPUS	2,174	Q1	Q2
Matos, J.S	Evolução Para Cidades Hidro-Sensatas	Indústria e Ambiente	nº 120, Jan(Fev.),pp30/31		Non (WoS, SCOPUS) National			
Almeida, C.; Ramos, T.B.; Neves, R.; Ferreira, T.; Oliveira, R.P.;	Evolution of the Trophic Status in a Mediterranean Reservoir under Climate Change: An Integrated Modelling Approach,	Journal of Water and Climate Change	jwc2020247	10.2166/wcc.2020.247	Non (WoS, SCOPUS) International			
Ingvardson, J.B.; Kaplan, S.; Abreu e Silva, J.; Ciommo, F.; Shiftan, Y.; Nielsen, O.A.	Existence, relatedness and growth needs as mediators between mode choice and travel satisfaction: evidence from Denmark	Transportation	V. 47, (337-358) , -.	10.1007/s11116-018-9886-3	WoS and SCOPUS	4,082	Q1	Q1
Reis, R.A.; Pires-Silva, A.; Fortes, C.J.; Suzuki, T.	Experiences with SWASH on modelling wave propagation over vegetation: comparisons with lab and field data	Journal of Integrated Coastal Zone Management	V. 20, n.º 2, (145-150) , -.	10.5894/rgci-n303	Non WoS; SCOPUS		Q4	
Guerreiro, J.; Ferreira, J.G.; Proença, J.; Gago, A.	Experimental and numerical analysis of the behaviour of masonry walls strengthened with CFRP reinforced render	Asian Journal of Civil Engineering	V. 21, n.º 2, (331-349) , March.	10.1007/s42107-019-00207-0	Non WoS; SCOPUS	0,600	Q3	
Brito, M.; Ferreira, R.M.L.; Teixeira, L.; Neves, M.G.; Gil, L.	Experimental investigation of the flow field in the vicinity of an oscillating wave surge converter	Journal of Marine Science and Engineering	V. 8, n.º 12, (976) , -.	10.3390/jmse8120976	WoS and SCOPUS	2,033	Q2	Q2
Chen, M.-T.; Young, B.; Martins, A.D.; Camotim, D.; Dinis, P.B.	Experimental investigation on cold-formed steel stiffened lipped channel columns undergoing local-distortional interaction	Thin-Walled Structures	V. 150, (art. 106682) , May.	10.1016/j.tws.2020.106682	WoS and SCOPUS	4,033	Q1	Q1
Brito, M.; Ferreira, R.M.L.; Teixeira, L.; Neves, M.G.; Canelas, R.B.	Experimental investigation on the power capture of an oscillating wave surge converter in unidirectional waves	Renewable Energy	V. 151, (975-992) , May.	10.1016/j.renene.2019.11.094	WoS and SCOPUS	6,274	Q1	Q1
Santos, F.A.; Bedon, C.; Micheletti, A.	Explorative study on adaptive facades with superelastic antagonistic actuation	Structural Control Health Monitoring	V. 27, n.º 4, (e2463) , April.	10.1002/stc.2463	WoS and SCOPUS		Q1	
Malcata, M.; Ponte, M.; Tiberti, S.; Bento, R.; Milani, G.	Failure analysis of a Portuguese cultural heritage masterpiece: Bonet building in Sintra	Engineering Failure Analysis	V. 115, (art. 104636) , September.	10.1016/j.engfailanal.2020.104636	WoS and SCOPUS	2,897	Q1	Q1

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Modano, M.; Majumder, A.; Santos, F.; Luciano, R.; Fraternali, F.	Fast and optimized calculation of the cable pretension forces in arch bridges with suspended deck	Frontiers in Built Environment	V. 6, (art. 114) , July.	10.3389/fbui.2020.00114	Non WoS; SCOPUS		Q2	
Sainz-Aja, J.; Thomas, C.; Carrascal, I.; Polanco, J.A.; de Brito, J.	Fast fatigue method for self-compacting recycled aggregate concrete characterization	Journal of Cleaner Production	V. 277, (art. 123263) , December.	10.1016/j.jclepro.2020.123263	WoS and SCOPUS	7,246	Q1	Q1
Rosa, I.C.; Santos, P.; Firmo, J.P.; Correia, J.R.	Fire behaviour of concrete slab strips reinforced with sand-coated GFRP bars	Composite Structures	V. 244, (art. 112270) , July.	10.1016/j.compstruct.2020.112270	WoS and SCOPUS	2,436	Q1	Q2
Martins, R.; Carmo, R.N.F.; Costa, H.; Júlio, E.	Flexural behavior of eco-efficient and ultra-high durability concrete beams	Construction and Building Materials	V. 236, (art. 117546) , March.	10.1016/j.conbuildmat.2019.117546	WoS and SCOPUS	4,419	Q1	Q1
Torabian, A.; Isufi, B.; Mostofinejad, D.; Ramos, A.P.	Flexural strengthening of flat slabs with FRP composites using EBR and EBROG methods	Engineering Structures	V. 211, (art. 110483) , May.	10.1016/j.engstruct.2020.110483	WoS and SCOPUS	3,548	Q1	Q1
Cardoso, M.; Telhado, M.; Almeida, M.; Brito, R.; Pereira, C.; Barreiro, J.; Moraes, M.	Following a step by step development of a resilience action plan	Sustainability	V. 12, n.º 21, (9017) , November.	10.3390/su12219017	WoS and SCOPUS	2,576	Q2	Q2
Almeida-Fernandes, L.; Silvestre, N.; Correia, J.R.; Arruda, M.T.	Fracture toughness-based models for damage simulation of pultruded GFRP materials	Composites Part B: Engineering	V. 186, (art. 107818) , April.	10.1016/j.compositesb.2020.107818	Non WoS; SCOPUS	7,635	Q1	
Lavado, J.; Bogas, J.; de Brito, J.; Hawreen, A.	Fresh properties of recycled aggregate concrete	Construction and Building Materials	V. 233, (art. 117322) , February.	10.1016/j.conbuildmat.2019.117322	WoS and SCOPUS	4,419	Q1	Q1
Rodrigues, C.; Capitão, S.; Picado-Santos, L.; Almeida, A.	Full recycling of asphalt concrete with waste cooking oil as rejuvenator and LDPE from urban waste as binder modifier	Sustainability	V. 12, n.º 19, (art. 8222) , -.	10.3390/su12198222	WoS and SCOPUS	2,576	Q2	Q2
Henriques, D.; Gonçalves, R.; Sousa, C.; Camotim, D.	GBT-based time-dependent analysis of steel-concrete composite beams including shear lag and concrete cracking effects	Thin-Walled Structures	V. 150, (art. 106706) , May.	10.1016/j.tws.2020.106706	WoS and SCOPUS	4,033	Q1	Q1
Otero, X.L.; Atiaga, O.; Estrella, R.; Tierra, W.; Ruales, J.; Zayas, L.; Souza Jr., V.; Ferreira, T.O.; Nóbrega, G.N.; Oliveira, D.P.; Queiroz, H.M.; Nunes, L.M.	Geographical variations in arsenic contents in rice plants from Latin America and the Iberian Peninsula in relation to soil conditions	Environmental Geochemistry and Health	V. 42, (3351-3372) , October.	10.1007/s10653-020-00581-8	WoS and SCOPUS	3,472	Q2	Q1
Gonçalves, J.; Mateus, R.; Silvestre, J.D.; Roders, A.P.	Going beyond good intentions for the sustainable conservation of built heritage: A systematic literature review	Sustainability	V. 12, n.º 22, (9649) , November.	10.3390/su12229649	WoS and SCOPUS	2,576	Q2	Q2
Liberalesso, T.; Cruz, C.O.; Silva, C.M.; Manso, M.	Green infrastructure and public policies: An international review of green roofs and green walls incentives	Land Use Policy	V. 96, (art. 104693) , July.	10.1016/j.landusepol.2020.104693	WoS and SCOPUS	3,682	Q1	Q1
Marvila, M.T.; Azevedo, A.R.G.; Barroso, L.S.; Barbosa, M.Z.; de Brito, J.	Gypsum plaster using rock waste: A proposal to repair the renderings of historical buildings in Brazil	Construction and Building Materials	V. 250, (art. 118786) , July.	10.1016/j.conbuildmat.2020.118786	WoS and SCOPUS	4,419	Q1	Q1
Boavida, I.; Ambrósio, F.; Costa, M.J.; Quaresma, A.; Portela, M.M.; Pinheiro, A.N.; Godinho, F.	Habitat use by Pseudochondrostoma duriense and Squalius carolitertii downstream of a small-scale hydropower plant	Water	V. 12, n.º 9, (2252) , -.	10.3390/w12092522	WoS and SCOPUS	2,544	Q2	Q2

