COST Action CA16114 RESTORE: REthinking Sustainability TOwards a Regenerative Economy,
Final Action Dissemination Publication

RESTORE

REthinking Sustainability TOwards a Regenerative Economy

RESTORY

Managing a COST Action as a Project

EDITORS
Carlo Battisti and Martin Brown

cost
EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

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IMPRESSUM

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TABLE OF CONTENTS

1 FOREWORD

Dr. Giuseppe Lugano
COST Action CA16114 Science Officer, COST Association

The COST Action CA16114 "REthinking Sustainability TOwards a Regenerative Economy" (RESTORE) has brought together academic and non-academic experts from around 40 countries to address the challenge of affecting a paradigm shift towards restorative sustainability for new and existing buildings and space design across Europe. This ambitious challenge was pursued over a 4-year collaborative period (March 2017 – April 2021), during which numerous activities were implemented and a variety of results and outputs produced and disseminated. This booklet illustrates the outcomes of the COST Action RESTORE, both the scientific results and key learning points, as well as the accomplishments related to the process of managing an open, cross-cultural, multi-stakeholder and growing network.

Indeed, the science and technology networks called COST Actions are flexible in nature and empower their leadership to adopt the most appropriate management approach required for both the needs and the objectives of each Action. Some background information on the structure of COST and how the Actions function is needed, in order to gain a better understanding of the nature of COST Actions.

COST is an intergovernmental framework consisting of 38 Members, 1 Cooperating Member and 1 Partner Member. Researchers from these countries can easily participate in COST Actions. Once a COST Action is approved after a competitive Open Call, its Management Committee (MC) – the decision-making body of the COST Action – is formed, following the nominations of (up to two) representatives for each participating COST Country. Additional experts from these countries may join the Action Working Groups (WGs), addressing the specific scientific and technological tasks related to the challenge. Further experts from any other country in the world may also join as MC Observers.

A COST Country formally joins an Action by accepting its Memorandum of Understanding (MoU), a key document describing the challenge of the Action, related research coordination and capacity building objectives, the innovative approach adopted to develop the field, the expected impact and its proposed implementation. Unlike research projects with a pre-defined consortium and an allocated budget, the MoU of the Action includes neither names of participating institutions/experts nor their roles/tasks, nor a budget overview of the proposed activities. Leadership roles in COST Actions are established by the MC of the Action, with a special emphasis on promoting the professional development of young researchers (Early Career Investigators, or ECIs) and participants from less research-intensive COST members (COST Inclusiveness Target Countries, or ITC[1]). When appointed to leadership roles, ECIs typically work side by side with more experienced researchers. Among others, the Action MC is responsible for reviewing the Action strategy and consequently planning activities and budget allocations. A Core Group typically provides support to the MC, which consists of the key Action leadership positions, and a range of additional horizontal roles or groups, as the MC may decide. The budget for Action networking activities is allocated per grant period (normally lasting 12 months) and takes into account the growth of the Action in terms of participation. On this occasion, the MC of the Action is required to submit a detailed specification of activities and budget allocation to the COST Association, a prerequisite to meet the goals of the funding period and to contribute to progress on the more general Action objectives.

While the challenge of the Action and the specific objectives stated in the MoU remain the same throughout the lifetime of the Action, other elements of the implementation (including Working Groups, types of activities, and to some extent definition of tasks and deliverables) can be updated through Action networking and collaboration and/or in response to relevant changes and emerging needs within the field.

1 In Horizon 2020, COST is 50% funded by the Spreading Excellence and Widening Participation (SEWP) programme and has committed itself to spend 50% of the budget to benefit researchers from a broad range of countries eligible under SEWP (equivalent to COST ITCs).

These elements contribute to make a COST Action a flexible and open collaborative space for knowledge sharing and co-creation, but at the same time they also imply a degree of management uncertainty, as well as some complexity, which is especially perceived by participants who unconsciously compare COST Actions to research projects. Hence, the nature of a COST Action may boost participants' engagement, motivation, commitment, and solution-orientation – key ingredients for success. However, it is in the hands of the Action MC to reap this potential, particularly through its leadership roles, which are key actors for unlocking the full potential of a network and enabling each single participant to grow around them. Issues such as the establishment of a common terminology in the area of the Action, defining a strategy to attract and to welcome new participants, and then to engage them, and establishing fair criteria for the selection of participants who will be reimbursed at a meeting are all part of the COST Action networking and collaboration activities.

In illustration of the significance of the Action and its results in the field, this booklet provides a useful account of the experience that the RESTORE Action leadership had in adopting a project management approach, to enable participation and to deal with the multi-faceted aspects of Action networking and collaboration successfully. COST Actions are not only projects, which are initiated, executed, and closed. They are lively communities. Thus, the success of a COST Action may be assessed in terms of scientific results, but also through the willingness and the capacity of its underlying community to continue beyond the timeframe of the Action. In this sense, the COST Action RESTORE is in the process of establishing the sustainability of its community, so as to continue making further contributions towards a regenerative future.

PROJECT MANAGEMENT COMPETENCIES ARE CRUCIAL FOR OUR ECONOMY

Max Panaro
President of IPMA Italy[2]

In this day and age, most of the workforce are required to have the necessary work skills "for projects" to function in efficient and effective ways. This booklet can be seen as a tool that responds precisely to that need. It is easily understood that we would not want a journalist to operate on us at hospital any more than we might wish a bartender to pilot our plane. It is evident that we establish different requirements for skills and competencies as a function of the activity, although we may sometimes be much more lenient when assessing the skills that are needed to perform certain activities and should be prepared to shoulder the consequences.

It is relevant to draw attention to the level of diffusion of work "for projects" in developed economies and, at the same time, to consider the intrinsic lack of both training and skills in the field of project management. This asymmetry leads to lower-than-expected results in a large number of cases and to a sub-optimal allocation of resources. We are facing an enormous loss of opportunities at the level of the overall system, yet insufficient awareness still prevails - and any consequent reaction is not forthcoming.

The macrotrend of "projectification" has been analysed in various research works, highlighting how the share of economic activities that take place in a project context is now above 30% of GDP in the various national economies under consideration. It is common knowledge that the working context has undergone a transformation, from the previous repetitive functional logic to an interconnected and multifunctional ecosystem that works for projects and programs. In 2022, a total of 42% of all working hours within several European countries is expected to take place within the context of projects, and nowhere will this transition from functional to project activities be implemented with greater speed than in the public sector where the time devoted to project work is expected to double.

At the same time, training courses centred on building specific project management competences are in short supply and trainees who have gained a certification for their project management skills number less than one in a thousand. Even if robust studies that demonstrate a correlation between PM certification and project results are not yet available, it is hardly questionable that working on projects involves the use of specific methods and skills, both at a personal and at an organizational level.