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Pereira, C.; de Brito, J.; Silvestre, J.D.	Harmonised classification of the causes of defects in a global inspection system: Proposed methodology and analysis of fieldwork data	Sustainability	V. 12, n.º 14, (5564) , -.	10.3390/su12145564	WoS and SCOPUS	2,576	Q2	Q2
Pereira, C.; de Brito, J.; Silvestre, J.D.	Harmonising the classification of diagnosis methods within a global building inspection system: Proposed methodology and analysis of fieldwork data	Engineering Failure Analysis	V. 115, (art. 104627) , September.	10.1016/j.engfailanal.2020.104627	WoS and SCOPUS	2,897	Q1	Q1
Barroqueiro, T.; da Silva, P.R.; de Brito, J.	High-performance self-compacting concrete with recycled aggregates from the precast industry: Durability assessment	Buildings	V. 10, (113) , -.	10.3390/buildings10060113	Non WoS; SCOPUS		Q1	
Cambra, P.; Moura, F.	How does walkability change relate to walking behavior change? Effects of a street improvement in pedestrian volumes and walking experience	Journal of Transport & Health	V. 16, (art. 100797) , March.	10.1016/j.jth.2019.100797	WoS and SCOPUS	2,418	Q2	Q2
Ali, R.; Kuriqi, A.; Kisi, O.	Human–Environment natural disasters interconnection in China: A review	Climate	V. 8, n.º 4, (48) , -.	10.3390/cli8040048	Non WoS; SCOPUS		Q2	
Simão, M.; Ramos, H.M.	Hybrid pumped hydro storage energy solutions towards wind and PV integration: Improvement on flexibility, reliability and energy costs	Water	V. 12, n.º 9, (2457) , -.	10.3390/w12092457	WoS and SCOPUS	2,544	Q2	Q2
Teixeira de Freitas, J.A.; Tiago, C.	Hybrid-Trefftz stress elements for plate bending	International Journal for Numerical Methods in Engineering	V. 121, n.º 9, (1946-1976) , May.	10.1002/nme.6294	WoS and SCOPUS	2,866	Q1	Q1
Stojnic, I.; Pfister, M.; Matos, J.; De Cesare, G.; Schleiss, A.J.	Hydraulic design of classical stilling basins downstream of stepped chutes	The International Journal of Hydropower & Dams	V. 27, n.º 5, (46-54) , May.		Non (WoS, SCOPUS) International			
Silva, B.A.; Ferreira Pinto, A.P.; Gomes, A.; Candeias, A.	Impact of a viscosity-modifying admixture on the properties of lime mortars	Journal of Building Engineering	V. 31, (art. 101132) , September.	10.1016/j.jobe.2019.101132	WoS and SCOPUS	3,379	Q1	Q1
Alcalá, F.; Pulido-Velazquez, D.; Ribeiro, L.	Impacts of Climate on Renewable Groundwater Resources and/or Stream–Aquifer Interactions	Water	V. 12, n.º 12, (3480) , -.	10.3390/w12123480	WoS and SCOPUS	2,544	Q1	Q2
Mendes, D.; Fortunato, A.B.; Bertin, X.; Martins, K.; Lavaud, L.; Silva, A.N.; Pires-Silva, A.A.; Coulombier, T.; Pinto, J.P.	Importance of infragravity waves in a wave-dominated inlet under storm conditions	Continental Shelf Research	V. 192, (art. 104026) , January.	10.1016/j.csr.2019.104026	WoS and SCOPUS	2,424	Q1	Q2
Pérez-Sánchez, M.; Sánchez-Romero, F.J.; Ramos, H.M.; López-Jiménez, P.A.	Improved planning of energy recovery in water systems using a new analytic approach to PAT performance curves	Water	V. 12, n.º 2, (468) , -.	10.3390/w12020468	WoS and SCOPUS	2,544	Q2	Q2
Dinis, P.B.; Camotim, D.; Landesmann, A.; Martins, A.D.	Improving the Direct Strength Method prediction of column flexural-torsional failure loads	Thin-Walled Structures	V. 148, (art. 106461) , March.	10.1016/j.tws.2019.106461	WoS and SCOPUS	4,033	Q1	Q1
Standen, K.; Costa, L.R.D.; Monteiro, J.P.	In-channel managed aquifer recharge: A review of current development worldwide and future potential in Europe	Water	V. 12, (3099) , -.	10.3390/w12113099	WoS and SCOPUS	2,544	Q2	Q2
Kurda, R.; Silva, R.; de Brito, J.	Incorporation of alkali-activated municipal solid waste incinerator bottom ash in mortar and concrete: A critical review	Materials	V. 13, n.º 15, (3428) , -.	10.3390/ma13153428	WoS and SCOPUS	3,057	Q2	Q2
Azevedo, A.S.; Firmo, J.P.; Correia, J.R.; Tiago, C.	Influence of elevated temperatures on the bond behaviour between concrete and NSM-CFRP strips	Cement and Concrete Composites	V. 111, (art. 103603) , August.	10.1016/j.cemconcomp.2020.103603	Non WoS; SCOPUS	6,257	Q1	

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Pereira, M.C.; Soares, A.; Flores-Colen, I.; Correia, J.R.	Influence of exposure to elevated temperatures on the physical and mechanical properties of cementitious thermal mortars	Applied Sciences	V. 10, n.º 6, (2200) , -.	10.3390/ap10062200	WoS and SCOPUS	2,474	Q2	Q2
Pedreño-Rojas, M.A.; de Brito, J.; Flores-Colen, I.; Pereira, M.F.C.; Rubio-de-Hita, P	Influence of gypsum wastes on the workability of plasters: Heating process and microstructural analysis	Journal of Building Engineering	V. 29, (art. 101143) , May.	10.1016/j.jobe.2019.101143	WoS and SCOPUS	3,379	Q1	Q1
Miranda, H.M.B.; Batista, F.A.; Antunes, M.L.; Neves, J.	Influence of laboratory aggregate compaction method on the particle packing of stone mastic asphalt	Construction and Building Materials	V. 259, (art. 119699) , October.	10.1016/j.conbuildmat.2020.119699	WoS and SCOPUS	4,419	Q1	Q1
Faria, R.; Marreiros, R.; Pinho Ramos, A.; Jesus, C.	Influence of the top reinforcement detailing in the behaviour of flat slabs	Structures	V. 23, (718-730) , February.	10.1016/j.istruc.2019.12.007	WoS and SCOPUS	1,839	Q1	Q2
Matos, R.V.; Ferreira, F.; Saldanha Matos, J.	Influence of ventilation in H2S exposure and emissions from a gravity sewer	Water Science & Technology	V. 81, n.º 10, (2043-2056) , May.	10.2166/wst.2020.253	WoS and SCOPUS	1,638	Q2	Q3
Ramos, H.M.; Dadfar, A.; Besharat, M.; Adeyeye, K.	Inline pumped storage hydropower towards smart and flexible energy recovery in water networks	Water	V. 12, (2224) , -.	10.3390/w12082224	WoS and SCOPUS	2,544	Q2	Q2
Salvador, L.; Arruda, M.R.T.	Innovative methodology for the design of composite steel-concrete sections with a new proposal for EC3 part 2	Engineering Solid Mechanics	V. 8, (215-232) , -.	10.5267/j.esm.2020.1.002	Non WoS; SCOPUS		Q2	
Nunes, M.; Bento, R.; Lopes, M.	In-plane stiffening and strengthening of timber floors for the improvement of seismic behaviour of URM buildings	International Journal of Masonry Research and Innovation	V. 5, n.º 1, (85-120) , January.	10.1504/IJMRI.2020.104847	WoS and SCOPUS		Q3	
Castelo, A.; Correia, J.R.; Cabral-Fonseca, S.; de Brito, J.	In-service performance of fiber-reinforced polymer constructions used in water and sewage treatment plants	Journal of Performance of Constructed Facilities	V. 34, n.º 4, (-) , August.	10.1061/(ASCE)CF.1943-5509.0001449	WoS and SCOPUS	1,648	Q1	Q3
Castelo, A.; Correia, J.R.; Cabral-Fonseca, S.; de Brito, J.	Inspection, diagnosis and rehabilitation system for all-fibre-reinforced polymer constructions	Construction and Building Materials	V. 253, (art. 119160) , August.	10.1016/j.conbuildmat.2020.119160	WoS and SCOPUS	4,419	Q1	Q1
Paz, M.C.; Alcalá, F.J.; Medeiros, A.; Martínez-Pagán, P.; Pérez-Cuevas, J.; Ribeiro, L.	Integrated MASW and ERT imaging for geological definition of an unconfined alluvial aquifer sustaining a coastal groundwater-dependent ecosystem in southwest Portugal	Applied Sciences	V. 10, n.º 17, (5905) , -.	10.3390/ap10175905	WoS and SCOPUS	2,474	Q2	Q2
Torres, M.I.M.; Flores-Colen, I.; Silveira, D.; Pinto, R.T.; Matias, G.M.L.	Interface argamassa-suporte: análise das características físicas com base em várias campanhas experimentais	Ambiente Construído	V. 20, n.º 3, (-) , July-September.	10.1590/s1678-8621202000300432	Non (WoS, SCOPUS) National			
da Silva, DP; Silvestre, HC; Embalo, AA	Inter-municipal cooperation in Brazil: the case of solid waste conso5tia	REVISTA DE ADMINISTRACAO PUBLICA	V. 54, nº 5, 1239-1259	10.1590/0034-761220180151x	Non WoS; SCOPUS		Q3	
Humberto, M.; Pizzol, B.; Moura, F.; Giannotti, M.; Lucca-Silveira, M.P.	Investigating the mobility capabilities and functionings in accessing schools through walking: A quantitative assessment of public and private schools in São Paulo (Brazil)	Journal of Human Development and Capabilities	V. 21, n.º 2, (183-204) , -.	10.1080/19452829.2020.1745163	WoS and SCOPUS	1,200	Q2	Q3
Ghalehnavi, M.; Karimipour, A.; Golmohammadi, M.; Brito, J. de	Investigation of the Behaviour of Steel-Concrete-Steel Sandwich Slabs with Bi-directional Corrugated-Strip Connectors	Applied Sciences	V. 10, nº 23, (8647)	10.3390/ap10238647	WoS and SCOPUS	2,474	Q2	Q2
Teotónio, I.; Cruz, C.O.; Silva, C.M.; Moraes, J.	Investing in sustainable built environments: The willingness to pay for green roofs and green walls	Sustainability	V. 12, n.º 8, (3210) , -.	10.3390/su12083210	WoS and SCOPUS	2,576	Q2	Q2
Pereira, H.; Marques, R.C.	Irrigation water tariffs: lessons for Portugal	Water Policy	V. 22, n.º 5, (887-907) , October.	10.2166/wsp.2020.005	WoS and SCOPUS	1,093	Q3	Q4

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Silvestre, H.C.; Marques, R.C.; Dollery, B.; Correia, A.M.	Is cooperation cost reducing? An analysis of public-public partnerships and inter-municipal cooperation in Brazilian local government	Local Government Studies	V. 46, n.º 1, (68-90) , -.	10.1080/03003930.2019.1615462	WoS and SCOPUS	1,909	Q1	Q2
Aleixo, R.; Antico, F.; Ricardo, A.M.; Ferreira, R.M.L.	Kinematics of particles at entrainment and disentrainment	Water	V. 12, n.º 8, (2110) , -.	10.3390/w12082110	WoS and SCOPUS	2,544	Q2	Q2
Galvão, A.	Laboratórios Vivos para a Água: inovar em ambiente colaborativo e de co-criação	Indústria e Ambiente	n.º 122		Non (WoS, SCOPUS) National			
Pires, R.; de Brito, J.; Amaro, B.; Pereira, C.	Levantamento estatístico da inspeção, diagnóstico e reparação de revestimentos por pinturas em fachadas rebocadas	Revista de Engenharia Civil	V. 58, (14-30) , -.		Non (WoS, SCOPUS) National			
Demertzi, M.; Silvestre, J.D.; Garrido, M.; Correia, J.R.; Durão, V.; Proença, M.	Life cycle assessment of alternative building floor rehabilitation systems	Structures	V. 26, (237-246) , August.	10.1016/j.struc.2020.03.060	WoS and SCOPUS	1,839	Q1	Q2
Demertzi, M.; Silvestre, J.D.; Durão, V.	Life cycle assessment of the production of composite sandwich panels for structural floor's rehabilitation	Engineering Structures	V. 221, (art. 111060) , October.	10.1016/j.engstruct.2020.111060	WoS and SCOPUS	3,548	Q1	Q1
de Brito, J.; Silva, A.	Life Cycle Prediction and Maintenance of Buildings	Buildings	V. 10, n.º 6, (112) , -.	10.3390/buildings10060112	Non WoS; SCOPUS		Q1	
Varandas, J.N.; Paixão, A.; Fortunato, E.; Coelho, B.Z.; Hölscher, P.	Long-term deformation of railway tracks considering train-track interaction and non-linear resilient behaviour of aggregates – a 3D FEM implementation	Computers and Geotechnics	V. 126, (art. 103712) , October.	10.1016/j.compgeo.2020.103712	WoS and SCOPUS	3,818	Q1	Q1
Portela, M.M.; Espinosa, L.A.; Zelenakova, M.	Long-term rainfall trends and their variability in Mainland Portugal in the last 106 years	CLIMATE	V. 8, n.º 12, (146) , -.	10.3390/cli8120146	WoS and SCOPUS		Q3	
Simão, M.; Ramos, H.M.	Low-head energy recovery: tubular propeller with 5 blades	Ingeniería del Agua	V. 24, n.º 4, (-) , 285-294.	10.4995/ia.2020.13636	Non (WoS, SCOPUS) International			
Thomas, C.; de Brito, J.; Cimentada, A.; Sainz-Aja, J.A.	Macro- and micro- properties of multi-recycled aggregate concrete	Journal of Cleaner Production	V. 245, (art. 118843) , February.	10.1016/j.jclepro.2021.118843	WoS and SCOPUS	7,246	Q1	Q1
Nobre, J.; Hawreen, A.; Bravo, M.; Evangelista, L.; de Brito, J.	Magnesia (MgO) production and characterization, and its influence on the performance of cementitious materials: A review	Materials	V. 13, n.º 21, (4752) , -.	10.3390/ma13214752	WoS and SCOPUS	3,057	Q2	Q2
Ferreira, C.; Silva, A.; de Brito, J.; Dias, I.; Flores-Colen, I.	Maintenance modelling of ceramic claddings in pitched roofs based on the evaluation of their in situ degradation condition	Infrastructures	V. 5, n.º 9, (77) , -.	10.3390/infrastructure5090077	WoS and SCOPUS		Q3	
Mira, L.; Andrade, A.R.; Gomes, M.C.	Maintenance scheduling within rolling stock planning in railway operations under uncertain maintenance durations	Journal of Rail Transport Planning & Management	V. 14, (art. 100177) , June.	10.1016/j.rtpm.2020.100177	Non WoS; SCOPUS		Q1	
Matias, I.; Santos, B.; Virtudes, A.	Making Cycling Spaces in Hilly Cities	KnE Engineering	May 3, 2020	10.18502/keng.v5i5.6933	Non (WoS, SCOPUS) International			
Monteiro, L.; Carneiro, J.; Saint-Maurice, G.; Covas, D.	Matriz da água como ferramenta para a gestão eficiente da água – aplicação ao Município de Cascais	Águas & Resíduos	V. IV, n.º 6, 28-39	10.22181/aer.2020.0603	Non (WoS, SCOPUS) National			
Gonçalves, T.; Silva, R.V.; de Brito, J.; Fernández, J.M.; Esquinas, A.R.	Mechanical and durability performance of mortars with fine recycled concrete aggregates and reactive magnesium oxide as partial cement replacement	Cement and Concrete Composites	V. 105, (art. 103420) , January.	10.1016/j.cemconcomp.2019.103420	Non WoS; SCOPUS	6,257	Q1	

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Tamayo, P.; Pacheco, J.; Thomas, C.; de Brito, J.; Rico, J.	Mechanical and durability properties of concrete with coarse recycled aggregate produced with electric arc furnace slag concrete	Applied Sciences	V. 10, (216) , -.	10.3390/ap10010216	WoS and SCOPUS	2,474	Q2	Q2
Karimipour, A.; Ghalehnavi, M.; de Brito, J.	Mechanical and durability properties of steel fibre-reinforced rubberised concrete	Construction and Building Materials	V. 257, (art. 119463) , October.	10.1016/j.conbuildmat.2020.119463	WoS and SCOPUS	4,419	Q1	Q1
Cantero, B.; Bravo, M.; de Brito, J.; Saéz del Bosque, I.F.; Medina, C.	Mechanical behaviour of structural concrete with ground recycled concrete cement and mixed recycled aggregate	Journal of Cleaner Production	V. 275, (art. 122913) , December.	10.1016/j.jclepro.2020.122913	WoS and SCOPUS	7,246	Q1	Q1
Safari, Z.; Kurda, R.; Al-Hadad, B.; Mahmood, F.; Tapan, M.	Mechanical characteristics of pumice-based geopolymer paste	Resources, Conservation and Recycling	V. 162, (art. 105055) , November.	10.1016/j.resconrec.2020.105055	Non WoS; SCOPUS		Q1	
Cavaco, E.; Grilo, I.; Gouveia, J.P.; Júlio, E.; Neves, L.	Mechanical performance of eco-efficient hollow clay bricks incorporating industrial nano-crystalline aluminium sludge	European Journal of Environmental and Civil Engineering	V. 24, n.º 12, (1921-1938) , -.	10.1080/19648189.2018.1492974	WoS and SCOPUS	1,832	Q2	Q2
Marques, B.; Tadeu, A.; António, J.; Almeida, J.; de Brito, J.	Mechanical, thermal and acoustic behaviour of polymer-based composite materials produced with rice husk and expanded cork by-products	Construction and Building Materials	V. 239, (art. 117851) , April.	10.1016/j.conbuildmat.2019.117851	WoS and SCOPUS	4,419	Q1	Q1
Miranda, R.; Babilio, E.; Singh, N.; Santos, F.A.; Fraternali, F.	Mechanics of smart origami sunscreens with energy harvesting ability	Mechanics Research Communications	V. 105, (art. 103503) , April.	10.1016/j.mechrescom.2020.103503	WoS and SCOPUS	2,282	Q1	Q2
Morgado, L.; Guedes, M.C.; Ferreira, J.G.; Cruz, H.	Method for the architectural design of wood houses in Portugal	Informes de la Construcción	V. 72, n.º 560, (e370) , December.	10.3989/ic.73680	WoS and SCOPUS	0,314	Q2	Q4
Macedo, M. de Brito, J.; Cruz, C.O.; Silva, A.	Methodological proposal for the development of insurance policies for building components	CivilEng	V. 1, n.º 1, (1-9) , -.	10.3390/civileng1010001	Non (WoS, SCOPUS) International			
Yu, X.; Khan, S.; Khan, A.; Tang, Y.; Nunes, L.M.; Yan, J.; Ye, X.; Li, G.	Methyl mercury concentrations in seafood collected from Zhoushan Islands, Zhejiang, China, and their potential health risk for the fishing community: Capsule: Methyl mercury in seafood causes potential health risk	Environment International	V. 137, (art. 105420) , April.	10.1016/j.envint.2019.105420	WoS and SCOPUS	7,577	Q1	Q1
MIRANDA, J., VALENÇA, J., COSTA, H., JÚLIO, E.	Método para Definição Cromática e Aplicação de Argamassas de Restauro em Superfícies de Betão Branco e Cinzento	Construção Magazine	V. 96: 16-21, 2020		Non (WoS, SCOPUS) National			
Santos, L., Cardoso, M. A., & Galvão, A.	Metodologia de avaliação de desempenho de sistemas de águas pluviais: aplicação ao caso de estudo da Quinta do Borel	Águas & Resíduos	V. IV, n.º 6, 5–17.	10.22181/aer.2020.0601	Non (WoS, SCOPUS) National			
Galvão, A.; Aleixo, M.; de Pablo, H.; Lopes, C.; Raimundo, J.	Microplastics in wastewater: microfiber emissions from common household laundry	Environmental Science and Pollution Research	V. 27, (26643-26649) , -.	10.1007/s11356-020-08765-6	WoS and SCOPUS	3,056	Q2	Q2
Santos, A.R.; Veiga, M.R.; Silva, A.S.; de Brito, J.	Microstructure as a critical factor of cement mortars' behaviour: The effect of aggregates' properties	Cement and Concrete Composites	V. 111, (art. 103628) , August.	10.1016/j.cemconcomp.2020.103628	Non WoS; SCOPUS	6,257	Q1	
Bogas, J.A.; Carriço, A.; Tenza-Abril, A.J.	Microstructure of thermoactivated recycled cement pastes	Cement and Concrete Research	V. 138, (art. 106226) , December.	10.1016/j.cemconres.2020.106226	WoS and SCOPUS	8,328	Q1	Q2
Gulisan, F.; Crucho, J.; Gallego, J.; Picado-Santos, L.	Microwave healing performance of asphalt mixture containing electric arc furnace (EAF) slag and graphene nanoplatelets (GNPs)	Applied Sciences	V. 10, n.º 4, (art. 1428) , -.	10.3390/ap10041428	WoS and SCOPUS	2,474	Q2	Q2
Parracha, J.L.; Silva, A.S.; Cotrim, M.; Faria, P.	Mineralogical and microstructural characterisation of rammed earth and earthen mortars from 12th century Paderne Castle	Journal of Cultural Heritage	V. 42, (226-239) , March-April.	10.1016/j.culher.2019.07.021	WoS and SCOPUS	2,553	Q2	Q2