A recent study on the Engineering and Construction sector[3] reported the top ten reasons that clients used to explain negative impacts on productivity in the sectors where "projectification" is prevalent, among which "poor project management and execution basics" headed the list. Hardly surprising, therefore, that a significant number of projects never achieved their set objectives in terms of time, cost, and quality of results. According to some research from Ernst & Young on 365 megaprojects, 64% failed cost targets and 73% overran their completion dates. So, the overall cost of this widespread lack of project management skills has a disruptive impact on our economy.

If robust project management expertise could improve project performance by just one percentage point (lower extra costs, compliance with deadlines, better allocation of resources), its impact on the overall GDP of the European economic system could be in the range of several billion Euros. These resources could be re-invested in better services to citizens and lower taxes. A reflection that is intended to engage the

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2 IPMA Italy emerged from the Project Management Section of ANIMP (National Association of Industrial Plant Engineering), the Member Association of IPMA® (International Project Management Association) in representation of Italy. Since 2000, ANIMP has had the exclusive right to issue professional certifications of Project Managers in Italy, according to the IPMA methodology.

3 McKinsey Global Institute, 'Reinventing construction: A route to higher productivity'. (2017).

various stakeholders, to move beyond their discussion on the “bartender in the pilot seat” or the surgeon’s qualification, so that project management skills may be collectively acknowledged as key factors for our economy. It is not enough – although it may be advisable - for the Project Manager or the executive to hold qualifications, but in this day and age, we are required to ensure that the majority of the workforce have the tools that are necessary to work efficiently and effectively on projects.

If 42% of work hours are dedicated to project work, then this booklet is a tool for everybody who has clearly foreseen the mega-trend of “projectification” and who wants to be prepared for the coming transition. Those who invest today in the 28 elements of ICB4 competence[4] will have an assured return.

4 IPMA Individual Competence Baseline®, ICB version 4 https://www.ipma.world/individuals/standard/

2 EXECUTIVE SUMMARY

Carlo Battisti *and* ***Martin Brown***

This publication has a two-fold aim: to summarize the main results from the COST Action **CA16114 REthinking Sustainability TOwards a Regenerative Economy** (**RESTORE**, 2017-2021); and, to provide some insight into the project management strategies that are in place for our team, thereby ensuring that the Action will be properly and successfully developed.

We hope these insights will be helpful for other colleagues involved in either current or future COST network Actions, and in general for professionals dealing with international research projects and initiatives that typically involve a large number of scholars and practitioners from different fields and expertise.

COST is the longest-running European framework supporting trans-national cooperation between researchers, engineers and scholars throughout Europe. The RESTORE Action is working for a paradigm shift towards restorative sustainability for new and existing buildings and space design across Europe, through active lobbying and mentoring, as well as through working groups, training schools and Short-Term Scientific Missions (STSMs), advancing the sustainability of restorative built-environment sustainability.

While COST already provides several useful publications on rules to apply to COST Actions and for their implementation, a publication on 'how to' manage a COST Action from the perspective of the practitioner is of interest and a very much needed initiative. There is no presumption to think that mistakes never happened along the way; on the contrary, we 'learned by doing' – this was the first COST Action for most of our participants, including the editors of this booklet – and we are happy to share some experiences and tips based on our journey of over four years. An Action including mostly academics … managed by non-academics, with a project management background (a distinctive element for a successful project…?).

Recalling the first time we learnt of COST and, in 2017, decided to respond to a COST call with a proposal to advance our vision of sustainability as progress for the built environment, we had in mind from the very beginning that we were immersing ourselves in a process that could turn out to be a complex endeavour. When weighing similar initiatives that fall under the 'research projects' category, the results are often uncertain, for the simple reason that researchers address scientific topics with the intention of developing new concepts and frameworks, unaware of how successful or otherwise they might turn out to be.

Following the definition of the International Project Management Association[5] (IPMA), a project is a *"unique, temporary, multi-disciplinary and organized endeavour to realise agreed deliverables within predefined requirements and constraints. Achievement of project objective requires these deliverables to conform to specific requirements, including multiple constraints such as time, cost, resources and quality standards or requirements.".* In so far as the Project Management Institute[6] (PMI) states that "*Project management is the process of leading the work of a team to achieve goals and meet success criteria at a specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints."* This approach includes a spectrum of competences that is even more important when the uncertainty of the expected results is, as with a scientific research project, a foregone conclusion, unlike for instance other sectors, where the outcomes are known and reliance is on standardized processes and techniques (*e.g.*, the built environment).

In this publication we will firstly provide an overview of what the RESTORE Action is, its challenge, main goals, structure, and main tasks, following the process from the first unsuccessful application to a COST call, to the approval of a second application to develop a 4-year project. A broad spectrum of competences and expertise from a network of over 160 participants from forty countries, mostly in Europe, has been

5 https://www.ipma.world/

6 https://www.pmi.org/

engaged in different tasks structured into five Work Packages (WP) that employed several networking tools, provided through financial, technical, and administrative support from the COST Association.

We will explore in greater detail how we addressed RESTORE, using an internationally recognized Project Management methodology (the IPMA Competence Baseline[7]), and we will describe how we aligned our approach with the main competences this framework contains and with the support of techniques, tools and documents.

The voices of RESTORE active members will reflect their impressions and insights on the experience they lived within a COST Action.

Ambitiously advancing a concept of 'restorative' and 'regenerative' sustainability for the built environment, we were aware that an Action that was to involve so many members traveling to and fro across Europe to work together and to share their results might be of great impact. Hence, we developed a policy aiming to reduce and to offset our impact on the environment, so that RESTORE could be the first carbon-neutral research consortium. At the time of writing this booklet, this initiative continues, and our intention has always been to accomplish this challenging task within the timeframe of the Action.

RESTORE has seen some great experiences, milestones of achievement, opportunities to explore, although it has also gone astray, as might happen when addressing a new project. However, we have done our best to manage all the aspects, sometimes finding what we thought were brilliant outcomes or at least achievements that deserve to be shared, if only to see whether others thought likewise.

We have learned a lot as individuals and, importantly, as a temporary community of practice that a COST Action is *de facto*, and we can offer some tips arising from this experience that we hope might be useful for other COST Action participants.

We will summarize RESTORE and its main results and its accomplishments, which are in line with targets that we had defined in the initial proposal and even at times exceeded, and which would have been impossible without the additional budgetary allocations that the COST Association guaranteed throughout our Action.

As with every project, there is the need and often an aim to understand how the effect and the positive results arising from this experience (with an active network as perhaps the first and foremost outcome) can be prolonged and how further debate can be stimulated. This subject completes the booklet, the final chapter of our RESTORE 'legacy'. What happens upon completion of our Action and rather than simply ending the story there will depend upon how we carry this conclusion forward with the purpose of something new arising, rather than simply arriving at the end of a story.

We would like to thank all our RESTORE members, the COST Association, our Scientific and Administrative COST Officers (Estelle Emeriau, Giuseppe Lugano, Aranzazu Sanchez, and Katchamon Nimprang) for helping us make it possible. We did it! A huge vote of thanks to all of you for this amazing experience.

7 https://www.ipma.world/individuals/standard/

3 THE RESTORE ACTION

AUTHORS
Carlo Battisti and Martin Brown

WHAT IS COST?

COST[8] (European Cooperation in Science and Technology) is a funding organization for research and innovation networks. COST is the longest-running European framework supporting trans-national cooperation between researchers, engineers and scholars across Europe.

It is a unique forum for them to develop their own ideas and new joint initiatives across all scientific and technological fields, including social sciences and humanities, through pan-European networking of nationally funded research activities. Based on a European intergovernmental framework for cooperation in science and technology, COST has been contributing – since its creation in 1971 – to closing the gap between science, policy makers and society throughout Europe and beyond. As a precursor of advanced multidisciplinary research, COST is playing a key role within the European Research Area (ERA).

Its activities anticipate and complement the activities of the EU Framework Programmes, constituting a "bridge" to networking with the scientific communities from COST Inclusiveness Target Countries. It also increases the mobility of researchers throughout Europe and fosters the establishment of scientific excellence.

A new organization has replaced the former science organization, which was structured into nine science and technology domains, that aims to guarantee a fully open and bottom-up approach through the establishment of a single Scientific Committee. This also includes a renewed evaluation and selection procedure aiming at identifying breakthrough ideas and favouring interdisciplinary and multidisciplinary projects.

WHAT IS RESTORE?

The first RESTORE[9] proposal – drafted between Carlo Battisti, Martin Brown and Emanuele Naboni – was presented to the COST Open Call Collection OC-2015-2, but unfortunately fell short of the high standards required of COST. Following the helpful assessment and comments on that1st proposal from COST, we decided to review possible improvements before reapplying to the subsequent Open Call for submission before 25 April 2016 (OC-2016-1). In this second call, COST positively approved the proposal, with a global rating of 62/65 points (95%), subdivided into 24/25 points for the 'soundness of the challenge', 19/20 points on 'impact' and 19/20 points on implementation.

8 https://www.cost.eu/

9 https://www.eurestore.eu/

Fig. 3-1: Applying for a COST Action [image: www.cost.eu/].

The following outlines the key points of our proposal:

Scientific Scope
- Areas of Expertise: Sustainable engineering, adaptation to long-term environmental changes; Sustainability; Environmental impact, Life-Cycle Assessment.
- Keywords: restorative sustainability; restorative design processes-methods-tools; climate change; health and well-being; sustainable urban development.

COST Countries involved
- Main Proposer: Italy.
- Network of Proposers (16 countries – ITC: 31%): Austria; Belgium; Denmark; Germany; Hungary; Italy; Latvia; Netherlands; Norway; Poland; Romania; Slovenia; Spain; Sweden; Switzerland; United Kingdom.

International Cooperation
- Near Neighbour Country (NNC): Albania.
- International Partner Country (IPC): United States.

Industrial Dimension
- SMEs: 10.

Total Proposers: 33 - Women: 58%/Men: 42% - Early Career Investigators: 28

COST ACTION CA16114 RESTORE RETHINKING SUSTAINABILITY TOWARDS A REGENERATIVE ECONOMY[10]

The RESTORE COST Action will support a shift of paradigm towards restorative sustainability for new and existing buildings and space design across Europe. Despite over a decade of built-environment sustainability strategies and programmes, all based on climate change targets to limit global warming to well below 2° C, none of those projects have meaningfully addressed key sustainability issues. The Paris 2015 Agreement pursued a global warming limit of 1.5° C; the luxury of a sector that is somehow incrementally less worse off no longer applies: it requires an urgent shift to net-positive, restorative sustainability thinking.

The built environment is a pivotal part of the climate change problem, due to its heavy consumption of energy, water and carbon estimated at 40%, as well as its waste production levels. It is also key to climate change solutions, not only reducing but also creating net positive impacts. Research is for example demonstrating that the built environment accounts for 12% of all water resources, 39% of all CO_2 emissions, 65% of all waste, 71% of total energy consumption. Green building could potentially bring improvements estimated at energy savings of 24-50%, reduced CO_2 emissions of 33-39%, 40% less usage of water and 70% less waste.

Sustainability (1) (see definitions below) in buildings and cities, as it is understood and practiced today in the vast majority of projects, is now recognized as an inadequate measure for current and future building design, because it merely aims at buildings that are “less bad”. Alternatively, a Restorative approach (2) to the built environment (3) has enormous and as yet unexplored potential for better improvements. Although the impacts need to be addressed through positive technical actions, there are multiple qualitative perspectives that are poorly considered within both the built environment and European regulatory frameworks.

Thus, the RESTORE action set out to expand a narrow focus within the built-environment sustainability agenda on the energetic performance of buildings, mitigation strategies and restrictions on environmental impacts. It is moving towards a broader framework that regenerates places (4) and enriches people, ecology, culture and climate at the core of design, construction and operational activities with a particular emphasis on such concepts as health, biophilia (5) and links to the natural ecosystem.

The RESTORE Action has specifically addressed the complexity of quantitative and qualitative thinking across a broader range throughout its actions, seeking opportunities and innovations that will enable multi-scale (‘scale jumping’) (6) thinking from the human microscale to the building/space mesoscale of city and ecosystem dimensions. A mixed network of researchers, built-environment practitioners, green-building consultants and agencies will enable the feasibility of this multi-scale thinking approach. The multidisciplinary effectiveness of this scientific, design-based approach is achieved by involving expertise drawn from ecology, economy, sociology, design and planning, construction, human health and wellbeing, design, mechanical engineering and the manufacturing of materials.

The RESTORE COST action will investigate how a new focus on the sustainable built environment can be a driving force for changing the *status quo* of current practice beyond legislation and client requirements. Sustainability targets are becoming broader and deeper, forcing designers to embrace forward thinking, so that they can access and implement multidisciplinary knowledge, and multiple tools that simulate dynamic and complex future scenarios.

10 Our RESTORE proposal included the contents described in this section.

The RESTORE COST action has been advocating, mentoring, and influencing restorative built-environment sustainability through working groups, training schools (including instructional design competitions) and Short-Term Scientific Missions (STSMs).