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Camotim, D.; Martins, A.D.; Dinis, P.B.; Young, B.; Chen, M.-T.; Landesmann, A.	Mode interaction in cold-formed steel members: state-of-art report. Part 1: Fundamentals and local-distortional coupling	Steel Construction	V. 13, n.º 3, (165-185), August.	10.1002/stco.202000036	Non WoS; SCOPUS		Q3	
Camotim, D.; Martins, A.D.; Dinis, P.B.; Young, B.; Chen, M.-T.; Landesmann, A.	Mode interaction in cold-formed steel members: state-of-art report. Part 2: Couplings involving global buckling	Steel Construction	V. 13, n.º 3, (186-207), August.	10.1002/stco.202000044	Non WoS; SCOPUS		Q3	
BATALHA, N., SOUSA, R., VITORINO, H., VARUM, H., FERNANDES, P., RODRIGUES, H.	Modelação do comportamento sísmico de edifícios prefabricados de betão armado	Revista Portuguesa de Engenharia de Estruturas	Série III. n.º 12. ISSN 2183-8488 (março 2020) 77-88		Non (WoS, SCOPUS) National			
Oliveira, J.N.C.; Oliveira, F.S.B.F.; Neves, M.G.; Clavero, M.; Trigo-Teixeira, A.	Modeling wave overtopping on a seawall with XBeach, IH2VOF, and Mase formulas	Water	V. 12, (2526), -.	10.3390/w12092526	WoS and SCOPUS	2,544	Q2	Q2
Collin, A.; Calle, C.; James, D.; Costa, S.; Maquaire, O.; Davidson, R.; Trigo-Teixeira, A.	Modelling 2D coastal flooding at fine-scale over vulnerable lowlands using satellite-derived topobathymetry, hydrodynamic and overflow simulations	Journal of Coastal Research	V. 95, SP1, (1052-1056), -.	10.2112/SI95-205.1	WoS and SCOPUS	0,793	Q2	Q4
Monteiro, L.; Carneiro, J.; Covas, D.I.C.	Modelling chlorine wall decay in a full-scale water supply system	Urban Water Journal	Volume 17, 2020 - Issue 8:	10.1080/1573062X.2020.1804595	WoS and SCOPUS	1,888	Q2	Q3
Alizamir, M.; Kisi, O.; Adnan, R.M.; Kuriqi, A.	Modelling reference evapotranspiration by combining neuro-fuzzy and evolutionary Strategies	Acta Geophysica	V. 68, (1113-1126), -.	10.1007/s11600-020-00446-9	WoS and SCOPUS	1,395	Q3	Q3
Silva, M.J.F.; Almeida, N.M.; Salgado, F.; Rodrigues, H.	Modelling structural performance and risk for enhanced building resilience and reliability	Innovative Infrastructure Solutions	V. 5, (art. 26), -.	10.1007/s41062-020-0277-1	Non WoS; SCOPUS		Q2	
Oliveira, M.; Oliveira, F.; Trigo-Teixeira, A.	Modelling the morphodynamics in the vicinity of a submerged detached breakwater	Journal of Integrated Coastal Zone Management	V. 20, n.º 2, (131-143), -.	10.5894/rgci-n302	Non WoS; SCOPUS		Q4	
Narzetti, D.A.; Marques, R.C.	Models of subsidies for water and sanitation services for vulnerable people in South American countries: Lessons for Brazil	Water	V. 12, n.º 7, (1976), -.	10.3390/w12071976	WoS and SCOPUS	2,544	Q2	Q2
Marques, A.I.; Morais, J.; Morais, P.; Veiga, M.R.; Santos, C.; Candeias, P.; Ferreira, J.G.	Modulus of elasticity of mortars: Static and dynamic analyses	Construction and Building Materials	V. 232, (art. 117216), January.	10.1016/j.conbuildmat.2019.117216	WoS and SCOPUS	4,419	Q1	Q1
Cetrulo, T.B.; Marques, R.C.; Malheiros, T.F.; Cetrulo, N.M.	Monitoring inequality in water access: Challenges for the 2030 Agenda for Sustainable Development	Science of the Total Environment	V. 727, (art. 138746), July.	10.1016/j.scitotenv.2020.138746	WoS and SCOPUS	6,551	Q1	Q1
Valença, J.; Carmo, R.; Costa, H.; Júlio, E.	Monitorização e avaliação de ligações viga-pilar em betão de agregados leves	Revista Portuguesa de Engenharia de Estruturas	Série III. n.º 12. ISSN 2183-8488. (março 2020) pp. 43-54		Non (WoS, SCOPUS) National			
Carriço, A.; Real, S.; Bogas, J.A.; Pereira, M.F.C.	Mortars with thermo activated recycled cement: Fresh and mechanical characterisation	Construction and Building Materials	V. 256, (art. 119502), September.	10.1016/j.conbuildmat.2020.119502	WoS and SCOPUS	4,419	Q1	Q1
Rashid, K.; Ul Rehman, M.; de Brito, J.; Ghafoor, H.	Multi-criteria optimization of recycled aggregate concrete mixes	Journal of Cleaner Production	V. 276, (art. 124316), December.	10.1016/j.jclepro.2020.124316	WoS and SCOPUS	7,246	Q1	Q1
Pedroso, M.; Flores-Colen, I.; Silvestre, J.D.; Gomes, M.G.	Nanomaterials' Influence on the Performance of Thermal Insulating Mortars—A Statistical Analysis	Applied Sciences	V. 10, n.º 7, (2219), -.	10.3390/ap10072219	WoS and SCOPUS	2,474	Q2	Q2

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Torres, I.; Matias, G.; Faria, P.	Natural hydraulic lime mortars - the effect of ceramic residues on physical and mechanical behaviour	Journal of Building Engineering	V. 32, (art. 101747) , November.	10.1016/j.jobe.2020.101747	WoS and SCOPUS	3,379	Q1	Q1
Ramos, H.M.; Carravetta, A.; McNabola, A.	New Challenges in Water Systems	Water	V. 12, (2340) , -.	10.3390/w12092340	WoS and SCOPUS	2,544	Q1	Q2
Moreira, M.; Schletterer, M.; Quaresma, A.; Boavida, I.; Pinheiro, A.N.	New insights into hydropeaking mitigation assessment from a diversion hydropower plant: The GKI project (Tyrol, Austria)	Ecological Engineering	V. 158, (art. 106035) , December.	10.1016/j.ecoleng.2020.106035	WoS and SCOPUS	3,512	Q1	Q1
Galvão, J.; Duarte, R.; Flores-Colen, I.; de Brito, J.; Hawreen, A.	Non-destructive mechanical and physical in-situ testing of rendered walls under natural exposure	Construction and Building Materials	V. 230, (art. 116838) , January.	10.1016/j.conbuildmat.2019.116838	WoS and SCOPUS	4,419	Q1	Q1
Çaktı, E.; Saygılı, Ö.; Lemos, J.V.; Oliveira, C.S.	Nonlinear dynamic response of stone masonry minarets under harmonic excitation	Bulletin of Earthquake Engineering	V. 18, (4813-4838) , -.	10.1007/s10518-020-00888-y	WoS and SCOPUS	2,602	Q1	Q2
Peres, R.; Bento, R.; Castro, J.M.	Nonlinear static seismic performance assessment of plan-irregular steel structures	Journal of Earthquake Engineering	V. 24, n.º 2, (226-253) , -.	10.1080/13632469.2018.1469438	WoS and SCOPUS	2,779	Q1	Q1
Vieira, J.; Cabral, M.; Almeida, N.; Silva, J.G.; Covas, D.	Novel methodology for efficiency-based long-term investment planning in water infrastructures	Structure and Infrastructure Engineering	V. 16, n.º 12, (1654-1668) , December.	10.1080/15732479.2020.1722715	WoS and SCOPUS	2,620	Q1	Q2
Carrillo, J.M.; Matos, J.S.G.; Lopes, R.	Numerical modeling of free and submerged labyrinth weir flow for a large sidewall angle	Environmental Fluid Mechanics	V. 20, (357-374) , April.	10.1007/s10652-019-09701-0	WoS and SCOPUS	1,512	Q2	Q3
Corrêa, D.; Flores-Colen, I.; Silvestre, J.D.; Pedroso, M.; Santos, R.A.	Old buildings' façades: Fieldwork and discussion of thermal retrofitting Strategies in a Mediterranean climate	Designs	V. 4, n.º 4, (45) , December.	10.3390/designs4040045	Non (WoS, SCOPUS) International			
Bravo, M.; Duarte, A.; Brito, J. de; Evangelista, L.; Pedro, D.	On the Development of a Technical Specification for the Use of Fine Recycled Aggregates from Construction and Demolition Waste in Concrete Production	Materials	v. 13(19),	10.3390/ma13194228	WoS and SCOPUS	3,057	Q2	Q2
Prieto, A.J.; Verichev, K.; Silva, A.; de Brito, J.	On the impacts of climate change on the functional deterioration of heritage buildings in South Chile	Building and Environment	V. 183, (art. 107138) , October.	10.1016/j.buildenv.2020.107138	WoS and SCOPUS	4,971	Q1	Q1
Gonçalves, R.	On the lateral-torsional elastic post-buckling and strength of channel steel beams	International Journal of Structural Stability and Dynamics	V. 20, n.º 12, (art. 2050135) , -.	10.1142/S0219455420501357	WoS and SCOPUS	2,015	Q2	Q2
Bourne-Webb, P.; Figueira, J.D.S.; Bodas Freitas, T.	On the resistance to heat flow across soil-structure interfaces	Energy and Buildings	V. 228, (art. 110488) , December.	10.1016/j.enbuild.2020.110488	WoS and SCOPUS	4,867	Q1	Q1
Ferreira, D.C.; Nunes, A.M.; Marques, R.C.	Operational efficiency vs clinical safety, care appropriateness, timeliness, and access to health care. The case of Portuguese public hospitals	Journal of Productivity Analysis	V. 53, (355-375) , -.	10.1007/s1123-020-00578-6	WoS and SCOPUS	1,375	Q1	Q3
Martins, L.F.; Marques, A.I.; Ribeiro, A.S.; Candeias, P.; Veiga, M.R.; Ferreira, J.G.	Optical measurement of planar deformations in the destructive mechanical testing of masonry specimens	Applied Sciences	V. 10, (371) , -.	10.3390/ap10010371	WoS and SCOPUS	2,474	Q2	Q2
Suwal, N.; Huang, X.; Kuriqi, A.; Chen, Y.; Pandey, K.P.; Bhattarai, K.P.	Optimisation of cascade reservoir operation considering environmental flows for different environmental management classes	Renewable Energy	V. 158, (453-464) , October.	10.1016/j.renene.2020.05.161	WoS and SCOPUS	6,274	Q1	Q1
Ferreira, C.; Silva, A.; de Brito, J.; Dias, I.; Flores-Colen, I.	Optimization of inspection period in natural stone claddings	Applied Sciences	V. 10, n.º 22, (8236) , November.	10.3390/ap10228236	WoS and SCOPUS	2,474	Q2	Q2
Camacho, V.T.; Horta, N.; Lopes, M.; Oliveira, C.S.	Optimizing earthquake design of reinforced concrete bridge infrastructures based on	Structural and Multidisciplinary Optimization	V. 61, (1087-1105) , March.	10.1007/s00158-019-02407-3	WoS and SCOPUS	3,377	Q1	Q1