Key Definitions:

(1) *Sustainability*: defined as seeking to limit damage caused to socio-economic and ecological systems.
(2) *Restorative Sustainability*: defined as restoring the capability of socio-economic and ecological systems to a healthy state.
(3) *Built Environment*: a collective description for the design, construction and operation of building, infrastructure and related projects.
(4) *Regenerative Sustainability*: defined as regenerating relationships so that socio-economic and ecological systems thrive and continuously evolve.
(5) *Biophilic Design*: defined as design that improves health through a connection with nature. (biophilia - "our innate relationship with nature").
(6) *Scale Jumping*: defined as the potential for sustainability solutions to be implemented at a scale beyond individual building projects:

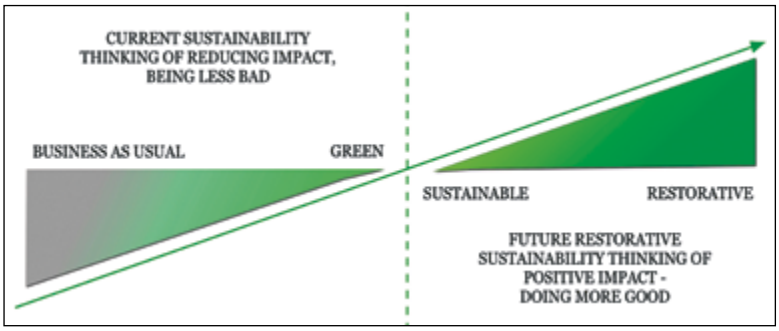


Fig. 3-2: From 'less bad' to 'more good' and how these concepts evolved from the beginning (first picture) to the end of the Action (second picture), including the transition from 'restorative' to 'regenerative'.

RESEARCH COORDINATION OBJECTIVES

The RESTORE Action addresses the creation, advocacy, dissemination and implementation of research evidence that can inform restorative sustainability practice within the built environment on health, wellbeing, energy, resource use, biophilia and it links in with ecosystems on multiple scales.

The aims of the RESTORE Action are as follows:
- To increase knowledge, collaboration and timely knowledge transfer between research centres, universities, training centres, companies, NGOs, and industry sectors related to the built environment.
- The pre-development of new compulsory design approaches, processes and technologies that can build and improve upon existing best practice.
- The creation and reinforcement of a European network of skilled professionals (architects, engineers, constructors, urban planners, academics, sustainability practitioners, *etc.*) capable of facing up to the complexity of a broader agenda of environmental strategies.
- Fostering continued collaboration beyond the completion of the RESTORE action. The network members are change agents.
- The inclusion of Restorative sustainability criteria within education curricula, thus preparing subsequent generations of building practitioners.
- Stimulate a major academic research focus on Restorative approaches to design; founded on multidisciplinary research collaborations.

The RESTORE Action, through its working groups will focus on Restorative Sustainability, progressing from 'business-as-usual' built-environment sustainability to a pathway towards Regenerative Sustainability.

CAPACITY-BUILDING OBJECTIVES

The RESTORE Action capacity building objectives are to:
- Facilitate sharing potential knowledge on restorative sustainability perspectives that include place, energy, water, waste, resources, health, equity and education.
- Increase and enhance knowledge and strengthen collaboration between research centres, universities, education entities, companies, NGOs and industrial sectors related to the built environment.
- Advance awareness and implementation of new approaches to required practice, methods and technologies that build and improve upon existing best practice.
- The creation and the reinforcement of a network of professionals (architects, engineers, constructors, urban planners, *etc.*) capable of tackling emergent environmental challenges.
- Foster continued collaboration beyond the completion of this action.
- The preparation of H2020 applications.

PROGRESS BEYOND THE STATE-OF-THE-ART AND INNOVATION POTENTIAL

The evidence of climate change, and its effects on legislative requirements and market demands, has moved the sustainability agenda on to an important core position. However, although every professional involved with the built-environment sector openly embraces sustainability as the primary driver of professional ethos, restorative sustainability has been achieved on a disappointingly small scale. Efforts can be further encumbered by energy and environmental targets legislated under building codes, which in their negotiation between ambitions and market readiness often switch by default to the latter. Both EU Regula-

tion and Voluntary Certification Systems focus on limiting damage to the environment with scarce little attention on regenerative and restorative design. Today there is an increasing, yet limited number of Restorative projects within and beyond Europe. Some of the projects are intended to be demonstrational. (The Bullitt Center, USA; The EAU Enterprise Centre, UK; The UBC CIRS Building, Canada; The Edge, Amsterdam; Geelen Counterflow, Netherlands: Snøhetta's Powerhouse Kjørbo, Oslo).
(RESTORE) will also review lessons learnt from the emerging sustainability standards that are based on ecological, social and equitable restorative and regenerative philosophies and advocacy. Some of these standards adopt a back-casting approach that envisions a desired future and then back casts the actions that are required for its achievement. (Examples of these standards include The Natural Step, Living Building Challenge, WELL Building Standard, One Planet Living and Planet Mark). State-of-the-art reviews will therefore inform a new set of parameters that describe the higher levels of performance needed in the built environment of the future, and in doing so will provide guidance, examples and an active and engaged community of experts and practitioners to deliver new models.[11]

The RESTORE Action will:
- Acknowledge and disseminate the paradigm shift required to move from energy-centric sustainability thinking to human and ecosystem-based sustainability.
- Create the bases for academic research within the field of restorative design.
- Enable practitioners to integrate the processes, methods, and tools for the implementation of Regenerative Design.
- Create the foundations of evidence-based Regenerative design while negotiating through the constraints and opportunities of standards and regulations.
- Equip educators to influence architecture students at the early stages of their professional career.

The RESTORE network will:
- Promote a wider definition of sustainable design in practice, relating to the development, testing and implementation of restorative sustainable solutions.
- Encourage practitioners to think beyond the boundaries of their professional specializations, through multidisciplinary collaboration to enable effective communication between all actors involved at all stages of the design, construction, and operation of buildings.
- Draw in expertise from other scientific domains such as ecology, geography, biology, physiology, and psychology.
- Share knowledge as it develops and evolves.
- Encourage adoption of integrated strategies, processes, methods, and tools of sustainable design.

The RESTORE network will explore:
- The new challenges facing the built environment. Today, the "reduce, reuse, recycle" and "building green" paradigms, together with the limitations on environmental impacts and the implementation of mitigation strategies, only partially capture the drivers of current and future design challenges.
- The climate change impact on and of the built environment, the creation of rich ecosystems, the prioritization of human health and well-being, user-friendly building operation strategies, and up-cycling of construction products are the next generation of design targets and represent a radical shift from the energy-driven and carbon-centred notion of sustainability that, for many years, has been the exclusive remit of mechanical engineers and environmental consultants.
- The opportunity for positive ecosystem regeneration through design and building operations. The building industry is being called upon to fully embrace advanced research that supports new targets, expanding design scenarios and exploiting traditional and innovative processes, methods, and tools to conceive, develop, test, and implement innovative solutions that celebrate the richness of design creativity and user comfort that is in harmony with the enrichment of urban and natural ecosystems.

11 See RESTORE final publications for further reference https://www.eurestore.eu/publications-and-articles/

THE ADDED VALUE OF NETWORKING

Across the EU, the network envisions an emerging perspective on sustainability within the built-environment sector. This perspective departs from current building practice that equates sustainable with "less bad" and moves towards a philosophy that argues in favour of buildings and cities that can actively benefit the environment. This emerging perspective is, at present, limited to a few pockets of practitioners and researchers (some within and some outside the network) promoting that theory and its associated research lines. By sharing, developing and promoting awareness of a new restorative sustainability perspective through networking and related activities, the RESTORE network will:

- add value and synergy, and enable progress towards a sector that is socially just, ecologically restorative and culturally rich;
- be socially equitable, improving its salutogenic and biophilic health focus of benefit to the wellbeing of every individual and advancing energy solutions to eliminate resource dependence and fuel poverty;
- be ecologically restorative, improving the relationship between buildings and the environment, with benefits such as increased biodiversity within the places where we live and work;
- be culturally enriching, facilitating new growth within the deep green build sector, for a market with estimated growth rates of 22% per annum;
- encourage "Thinking Differently" from established built-environment practices and working methods – fostering a responsible collaborative, lean and sustainable building sector;
- investigate the possibility of integrating unexplored opportunities within the built environment (*e.g.*, food production appropriate both for the scale and the density of buildings);
- Identify scale jumping for restorative sustainability from the building level to the community and at the level of smart cities (focus of Working Group 5).

Fig. 3-3: Network of RESTORE participants.

The RESTORE Action will:

- Address, develop and promote the embryonic efforts to advance restorative sustainability now in existence or that are emerging within the EU, for example in Italy, Romania, Sweden and the UK. The activities taking place at a European level are generally based on a top-down approach: EU regulations and directives, addressing the topics of sustainability, energy efficiency and reduced resource consumption, R&D projects financed with EU funds, technical harmonization through the European Committee for Standardization (CEN), subsequently implemented at a national level.
- RESTORE will address a bottom-up approach, working to implement new policies at regional and local levels through a radical change with respect to culture and practices. Furthermore, the aim is to implement R&D projects addressing the themes of RESTORE's work packages, to integrate RESTORE's best practice within scientific development.
- In addition, the RESTORE Proposal will address, develop, and promote the embryonic and emerging restorative sustainability efforts internationally, for example, those developed and tested in the USA, Canada, Australia, and New Zealand and in early stages within the EU. In these cases, a strong emergent development of rating systems and tools for sustainability has taken place in recent years, addressing the lack of standards regulating or promoting restorative sustainability at a national level. The RESTORE Proposal aims to benefit from global best practices and policies specifically addressing restorative sustainability development in the EU.

RESTORE'S STRUCTURE

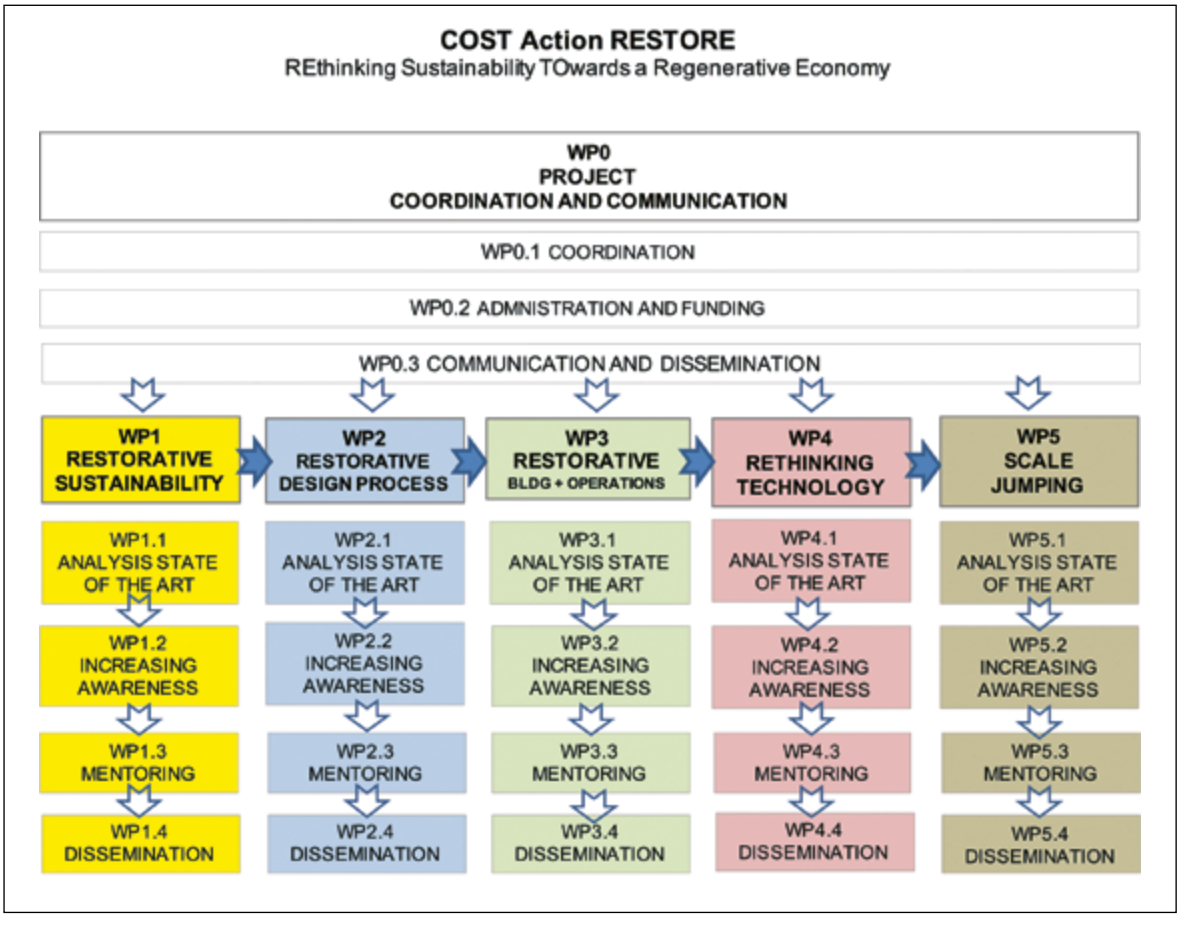


Fig. 3-4: RESTORE Work breakdown structure (WBS).