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	evolutionary computation techniques							
Ferreira, D.C.; Nunes, A.M.; Marques, R.C.	Optimizing payments based on efficiency, quality, complexity, and heterogeneity: the case of hospital funding	International Transactions in Operational Research	V. 27, n.º 4, (1930-1961) , July.	10.1111/it or.12713	WoS and SCOPUS	2,987	Q1	Q2
Sousa, V.; Meireles, I.; Silva, A.	Optimizing service life prediction models of external paint finishes	Journal of Performance of Constructed Facilities	V. 34, n.º 2, (-) , April.	10.1061/(A SCE)CF.194 3-5509.0001 405	WoS and SCOPUS	1,648	Q1	Q3
Giudicianni, C.; Herrera, M.; di Nardo, A.; Adeyeye, K.; Ramos, H.M.	Overview of energy management and leakage control systems for smart water grids and digital water	Modelling	V. 1, n.º 2, (134-155) , -.	10.3390/m odelling10 20009	Non (WoS, SCOPUS) Internati onal			
Almeida, J.; Ribeiro, A.B.; Santos Silva, A.; Faria, P.	Overview of mining residues incorporation in construction materials and barriers for full-scale application	Journal of Building Engineering	V. 29, (art. 101215) , May.	10.1016/j.j obe.2020.1 01215	WoS and SCOPUS	3,379	Q1	Q1
Dias-da-Costa, D.; Neves, L.A.C.; Gomes, S.; Graça-e-Costa, R.; Hadigheh, S.A.; Fernandes, P.	Partial safety factors for prestressed concrete girders strengthened with CFRP laminates	Journal of Composites for Construction	V. 24, n.º 1, (-) , February.	10.1061/(A SCE)CC.194 3-5614.0000 993	WoS and SCOPUS	2,896	Q1	Q1
Bot, K.; Aelenei, L.; Gomes, M.G.; Silva, C.S.	Performance assessment of a building integrated photovoltaic thermal system in Mediterranean climate—A numerical simulation approach	Energies	V. 13, n.º 11, (art. 2887) , -.	10.3390/en 13112887	WoS and SCOPUS	2,702	Q2	Q3
Almeida, A.; Capitão, S.; Bandeira, R.; Fonseca, M.; Picado-Santos, L.	Performance of AC mixtures containing flakes of LDPE plastic film collected from urban waste considering ageing	Construction and Building Materials	V. 232, (art. 117253) , January.	10.1016/j.c onbuildmat .2019.1172 53	WoS and SCOPUS	4,419	Q1	Q1
Sanchez, R.; Simões, F.M.F.; Pinto da Costa, A.	Physical and geometrical nonlinear dynamic analysis of beams on foundations under moving loads	Journal of Engineering Mechanics	V. 146, n.º 1, (-) , January.	10.1061/(A SCE)EM.19 43-7889.0001 692	WoS and SCOPUS	2,003	Q1	Q2
Pedroso, M.; Flores-Colen, I.; Silvestre, J.D.; Gomes, M.G.; Silva, L.; Ilharco, L.	Physical, mechanical, and microstructural characterisation of an innovative thermal insulating render incorporating silica aerogel	Energy and Buildings	V. 211, (art. 109793) , March.	10.1016/j.e nbuid.202 0.109793	WoS and SCOPUS	4,867	Q1	Q1
Solarino, S.; Ferreira, M.A.; Musacchio, G.; Eva, E.	Playing games for risk prevention: design, implementation and testing of serious games in recent European projects UPStrat-MAFA and KnowRISK	Annals of Geophysics	V. 63, (art. AC8)	10.4401/ag -8436	WoS and SCOPUS	1,067	Q3	Q4
Travassos, N.; Costa, A.; Delgado, R.	Pontes e Viadutos Rodoviários com Tabuleiros Pré-Fabricados na BR-381 e na BR-101 (Brasil) - Conceção, Projeto e Obra	Construção Magazine	V. 99 set/out 2020, p. 34-39		Non (WoS, SCOPUS) National			
Kuriqi, A.; Koçileri, G.; Ardiçlioğlu, M.	Potential of Meyer-Peter and Müller approach for estimation of bed-load sediment transport under different hydraulic regimes	Modeling Earth Systems and Environment	V. 6, (129-137) , -.	10.1007/s4 0808-019- 00665-0	Non WoS; SCOPUS			
Neto, D.C.S.; Cruz, C.O.; Rodrigues, F.; Silva, P.	PPP development and governance in Latin America: Analysis of Brazilian state PPP units	Journal of Infrastructure Systems	V. 26, n.º 2, (-) , June.	10.1061/(A SCE)IS.194 3-555X.0000 544	WoS and SCOPUS	1,825	Q1	Q2
Pu, W.; Xu, F.; Chen, R.; Marques, R.C.	PPP project procurement model selection in China: does it matter?	Construction Management and Economics	V. 38, n.º 2, (126-139) , -.	10.1080/01 446193.20 19.159629 1	WoS and SCOPUS		Q1	
Arruda, M.R.T.; Lopes, B.	Pre-design guidelines for GFRP composite sandwich panels	Engineering Solid Mechanics	V. 8, n.º 2, (169-186) , February.	10.5267/j.e sm.2019.9. 004	Non WoS; SCOPUS		Q2	
Nogueira, R.; Ferreira Pinto,	Prediction of compressive strength for heterogeneous	International Journal of	V. 14, n.º 3, (415-432) , -.	10.1080/15 583058.20	WoS and SCOPUS	1,853	Q1	Q2

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A.P.; Gomes, A.; Bogas, J.A.	mortars from drilling resistance data	Architectural Heritage		18.1547800				
Pereira, C.; Hamadyk, E.; Silva, A.	Probabilistic analysis of the durability of architectural concrete surfaces	Applied Mathematical Modelling	V. 77, Part 1, (199-215), January.	10.1016/j.apm.2019.07.031	WoS and SCOPUS	3,633	Q1	Q1
Santos, L.O.; Xu, M.; Virtuoso, F.	Probabilistic structural analysis of São João Bridge based on the on-site study of the time-dependent behavior of concrete	Structural Concrete	V. 21, n.º 4, (1298-1308), August.	10.1002/suco.201900455	WoS and SCOPUS	2,174	Q1	Q2
Ghaderi, P.; Ferreira, D.; Cavaco, E.; Lúcio, V.	Progressive collapse prevention design of framed RC structures-cost-benefit analysis	Journal of Failure Analysis and Prevention	V. 20, (1244-1257), August.	10.1007/s11668-020-00930-w	Non WoS; SCOPUS		Q3	
Goiana-da-Silva, Francisco; Severo, Milton; Cruz e Silva, David; Nunes, A.J. et al	Projected impact of the Portuguese sugar-sweetened beverage tax on obesity incidence across different age groups: A modelling study	PLOS Medicine	v. 12;17(3), March	10.1371/journal.pmed.1003036	WoS and SCOPUS	10,500	Q1	Q1
Tavakoli, D.; Dehkordi, R.S.; Divandari, H.; de Brito, J.	Properties of roller-compacted concrete pavement containing waste aggregates and nano SiO ₂	Construction and Building Materials	V. 249, (art. 118747), July.	10.1016/j.conbuildmat.2020.118747	WoS and SCOPUS	4,419	Q1	Q1
Lima, D.; Santos, B.; Almeida, P.G.	Proposal of an Airport Pavement Maintenance Management System for Cape Verde	KnE Engineering	May 3, 2020	10.18502/keng.v5i5.6917	Non (WoS, SCOPUS) International			
PEREIRA, T., LOURO, A., COSTA, H., JÚLIO. E.	Proposta de Lei de Aderência entre Varões de Aço e Betões com Baixa Dosagem de Ligante com Agregados Naturais/Reciclados	Revista Portuguesa de Engenharia de Estruturas	Série III, N.º 14: 43-56, 2020		Non (WoS, SCOPUS) National			
Nunes, A.M.	Public Hospital Network: Outcomes of the different models of organization	REVISTA DE GESTÃO EM SISTEMAS DE SAÚDE-RGSS	V.9, no 3 (499-516)	10.5585/rgss.v9i1.13286	Non (WoS, SCOPUS) International			
Inácio, M.M.G.; Lapi, M.; Ramos, A.P.	Punching of reinforced concrete flat slabs – Rational use of high strength concrete	Engineering Structures	V. 206, (art. 110194), March.	10.1016/j.engstruct.2020.110194	WoS and SCOPUS	3,548	Q1	Q1
Talento, K.; Amado, M.; Kullberg, J.C.	Quarries: From Abandoned to Renewed Places	Land	V. 9, n.º 5, (136), -.	10.3390/land9050136	WoS and SCOPUS	2,429	Q2	Q2
Matias, S.R.; Ferreira, P.A.	Railway slab track systems: review and research potentials	Structure and Infrastructure Engineering	Vol. 16, Issue 12, (1635-1653), February	10.1080/15732479.2020.1719167 10.1080/15732479.2020.1719167	WoS and SCOPUS	2,620	Q1	Q2
Espinosa, L.A.; Portela, M.M.	Rainfall trends over a small island teleconnected to the North Atlantic oscillation - the case of Madeira Island, Portugal	Water Resources Management	V. 34, (4449-4467), November.	10.1007/s11269-020-02668-4	WoS and SCOPUS	2,924	Q1	Q1
Almeida, J., Gama, D., Lourenço, M	Reabilitação e Reforço Sísmico de Palacete pré-pombalino no Campos dos Mártires da Pátria, em Lisboa	Construção Magazine	V. 99, Setembro/Outubro 2020, pp. 26-33		Non (WoS, SCOPUS) National			
Sibilla, S.; Meninno, S.; Canelas, R.B.	Recent developments in the analysis of Large Wood dynamics in fluvial systems	Environmental Fluid Mechanics	v. 20, (479–484), April.	10.1007/s10652-020-09741-x	WoS and SCOPUS	1,512	Q2	Q3
Cruz, C.O.; Branco, F.	Reconstruction cost model for housing insurance	Journal of Legal Affairs and Dispute Resolution in Engineering and Construction	V. 12, n.º 3, (-), August.	10.1061/(ASCE)LA.1943-4170.0000408	WoS and SCOPUS		Q3	
Martínez-García, R.; Guerra-Romero, M.I.; Morán-del Pozo, J.M.; de Brito, J.; Juan-Valdés, A.	Recycling aggregates for self-compacting concrete production: a feasible option	Materials	V. 13, n.º 4, (art. 868), -.	10.3390/ma13040868	WoS and SCOPUS	3,057	Q2	Q2

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Girondi, G.D.; Marvila, M.M.; Azevedo, A.R.G.; Souza, C.; Souza, D.; de Brito, J.; Vieira, C.M.F.	Recycling potential of powdered cigarette waste in the development of ceramic materials	Journal of Material Cycles and Waste Management	V. 22, (1672-1681) , -.	10.1007/s10163-020-01058-7	WoS and SCOPUS	1,974	Q2	Q3
Bufo, E.; López-Sánchez, C.; Lozano, L.; Martínez-Solares, J.M.; Cesca, S.; Oliveira, C.S.; Ufias, A.	Re-evaluation of Seismic Intensities and Relocation of 1969 Saint Vincent Cape Seismic Sequence: A Comparison with the 1755 Lisbon Earthquake	Pure and Applied Geophysics	V. 177, (1781-1800) , April.	10.1007/s0024-019-02336-8	WoS and SCOPUS	1,586	Q2	Q3
Adnan, R.M.; Chen, Z.; Yuan, X.; Kisi, O.; El-Shafie, A.; Kuriqi, A.; Ikran, M.	Reference evapotranspiration modeling using new heuristic methods	Entropy	V. 22, n.º 5, (547) , May.	10.3390/e22050547	WoS and SCOPUS	2,494	Q2	Q2
Almeida, J., Reis, F., Garcia, P., Alvarez, L., Pinheiro, A.	Reforço Sísmico da sede da Nelté Portugal	Construção Magazine	V. 99, Setembro/Outubro 2020, pp. 4-10		Non (WoS, SCOPUS) National			
Silva, R.V.; de Brito, J.	Reinforced recycled aggregate concrete slabs: Structural design based on Eurocode 2	Engineering Structures	V. 204, (art. 110047) , February.	10.1016/j.engstruct.2019.110047	WoS and SCOPUS	3,548	Q1	Q1
Ferreira, A.; Pinheiro, M.D.; de Brito, J.; Mateus, R.	Relating carbon and energy intensity of best-performing retailers with policy, Startegy and building practice	Energy Efficiency	V. 13, (597-619) , -.	10.1007/s12053-020-09840-0	WoS and SCOPUS	1,810	Q2	Q3
Flores-Colen, I.; de Brito, J.; Freitas, V.P.; Hawreen, A.	Reliability of in-situ diagnosis in external wall renders	Construction and Building Materials	V. 252, (art. 119079) , August.	10.1016/j.conbuildmat.2020.119079	WoS and SCOPUS	4,419	Q1	Q1
Farinha, C.B.; de Brito, J.; Veiga, R.	Rendering mortars with low sand and cement content. Incorporation of sanitary ware waste and forest biomass ashes	Applied Sciences	V. 10, n.º 9, (3146) , -.	10.3390/ap10093146	WoS and SCOPUS	2,474	Q2	Q2
Marques, A.I.; Veiga, M.R.; Candeias, P.X.; Ferreira, J.G.	Revestimentos armados como solução de reabilitação sísmica de paredes de alvenaria de edifícios antigos	Revista Portuguesa de Engenharia de Estruturas	V. III, n.º 13, (25-36) , July.		Non (WoS, SCOPUS) National			
Lourenço, N.; Nunes, L.M.	Review of dry and wet decentralized sanitation technologies for rural areas: Applicability, challenges and opportunities	Environmental Management	V. 65, (642-664) , May.	10.1007/s00267-020-01268-7	WoS and SCOPUS	2,561	Q1	Q2
Camacho, V.T.; Lopes, M.; Oliveira, C.S.	Revising seismic behaviour factors for reinforced concrete bridge design in the longitudinal direction using multi-objective evolutionary algorithms	Bulletin of Earthquake Engineering	V. 18, n.º 3, (925-951) , February.	10.1007/s10518-019-00739-5	WoS and SCOPUS	2,602	Q1	Q2
Marques, R.C.; Simões, P.	Revisiting the comparison of public and private water service provision: An empirical study in Portugal	Water	V. 12, (1477) , -.	10.3390/w12051477	WoS and SCOPUS	2,544	Q2	Q2
Isufi, B.; Cismasiu, I.; Marreiros, R.; Ramos, A.P.; Lúcio, V.	Role of punching shear reinforcement in the seismic performance of flat slab frames	Engineering Structures	V. 207, (art. 110238) , March.	10.1016/j.engstruct.2020.110238	WoS and SCOPUS	3,548	Q1	Q1
Kuriqi, A.; Ali, R.; Pham, Q.B.; Gambini, J.M.; Gupta, V.; Malik, A.; Linh, N.T.T.; Joshi, Y.; Anh, D.T.; Nam, V.T.; Dong, X.	Seasonality shift and streamflow flow variability trends in central India	Acta Geophysica	V. 68, (1461-1475) , October.	10.1007/s1600-020-00475-4	WoS and SCOPUS	1,395	Q3	Q3
Simões, A.G.; Bento, R.; Lagomarsino, S.; Cattari, S.; Lourenço, P.B.	Seismic assessment of nineteenth and twentieth centuries URM buildings in Lisbon: structural features and derivation of fragility curves	Bulletin of Earthquake Engineering	V. 18, n.º 2, (645-672) , January.	10.1007/s10518-019-00618-z	WoS and SCOPUS	2,602	Q1	Q2

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Oliveira, L.; Teves-Costa, P.; Pinto, C.; Gomes, R.C.; Almeida, I.M.; Ferreira, C.; Pereira, T.; Sotto-Mayor, M.	Seismic microzonation based on large geotechnical database: Application to Lisbon	Engineering Geology	V. 265, (art. 105417) , February.	10.1016/j.enggeo.2019.105417	WoS and SCOPUS	4,779	Q1	Q1
Couto, R.; Bento, R.; Gomes, R.C.	Seismic performance and fragility curves of historical residential buildings in Lisbon downtown affected by settlements	Bulletin of Earthquake Engineering	V. 18, (5281-5307) , -.	10.1007/s10518-020-00906-z	WoS and SCOPUS	2,602	Q1	Q2
Cismaşiu, C.; Santos, F.A.; Perdigão, R.A.D.S.; Bernardo, V.M.S.; Candeias, P.X.; Carvalho, A.R.; Guerreiro, L.M.C.	Seismic vulnerability assessment of a RC pedestrian crossing	Journal of Earthquake Engineering	V. 24, n.º 5, (727-744) , -.	10.1080/13632469.2018.1453399	WoS and SCOPUS	2,779	Q1	Q1
Matos, P.R.; Pilar, R.; Bromerchenkel, L.H.; Schankoski, R.A.; Gleize, P.; de Brito, J.	Self-compacting mortars produced with fine fraction of calcined waste foundry sand (WFS) as alternative filler: Fresh-state, hydration and hardened-state properties	Journal of Cleaner Production	V. 252, (art. 119871) , April.	10.1016/j.jclepro.2019.119871	WoS and SCOPUS	7,246	Q1	Q1
Prieto, A.J.; Silva, A.	Service life prediction and environmental exposure conditions of timber claddings in South Chile	Building Research & Information	V. 48, n.º 2, (191-206) , -.	10.1080/09613218.2019.1631143	WoS and SCOPUS	3,887	Q1	Q1
Poggi, F.; Amado, M.	Shaping energy transition at municipal scale: A net-zero energy scenario-based approach	Land Use Policy	V. 99, (art. 104955) , December.	10.1016/j.landusepol.2020.104955	WoS and SCOPUS	3,682	Q1	Q1
Queiroz, M.M.; Roque, C.; Moura, F.	Shifting from private to public transport using duration-based modeling of a school-based intervention	Transportation Research Record: Journal of the Transportation Research Board	V. 2674, n.º 7, (540-554) , July.	10.1177/0361198120923666	Non WoS; SCOPUS	1,029	Q2	
Espinosa, L.A.; Portela, M.M.; Rodrigues, R.	Significant extremal dependence of a daily North Atlantic Oscillation Index (NAOI) and weighted regionalised rainfall in a small island using the extremogram	Water	V. 12, n.º 11, (2989) , November.	10.3390/w12112989	WoS and SCOPUS	2,544	Q2	Q2
Pienika, R.; Usera, G.; Ramos, H.M.	Simulation of a hydrostatic pressure machine with Caffa3d solver: Numerical model characterization and evaluation	Water	V. 12, n.º 9, (2419) , -.	10.3390/w12092419	WoS and SCOPUS	2,544	Q2	Q2
Pereira, J.O.; Gomes, M.G.; Rodrigues, A.M.; Teixeira, H.; Almeida, M.	Small-scale field study of window films' impact on daylight availability under clear sky conditions	Journal of Facade Design and Engineering	V. 8, n.º 1, (65-84) , October.	10.7480/jfd.e.2020.1.4785	Non WoS; SCOPUS		Q3	
Ramos, H.M.; McNabola, A.; López-Jiménez, P.A.; Pérez-Sánchez, M.	Smart water management towards future water sustainable networks	Water	V. 12, (58) , -.	10.3390/w12010058	WoS and SCOPUS	2,544	Q2	Q2
Nóbrega, J.D.; Matos, J.; Schulz, H.E.; Canelas, R.B.	Smooth and stepped spillway modeling using the SPH method	Journal of Hydraulic Engineering	v. 146 Issue 8, August	10.1061/(ASCE)HY.1943-7900.0001776	WoS and SCOPUS	1,993	Q1	Q2
Baltazar, M.E.; Silva, J.	Spanish airports performance and efficiency benchmark. A PESA-AGB study	Journal of Air Transport Management	V. 89, (art. 101889) , October.	10.1016/j.jairtraman.2020.101889	WoS and SCOPUS	2,811	Q1	Q2
Picado-Santos, L.; Crucho, J.	Special Issue on Nano-Modified Asphalt Binders and Mixtures to Enhance Pavement Performance	Applied Sciences	V. 10, n.º 12, (4187) , -.	10.3390/ap10124187	WoS and SCOPUS	2,474	Q2	Q2
Capitão, S. Picado-Santos, L.	Special Issue on Towards Sustainable Pavement Materials and Structures	Sustainability	V. 12		WoS and SCOPUS	2,576	Q2	Q2