WG0. PROJECT COORDINATION AND COMMUNICATION	
The general coordination, administration and communications activities of the project. It includes the Management Committee (MC) members. See the following work plan for the main tasks and their schedules.	
Objectives	Project coordination and communication. Development and coordination of information database and communication channels.
Methods	Coordination, administration and funding, communication, and dissemination.
Activities	Project management, project administration and finance, fundraising, project communication, project dissemination.
List of major deliverables	Short term: Project management reports (progress reports, *etc.*), accounting reports (Intermediate Financial Report, *etc.*), grant application, website, mid-programme conference, collated output, and results from restorative sustainability STSM, decision to end the RESTORE Action, definition of final report content.
	Long term: Curation of the "Atlas of Solutions" (described in section 2.2.2), a catalogue of solutions that facilitate the creation of restorative buildings. Development and promotion of final conference, reports and booklet.
Topics include:	Coordination, Communication, Output Management and Wrapping Up.

WG1. RESTORATIVE SUSTAINABILITY	
The Evolving Agenda of Restorative Design introduces a kaleidoscope of paradigms, design challenges, opportunities, and perspectives for sustainable architecture and urban design. It discusses the knowledge, skills and competence that should inform and orient the shift in practice required by an approach to architecture informed by restorative sustainability.	
Objectives	Define the influence of the built environment as a contributory cause/factor and potential solution to address climate change.
Methods	Analysis of the state-of-the-art, increasing awareness, mentoring of practitioners and professionals and dissemination.
Activities	New paradigm definition + gap analysis, short-term scientific missions, training school, events, and papers.
List of major deliverables	Short term: State of the art + new paradigm report, STSM reports, design competition, conference presentations and articles.
	Long term: Produce training materials, contribute to the "Atlas of Solutions" (described under 2.2.2), a catalogue of solutions that facilitate the creation of restorative buildings, University curricula (Undergraduate/Postgraduate/Masters/Doctorates).
Topics include:	Ecology (soils, carbon, nature), Place, Bio-Climate, Health, Energy, Water, Equity and Education.

WG2. RESTORATIVE DESIGN PROCESS	
Processes, Methods and Tools for Restorative Design. Primarily based on case studies derived from workshops, it constitutes the core of the action and is intended to provide "hands-on" guidance for restorative design practice.	
Objectives	Design process analysis, solutions, and implementation.
Methods	Analysis of the state-of-the-art, increasing awareness, mentoring of practitioners and professionals, dissemination, Review of existing standards and networks in respect of restorative sustainability approaches and development, Gap analysis, short-term scientific missions, training school, events, and papers.
Activities	New paradigm definition + gap analysis, short-term scientific missions, training school, events, and papers.
List of major deliverables	Short term: State of the art + new paradigm report, Short-Term Scientific Mission (STSM) reports, design competition, conference presentations, and articles.
	Long term: Produce training materials, contribute to the "Atlas of Solutions" (described under 2.2.2), a catalogue of solutions that facilitate the creation of restorative buildings, University curricula (Undergraduates/Postgraduates/Masters/Doctorates).
Topics include:	Biophilic Design, Bio-Climate Design, Cradle-to-Cradle, Design for Deconstruction, Circular Economy.

WG3. RESTORATIVE BUILDING AND OPERATIONS	
Impact and innovations for a restorative approach to construction and operations (facilities management).	
Objectives	Regenerative building analysis, solutions, and implementation.
Methods	Analysis of the state-of-the-art, existing, and former network efforts, Review of existing standards in respect of restorative sustainability approaches and development.
Activities	New paradigm definition + gap analysis, STSMs, training schools, events and papers.
List of major deliverables	Short term: State of the art + new paradigm report, STSM reports, design competition, conference presentations and articles.
	Long term: Produce training materials, contribute to the "Atlas of Solutions" (described in section 2.2.2), a catalogue of solutions that facilitate the creation of restorative buildings. University curricula (Undergraduates/Postgraduates/Masters/Doctorates).
Topics include:	Lean construction, Zero Waste, Material Conservation, Modern Methods of Construction.

WG4. RETHINKING TECHNOLOGY	
Impact and influence of built-environment technologies for a restorative sector.	
Objectives	This working group will explore the potential for further implementation of such interactive systems and technologies in new and existing buildings.
Methods	Analysis of the state-of-the-art, increasing awareness, mentoring of practitioners and professionals, dissemination.
Activities	New paradigm definition + gap analysis, short-term scientific missions, training school, events, papers
List of major deliverables	Short term: State of the art + new paradigm report, short-term scientific missions, training school, events, and papers.
	Long term: Produce training materials, contribute to the "Atlas of Solutions" (described in section 2.2.2), a catalogue of solutions that facilitate the creation of restorative buildings.
Topics include:	Information Management, Digital, Smart (Buildings, Cities), Production (3D), Nanotechnology, Transportation, Communications and Social Media (restorative education and learning).

WG5. SCALE JUMPING	
Thinking beyond the building, identifying scale jumping potentials to neighbourhood and city level sustainability.	
Objectives	This working group will explore scale-jumping potentials including analysis, solutions, and implementation.
Methods	Analysis of the state-of-the-art, increasing awareness, mentoring of practitioners and professionals, dissemination.
Activities	New paradigm definition + gap analysis, short-term scientific missions, training school, events, and papers.
List of major deliverables	Short term: State of the art + new paradigm report, short-term scientific missions, training school, events, and papers.
	Long term: Produce training materials, contribute to the "Atlas of Solutions" (described in section 2.2.2), a catalogue of solutions that facilitate the creation of restorative buildings.
Topics include:	Building as Clusters, Buildings as nodes in Nano and Micro Grids (energy, water, transport, communications), Neighbourhoods, Smart and Eco Cities.