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Furlan, P.; Pfister, M.; Matos, J.S.G.; Amado, C.; Schleiss, A.J.	Statistical accuracy for estimations of large wood blockage in a reservoir environment	Environmental Fluid Mechanics	V. 20, (579-592) , June.	10.1007/s10652-019-09708-7	WoS and SCOPUS	1,512	Q2	Q3
Ameri, F.; de Brito, J.; Madhkan, M.; Taheri, R.A.	Steel fibre-reinforced high-strength concrete incorporating copper slag: Mechanical, gamma-ray shielding, impact resistance, and microstructural characteristics	Journal of Building Engineering	V. 29, (art. 101118) , May.	10.1016/j.jobe.2019.101118	WoS and SCOPUS	3,379	Q1	Q1
Ferreira, C.; Neves, L.C.; Silva, A.; de Brito, J.	Stochastic maintenance models for ceramic claddings	Structure and Infrastructure Engineering	V. 16, n.º 2, (247-265) , -.	10.1080/15732479.2019.1652657	WoS and SCOPUS	2,620	Q1	Q2
Carvalho, G.; Marques, R.	Strategies to Foster Competition for the Market in the Urban Bus Sector in Developing Countries	Infrastructures	v. 5(12), 115	10.3390/infrastructure5120115	Non WoS; SCOPUS		Q3	
Franco, N.; Chastre, C.; Biscaia, H.	Strengthening RC beams using stainless steel continuous reinforcement embedded at ends	Journal of Structural Engineering	V. 146, n.º 5, (-) , May.	10.1061/(ASCE)ST.1943-541X.0002606	WoS and SCOPUS	2,454	Q1	Q2
Santos, M.B.; de Brito, J.; Silva, A.S.; Ahmed, H.H.	Study of ASR in concrete with recycled aggregates: Influence of aggregate reactivity potential and cement type	Construction and Building Materials	V. 265, (art. 120743) , December.	10.1016/j.conbuildmat.2020.120743	WoS and SCOPUS	4,419	Q1	Q1
Pro, C.; Buforn, E.; Udías, A.; Borges, J.; Oliveira, C.S.	Study of the PGV, strong motion and intensity distribution of the February 1969 (Ms 8.0) offshore Cape St. Vincent (Portugal) earthquake using synthetic ground velocities	Pure and Applied Geophysics	V. 177, (1809-1829) , -.	10.1007/s00024-019-02401-2	WoS and SCOPUS	1,586	Q2	Q3
Silva, B.A.; Ferreira Pinto, A.P.; Gomes, A.; Candeias, A.	Suitability of different surfactants as air-entraining admixtures for lime mortars	Construction and Building Materials	V. 256, (art. 118986) , September.	10.1016/j.conbuildmat.2020.118986	WoS and SCOPUS	4,419	Q1	Q1
Marques, R.C.; Miranda, J.	Sustainable tariffs for water and wastewater services	Utilities Policy	V. 64, (art. 101054) , June.	10.1016/j.up.2020.101054	WoS and SCOPUS	1,835	Q1	Q3
Crucho, J.; Picado-Santos, L.; Neves, J.; Capitão, S.; Al-Qadi, I.	Tecnico accelerated ageing (TEAGE) – a new laboratory approach for bituminous mixture ageing simulation	International Journal of Pavement Engineering	V. 21, n.º 6, (753-765) , -.	10.1080/10298436.2018.1508845	WoS and SCOPUS	2,646	Q1	Q2
Santos, A.R.L.; Veiga, M.R.; Silva, A.M.S.; de Brito, J.	Tensile bond strength of lime-based mortars: The role of the microstructure on their performance assessed by a new non-standard test method	Journal of Building Engineering	V. 29, (art. 101136) , May.	10.1016/j.jobe.2019.101136	WoS and SCOPUS	3,379	Q1	Q1
Beceiro, P.; Brito, R.S.; Galvão, A.	The contribution of NBS to urban resilience in stormwater management and control: A framework with stakeholder validation	Sustainability	V. 12, n.º 6, (2537) , -.	10.3390/su12062537	WoS and SCOPUS	2,576	Q2	Q2
Karimipour, A.; Ghalehnovi, M.; de Brito, J.; Attari, M.	The effect of polypropylene fibres on the compressive strength, impact and heat resistance of self-compacting concrete	Structures	V. 25, (72-87) , June.	10.1016/j.istruc.2020.02.022	WoS and SCOPUS	1,839	Q1	Q2
Goiana-da-Silva, F.; Cruz-e-Silva, D.; Bartlett, O.; Vasconcelos, J.; Nunes, A.; Ashrafian, H.; Miraldo, M.; Machado, M.C.; Araújo, F.; & Darzi, A	The ethics of taxing sugar-sweetened beverages to improve public health.	Frontier in Public Health	v. 8, article 110	10.3389/fpubh.2020.0110	WoS and SCOPUS	2,483	Q2	Q2
Chang, S.-J.; Kendall, E.; Davaile, A.; Ferreira, A.M.G.	The evolution of mantle plumes in East Africa	JGR Solid Earth	V. 125, n.º 12, (e2020JB019929) , December.	10.1029/2020JB019929	WoS and SCOPUS	3,638	Q1	Q1
Pedroso, M.; Flores-Colen, I.	The influence of dimension and content of natural organic fibrous materials on the multi-	Construction and Building Materials	V. 231, (art. 117175) , January.	10.1016/j.conbuildmat	WoS and SCOPUS	4,419	Q1	Q1

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	performance of cement-based composites: A statistical approach			.2019.117175				
Celentano, G.; Göswein, V.; Magyar, J.; Habert, G.	The informal city as a socio-technical system: Construction management and money distribution in the informal and upgraded communities of Bangkok	Journal of Cleaner Production	V. 256, (art. 120142) , May.	10.1016/j.jclepro.2020.120142	WoS and SCOPUS	7,246	Q1	Q1
Nunes, A.M.; Ferreira, D.C.; de Matos, A.; Julião, R.M.	The Portuguese generic medicines market: What's next?	Health Policy	V. 124, n.º 4, (397-403) , April.	10.1016/j.healthpol.2020.02.014	WoS and SCOPUS	2,212	Q1	Q2
Nunes, A.M.	The Portuguese National Health Service: Characterization, classification and perspective	REVISTA DE GESTAO EM SISTEMAS DE SAUDE-RGSS	V.9, no 3 (499-516)	10.5585/rgss.v9i3.18541	Non (WoS, SCOPUS) International			
Marignier, A.; Ferreira, A.M.G.; Kitching, T.	The probability of mantle plumes in global tomographic models	Geochemistry, Geophysics, Geosystems	V. 21, n.º 9, (art. e2020GC009276) , September.	10.1029/2020GC009276	Non WoS; SCOPUS	3,280	Q1	
Venus, T.E.; Hinzmann, M.; Bakken, T.H.; Gerdes, H.; Godinho, F.N.; Hansen, B.; Pinheiro, A.; Sauer, J.	The public's perception of run-of-the-river hydropower across Europe	Energy Policy	V. 140, (art. 111422) , May.	10.1016/j.enpol.2020.111422	WoS and SCOPUS	5,042	Q1	Q1
Talento, K.; Amado, M.; Kullberg, J.C.	The reuse of waste heaps from extraction sites: An architectural methodology	Sustainability	V. 12, n.º 16, (6548) , -.	10.3390/su12166548	WoS and SCOPUS	2,576	Q2	Q2
Bourne-Webb, P.	The role of concrete creep under sustained loading, during thermo-mechanical testing of energy piles	Computers and Geotechnics	V. 118, (art. 103309) , February.	10.1016/j.compgeo.2019.103309	WoS and SCOPUS	3,818	Q1	Q1
Martínez-Fernández, J.; Neto, S.; Hernández-Mora, N.; Del Moral, L.; La Roca, F.	The role of the Water Framework Directive in the controversial transition of water policy paradigms in Spain and Portugal	Water Alternatives	V. 13, n.º 3, (556-581) , October.		WoS and SCOPUS	1,979	Q2	Q3
Ritto-Corrêa, M.; Tomaz, A.R.; Guerreiro, L.	The shape of the seismic response interaction diagram: The effect of combination rules in response spectrum analysis	Earthquake Engineering and Structural Dynamics	V. 49, n.º 14, (1428-1451) , November.	10.1002/eqe.3311	Non WoS; SCOPUS		Q1	
Crucho, J.M.L.; Picado-Santos, L.; Neves, J.M.; Capitão, S.D.	The TEAGE ageing method for asphalt mixtures	Transportation Engineering	V. 2, (art. 100030) , December.	10.1016/j.treng.2020.100030	Non (WoS, SCOPUS) International			
Teixeira, H.; Gomes, M.G.; Moret, A.; Pereira, J.	Thermal and visual comfort, energy use and environmental performance of glazing systems with solar control films	Building and Environment	V. 168, (art. 106474) , January.	10.1016/j.buildenv.2019.106474	WoS and SCOPUS	4,971	Q1	Q1
Cantero, B.; Bravo, M.; de Brito, J.; Saéz del Bosque, I.F.; Medina, C.	Thermal performance of concrete with recycled concrete powder as partial cement replacement and recycled CDW aggregate	Applied Sciences	V. 10, n.º 13, (4540) , July.	10.3390/ap10134540	WoS and SCOPUS	2,474	Q2	Q2
Bourne-Webb, P.; Bodas Freitas, T.	Thermally-activated piles and pile groups under monotonic and cyclic thermal loading—a review	Renewable Energy	V. 147, Part 2, (2572-2581) , March.	10.1016/j.renene.2020.11.025	WoS and SCOPUS	6,274	Q1	Q1
Carriço, A.; Bogas, J.A.; Guedes, M.	Thermoactivated cementitious materials – A review	Construction and Building Materials	V. 250, (art. 118873) , July.	10.1016/j.conbuildmat.2020.118873	WoS and SCOPUS	4,419	Q1	Q1
Canelas, O.B.; Ferreira, R.M.L.; Guillén-Ludeña, S.; Alegria, F.C.; Cardoso, A.H.	Three-dimensional flow structure at fixed 70° open-channel confluence with bed discordance	Journal of Hydraulic Research	V. 58, n.º 3, (434-446) , -.	10.1080/00221686.2019.1596988	WoS and SCOPUS	2,098	Q1	Q2

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Ceregueiro, J.M.; Pinheiro, M.D.; Campuzano, F.R.	Tidal farm electric energy production in the Tagus Estuary	Journal of Integrated Coastal Zone Management	V. 20, n.º 1, (61-78) , June.	10.5894/RGCI-N281	Non WoS; SCOPUS		Q4	
Cruz, C.O.; Sarmiento, J.M.	Traffic forecast inaccuracy in transportation: a literature review of roads and railways projects	Transportation	V. 47, (1571-1606) , -.	10.1007/s1116-019-09972-y	WoS and SCOPUS	4,082	Q1	Q1
Marcelino, P.; Antunes, M.L.; Fortunato, E.; Gomes, M.C.	Transfer learning for pavement performance prediction	International Journal of Pavement Research and Technology	V. 13, (154-167) , March.	10.1007/s42947-019-0096-z	WoS and SCOPUS	2,646	Q1	Q2
Besharat, M.; Dadfar, A.; Viseu, M.T.; Brunone, B.; Ramos, H.M.	Transient-flow induced compressed air energy storage (TI-CAES) system towards new energy concept	Water	V. 2020, n.º 12, (601) , -.	10.3390/w12020601	WoS and SCOPUS	2,544	Q2	Q2
Sá, M.F.; Correia, J.R.; Silvestre, N.; Gomes, A.M.	Transverse bending and in-plane shear behaviours of multicellular pultruded GFRP deck panels with snap-fit connections	Thin-Walled Structures	V. 154, (art. 106854) , September.	10.1016/j.tws.2020.106854	WoS and SCOPUS	4,033	Q1	Q1
Almeida-Fernandes, L.; Correia, J.R.; Silvestre, N.	Transverse fracture behavior of pultruded GFRP materials in tension: Effect of fiber layup	Journal of Composites for Construction	V. 24, n.º 4, (-) , August.	10.1061/(ASCE)CC.1943-5614.0001024	WoS and SCOPUS	2,896	Q1	Q1
Rosales, J.; Pérez, S.M.; Cabrera, M.; Gázquez, M.J.; Bolívar, J.P.; de Brito, J.; Agrela, F.	Treated phosphogypsum as an alternative set regulator and mineral addition in cement production	Journal of Cleaner Production	V. 244, (art. 118752) , January.	10.1016/j.jclepro.2019.118752	WoS and SCOPUS	7,246	Q1	Q1
Mehrabani, F.V.; Mohammadi, M.; Ayyoubzadeh, S.A.; Fernandes, J.N.; Ferreira, R.M.L.	Turbulent flow structure in a vegetated non-prismatic compound channel	River Research and Applications	V. 36, n.º 9, (1868-1878) , -.	10.1002/rra.3723	WoS and SCOPUS	1,916	Q1	Q3
SILVA, A., BENTO, R.	Uma abordagem Multidisciplinar para a Avaliação Sísmica do Edifício dos Brasões, Palácio Nacional de Sintra, A Multi-Disciplinary Approach to the Seismic Assessment of the Brasões Building, National Palace of Sintra	Revista Portuguesa de Engenharia de Estruturas	Série III, nº 14, 97-110		Non (WoS, SCOPUS) National			
Pacheco, J.N.; de Brito, J.; Chastre, C.; Evangelista, L.	Uncertainty of shear resistance models: Influence of recycled concrete aggregate on beams with and without shear reinforcement	Engineering Structures	V. 204, (art. 109905) , February.	10.1016/j.engstruct.2019.109905	WoS and SCOPUS	3,548	Q1	Q1
Arantes, A.; Ferreira, L.M.	Underlying causes and mitigation measures of delays in construction projects: An empirical study	Journal of Financial Management of Property and Construction	V. 25, n.º 2, (165-181) , -.	10.1108/JFMP-03-2019-0029	Non WoS; SCOPUS		Q3	
Chen, M.-T.; Young, B.; Martins, A.D.; Camotim, D.; Dinis, P.B.	Uniformly bent CFS lipped channel beams experiencing local-distortional interaction: Experimental investigation	Journal of Constructional Steel Research	V. 170, (art. 106098) , July.	10.1016/j.jcsr.2020.106098	WoS and SCOPUS	2,938	Q1	Q1
Cereja, R.; Vinagre, C.; Silva, A.	Unknown facts of the biology of Polybius henslowii – Effect of gender on claw morphology and diet	Journal of Sea Research	V. 165, (art. 101953) , October.	10.1016/j.jseares.2020.101953	WoS and SCOPUS	1,725	Q2	Q2
Almeida, M.C.; Telhado, M.J.; Morais, M.; Barreiro, J.; Lopes, R.	Urban resilience to flooding: Triangulation of methods for hazard identification in urban areas	Sustainability	V. 12, (2227) , -.	10.3390/su12062227	WoS and SCOPUS	2,576	Q2	Q2
Pereira, C.; Silva, A.; de Brito, J.; Silvestre, J.D.	Urgency of repair of building elements: Prediction and influencing factors in façade renders	Construction and Building Materials	V. 249, (art. 118743) , July.	10.1016/j.conbuildmat.2020.118743	WoS and SCOPUS	4,419	Q1	Q1
Pedreño-Rojas, M.A.; Rodríguez-Liñán, C.; Flores-Colen, I.; de Brito, J.	Use of polycarbonate waste as aggregate in recycled gypsum plasters	Materials	V. 13, n.º 14, (3042) , July.	10.3390/ma13143042	WoS and SCOPUS	3,057	Q2	Q2

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Liberalesso, T.; Mutevuie, R.; Cruz, C.O.; Silva, C.M.; Manso, M.	Users' perceptions of green roofs and green walls: An analysis of youth hostels in Lisbon, Portugal	Sustainability	V. 12, n.º 23, (10136) , December.	10.3390/su122310136	WoS and SCOPUS	2,576	Q2	Q2
Pereira, M.A.; Figueira, J.R.; Marques, R.C.	Using a Choquet integral-based approach for incorporating decision-maker's preference judgements in a Data Envelopment Analysis model	European Journal of Operational Research	V. 284, n.º 3, (1016-1030) , August.	10.1016/j.ejor.2020.01.037	WoS and SCOPUS	4,213	Q1	Q1
Göswein, V.; Rodrigues, C.; Silvestre, J.D.; Freire, F.; Habert, G.; König, J.	Using anticipatory life cycle assessment to enable future sustainable construction	Journal of Industrial Ecology	V. 24, n.º 1, (178-192) , February.	10.1111/jie.c.12916	WoS and SCOPUS	6,539	Q1	Q1
Amado, M.; Rodrigues, E.; Poggi, F.; Pinheiro, M.D.; Amado, A.R.; José, H.	Using different levels of information in planning green infrastructure in Luanda, Angola	Sustainability	V. 12, n.º 8, (3162) , -.	10.3390/su12083162	WoS and SCOPUS	2,576	Q2	Q2
Pereira, M.A.; Machete, I.F.; Ferreira, D.C.; Marques, R.C.	Using multi-criteria decision analysis to rank European health systems: The Beveridgian financing case	Socio-Economic Planning Sciences	V. 72, (art. 100913) , December.	10.1016/j.sps.2020.100913	WoS and SCOPUS	4,149	Q1	Q1
Santos, B.; Almeida, P.G.; Feitosa, I.; Lima, D.	Validation of an indirect data collection method to assess airport pavement condition	Case Studies in Construction Materials	V. 13, (art. e00419) , December.	10.1016/j.cscm.2020.e00419	Non WoS; SCOPUS		Q1	
Duarte, R.; Flores-Colen, I.; de Brito, J.; Hawreen, A.	Variability of in-situ testing in wall coating systems - Karsten tube and moisture meter techniques	Journal of Building Engineering	V. 27, (art. 100998) , January.	10.1016/j.jobe.2019.100998	WoS and SCOPUS	3,379	Q1	Q1
Marques, B.; António, J.; Almeida, J.; Tadeu, A.; de Brito, J.; Dias, S.; Pedro, F.; Sena, J.D.	Vibro-acoustic behaviour of polymer-based composite materials produced with rice husk and recycled rubber granules	Construction and Building Materials	V. 264, (art. 120221) , December.	10.1016/j.conbuildmat.2020.120221	WoS and SCOPUS	4,419	Q1	Q1
Condeso de Melo, M.T.; Shandilya, R.N.; Silva, J.B.P.; Postma, D.	Volcanic glass leaching and the groundwater geochemistry on the semi-arid Atlantic island of Porto Santo	Applied Geochemistry	V. 114, (art. 104470) , March.	10.1016/j.apgeochem.2019.104470	WoS and SCOPUS	2,903	Q1	Q2
Romano, G.; Ferreira, D.C.; Marques, R.C.; Carosi, L.	Waste services' performance assessment: The case of Tuscany, Italy	Waste Management	V. 118, (573-584) , December.	10.1016/j.wasman.2020.08.057	WoS and SCOPUS	5,448	Q1	Q1
Cetrulo, T.; Marques, R.; Cetrulo, N.; Malheiros, T.	Water utilities performance analysis in developing countries: On an adequate model for universal access.	Journal of Environmental Management	Volume 268, 15 August 2020, 110662	10.1016/j.jenvman.2020.110662	WoS and SCOPUS	5,647	Q1	Q1
Kuriqi, A.; Pinheiro, A.N.; Sordo-Ward, A.; Garrote, L.	Water-energy-ecosystem nexus: Balancing competing interests at a run-of-river hydropower plant coupling a hydrologic-ecohydraulic approach	Energy Conversion and Management	V. 223, (art. 113267) , November.	10.1016/j.enconman.2020.113267	WoS and SCOPUS	8,208	Q1	Q1
Nascimento, S.M.D.; Pedro, J.J.O.; da Graça, A.F.B.S.P.	Web buckling of high-strength steel plate girders induced by bending curvature	Steel Construction-Design and Research	V. 13, n.º 2, (84-91) , May.	10.1002/stco.202000015	Non (WoS, SCOPUS) International			
Teixeira de Freitas, J.A.; Tiago, C.	Wedge and crack solutions for Mindlin-Reissner plates	International Journal of Fracture	V. 221, (1-23) , January.	10.1007/s10704-019-00397-3	WoS and SCOPUS	2,807	Q1	Q2
Neto, S.; Camkin, J.	What rights and whose responsibilities in water? Revisiting the purpose and reassessing the value of water services tariffs	Utilities Policy	V. 63, (art. 101016) , April.	10.1016/j.jup.2020.101016	WoS and SCOPUS	1,835	Q2	Q3
Ferreira, M.A.; Meroni, F.; Azzaro, R.; Musacchio, G.; Rupakhety, R.; Bessason, B.; Thorvaldssdottir, S.; Lopes, M.; Oliveira, C.S.; Solarino, S.	What scientific information on the seismic risk to non-structural elements do people need to know? Part 1: Compiling an inventory on damage to non-structural elements	Annals of Geophysics	V. 63, (art. AC04) , -.	10.4401/ag-8412	WoS and SCOPUS	1,067	Q3	Q4

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Solarino, S.; Ferreira, M.A.; Musacchio, G.; Rupakhety, R.; O'Neill, H.; Falsaperla, S.; Vicente, M.; Lopes, M.; Oliveira, C.S.	What scientific information on the seismic risk to non-structural elements do people need to know? Part 2: tools for risk communication	Annals of Geophysics	V. 63, (art. AC05) , -.	10.4401/ag-8439	WoS and SCOPUS	1,067	Q3	Q4
Melo, C.; Teotónio, I.; Silva, C.M.; Cruz, C.O.	What's the economic value of greening transport infrastructures? The case of the underground passages in Lisbon	Sustainable Cities and Society	V. 56, (art. 102083) , May.	10.1016/j.scs.2020.102083	WoS and SCOPUS	5,268	Q1	Q1
Giudicianni, C.; Herrera, M.; di Nardo, A.; Carravetta, A.; Ramos, H.M.; Adeyeye, K.	Zero-net energy management for the monitoring and control of dynamically-partitioned smart water systems	Journal of Cleaner Production	V. 252, (art. 119745) , April.	10.1016/j.jclepro.2019.119745	WoS and SCOPUS	7,246	Q1	Q1

ANNEX C—RESEARCH GROUP ACTIVITIES IN 2020