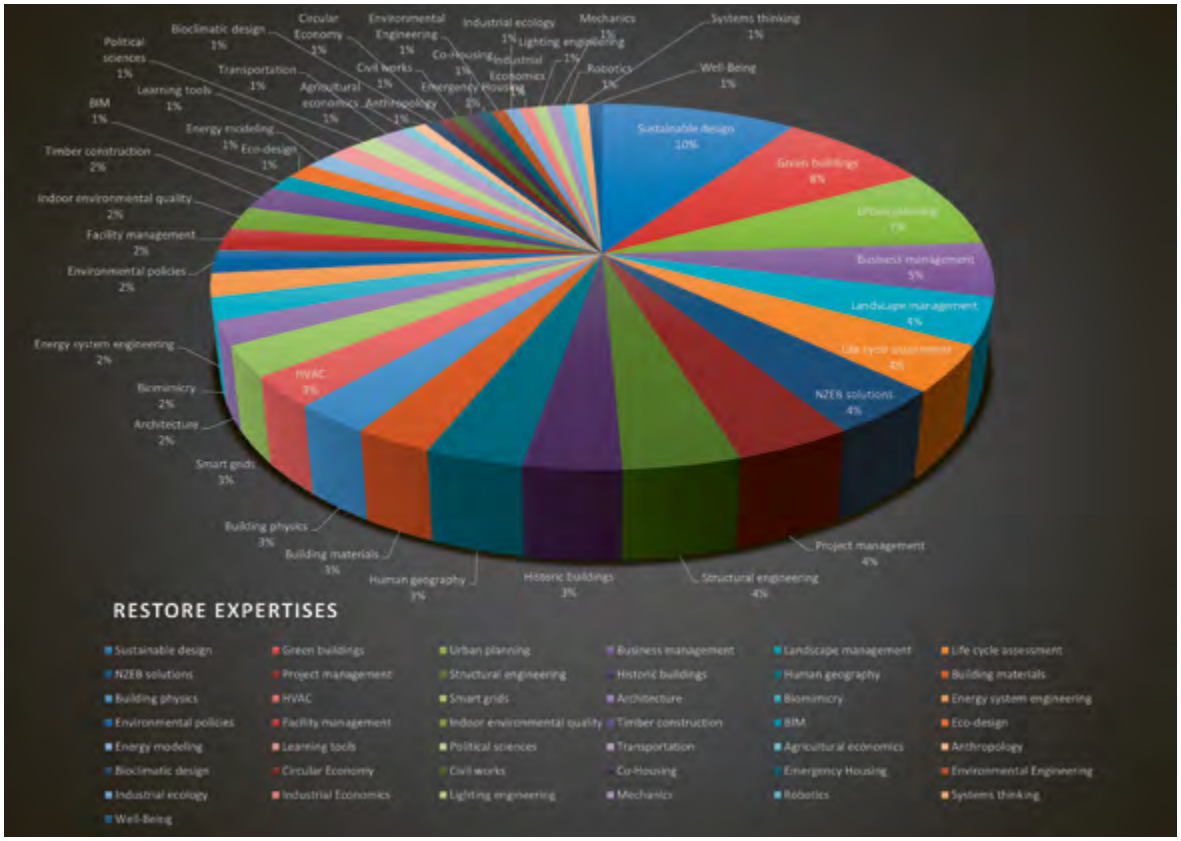


Fig. 3-5: Expertise of RESTORE participants.

CHRONOLOGICAL PRESENTATION OF RESTORE ACTIVITIES AND OUTPUTS[12]

Management Committee (Kick-off) meeting	MC Meeting	9 March 2017	Brussels (Belgium)
WG0+WG1+WG2 Meeting	WG meeting	30-31 May 2017	Faro (Portugal)
The Use of Life Cycle Assessment in the Design Process of Restorative Heritage Refurbishment	STSM	17 July – 11 November 2017	Bolzano (Italy)
A Biophilic Mindset for Restorative Buildings	STSM	11 September – 13 October 2017	Faro (Portugal)
Traces of upcycling and low-budget design in the public space of Faro	STSM	1 October – 1 November 2017	Faro (Portugal)
WG1+WG2 meeting	WG meeting	4-5 October 2017	Sofia (Bulgaria)

12 The lengthy preparatory work between the approval of our proposal by the COST Committee of Senior Officials (October 2016) and the kick-off meeting, including a Welcome to COST - Preparatory Workshop for Main Proposers organised by the COST Association in February 2017 is not included in this list.

Outdoor Space Comfort Perception in University Campuses	STSM	11-25 November 2017	Copenhagen (Denmark)
WP1 Training School	Training School	14-17 November 2017	Lancaster (United Kingdom)
Influencing factors & frameworks for Restorative Sustainability	STSM	5-23 February 2018	Auckland (New Zealand)
Management Committee meeting	MC Meeting	13 February 2018	Budapest (Hungary)
Conference	Conference	13 February 2018	Budapest (Hungary)
WG0-2-3 meeting	WG meeting	22 March 2018	Eindhoven (The Netherlands)
Bringing Restorative and Living Buildings to Europe. The COST Action RESTORE.	Dissemination meeting	17-18 April 2018	Berlin (Germany)
WG0-1-2-3 meeting	WG meeting	26-27 April 2018	Malaga (Spain)
WG2-3 meeting	WG meeting	13-14 June 2018	Koper (Slovenia)
Integrative design processes: Towards a regenerative management for a design of regenerative buildings	STSM	6-31 August 2018	Barcelona (Spain)
Circular Economy towards Regenerative Structural Design	STSM	3 September – 30 November 2018	Brussels (Belgium)
WG3 Meeting	WG meeting	14 September 2018	Stuttgart (Germany)
Recording regenerative design in action	STSM	14-20 October 2018	Malaga (Spain)
WP2 Training school	Training School	15-19 October 2018	Malaga (Spain)
Urban Climate Adaptation in the Digital Practice	STSM	19 November 2018 – 31 January 2019	Singapore
H2020 activity state of play meeting	WG meeting	21 November 2018	Cluj-Napoca (Romania)
Green infrastructure in sustainable urban beach management	STSM	2 January – 5 February 2019	Seville (Spain)
Mainstreaming adaptation to climate change as a key dimension of urban regeneration	STSM	8 January – 12 February 2018	Venice (Italy)
WG3 Meeting	WG meeting	14 February 2019	Brussels (Belgium)
Green materials, perspective, and challenges	STSM	4-8 March 2019	Stockholm (Sweden)
WP3 Training school	Training School	11-14 March 2019	Bolzano (Italy)
Mid-term conference	Conference	14 March 2019	Bolzano (Italy)

Management Committee meeting	MC meeting	15 March 2019	Bolzano (Italy)
WG3-4 meeting	WG meeting	15 March 2019	Bolzano (Italy)
Indoor sound-scaping and natural ventilation for restorative buildings	STSM	23 March – 7 April 2019	New York City (USA)
WG3-WG4 Meeting	WG meeting	15-16 April 2019	Brussels (Belgium)
Dissemination meeting	Dissemination meeting	29-30 April 2019	Brussels (Belgium)
WG4 meeting	WG meeting	27-28 June 2019	Riga (Latvia)
Procedures for conducting POE (Post Occupancy Evaluation) campaigns, methods, protocols, and tools for data analysis	STSM	9 September – 2 November 2019	Brussels (Belgium)
Best practices to achieve operative Net Zero Performances	STSM	12-27 October 2019	Seattle (USA)
WG4 meeting	WG meeting	12 November 2019	Venice (Italy)
WP4 Training school	Training School	2-5 December 2019	Venice (Italy)
Comprehensive concrete recycling method as an eco-friendly aid for the environment and construction companies	STSM	3 January – 10 February 2020	Cordoba (Spain)
Regenerative wooden buildings in Europe: comparing Spain to other countries	STSM	6-31 January	Koper (Slovenia)
Vegetated roofs as regenerative tools for the mitigation of building energy consumption and the improvement of indoor comfort	STSM	8 January – 28 February 2020	Luxembourg
Innovative envelope for regenerative environment	STSM	19 January – 2 February 2020	Delft (The Netherlands)
WG4 Industry Workshop	Workshop	23 January 2020	Bolzano (Italy)
Rethinking technologies for working with fractals. Designing a new toolkit for restorative indoor environment	STSM	29 January – 29 February 2020	New York City (USA)
Controlled testing of low-cost IAQ sensors	STSM	10-21 February 2020	Lausanne (Switzerland)
WG4-5 meeting	WG meeting	13 February 2020	Limassol (Cyprus)
Management Committee meeting	MC meeting	14 February 2020	Limassol (Cyprus)
WP5 Training school	Training School	21-25 September 2020	Vienna (Austria)

Improving assessment tools for existing buildings to promote more ambitious and regenerative renovations of built environment	STSM	28 September – 20 December 2020	Turin (Italy)
Final Conference	Conference	3 December 2020	online
Management Committee meeting	MC meeting	4 December 2020	online
Scale jumping from energy efficiency to energy sufficiency: an overview of comfort concepts	STSM	24 February – 9 March 2021	Madrid (Spain)
Regenerative Design via Smart Cities Approaches	STSM	1-24 March 2021	Crete (Greece)
Scale Jumping towards 2030 Holistic Urban Living. Investigation of regenerative, inclusive, and socio-culturally sensitive planning approaches - case study of the 16th Viennese District.	STSM	8 March – 29 April 2021	Vienna (Austria)
RESTORE READY[13] event	Conference	12 March 2021	Athens (Greece)
Required social, environmental, and economical engagement to ensure scale-jumps toward regenerative sustainability	STSM	15-31 March 2021	Vienna (Austria)
RESTORE READY event	Conference	16 March 2021	Warsaw (Poland)
RESTORE READY event	Conference	19 March 2021	Paris (France)
RESTORE READY event	Conference	26 March 2021	Madrid (Spain)
Scale jump and success factors for a paradigm shift towards Regenerative Sustainability	STSM	1-15 April 2021	Pristina (Kosovo)
RESTORE READY event	Conference	9 April 2021	Belgrade (Serbia)
Innovative envelope for regenerative environment	STSM	15-29 April 2021	Delft (The Netherlands)
RESTORE READY event	Conference	16 April 2021	Malmö (Sweden)
RESTORE READY event	Conference	20 April 2021	Sabden (United Kingdom)

13 READY = REstore Action Dissemination Yield

4 MANAGING AN ACTION AS A PROJECT

AUTHOR
Carlo Battisti

THE CHANGING NATURE OF SCIENCE[14]

The nature of science has changed. It has become more interconnected, interdisciplinary, collaborative and data intensive. Collaboration has become critical to solving complex problems.
COST creates spaces where scientists are in the driving seat (bottom-up) and ideas grow through flexible and open approaches. By enabling researchers from academia, industry, the public and private sector to work together in open networks that transcend borders, COST helps to advance science, stimulates knowledge sharing and pools resources.
National governments make a real difference by ensuring that research cooperation optimizes national investments in research and technology, thereby unlocking the full potential of science.
COST (European Cooperation in Science and Technology) is a funding organization for research and innovation networks. COST Actions help connect research initiatives across Europe and beyond and enable researchers and innovators to nurture their ideas in any science and technology field by sharing them with their peers. COST Actions are bottom-up networks with a duration of four years that boost research, innovation, and careers.

WHAT ARE COST ACTIONS?

Since its inception, COST has operated according to one main instrument, the COST Action.

COST Action is a network dedicated to scientific collaboration, complementing national research funds. COST Actions are:

- open to researchers and innovators;
- collaborating in a field of science and technology of common interest to at least seven COST Members/ Cooperating Members;
- based on a joint work programme lasting four years;
- responding to the COST Open Call for proposals.

A COST Action is open to all:

- science and technology fields (including trans-, and interdisciplinary, new and emerging fields);
- institutions (academia, public institutions, SME/industry and NGO European/international organizations, *etc.*);
- career stages (both young and experienced);
- COST Members.

Non-COST Members are spread across the Near-Neighbour Countries and International Partner Countries and can join based on mutual benefit.
A COST Action is organized by a range of networking tools, such as meetings, conferences, workshops, short-term scientific missions, training schools, publications, and dissemination activities. Funding covers the cost of COST Action networking tools.
COST Actions can pave the way to or establish synergies with EU-funded research projects. Collaboration within research projects often lead to new Actions, thus enhancing the networking potential of research consortia.

14 https://www.cost.eu/

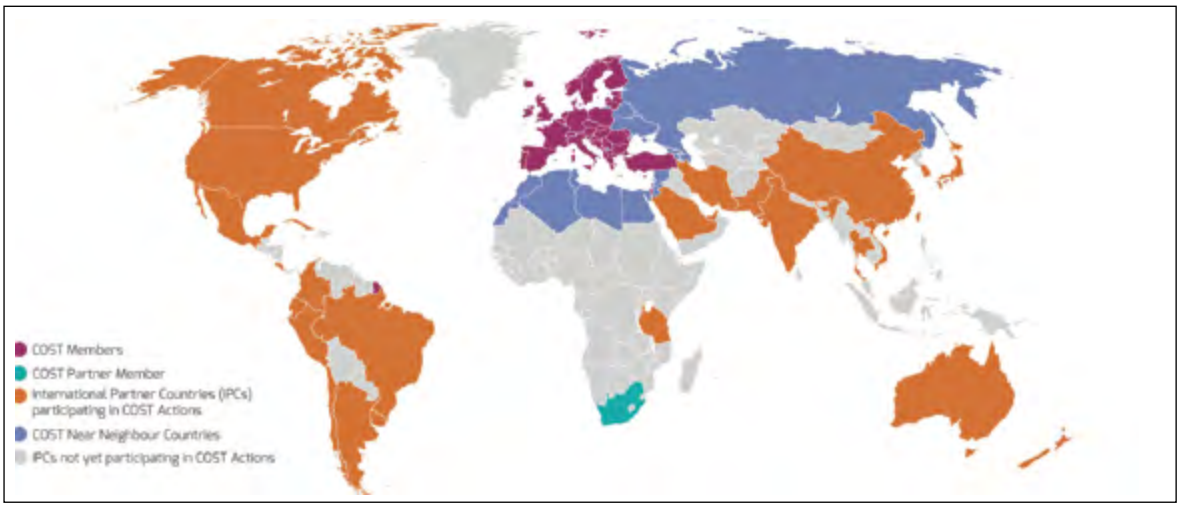


Fig. 4-1: The COST Network.

MANAGING A COST ACTION AS A PROJECT.

Managing a COST Action could represent a complex endeavour. The mission to accomplish the challenge behind the Action, a broad network of participants, most unacquainted with each other upon the submission of the proposal (participants from COST countries can apply and join the first group of proposers after the Action's Memorandum of Understanding (MoU) has been signed by their country), a grant budget to control, the technical difficulties behind the research tasks, expected timing and quality of results, accounting, reporting, *etc.* All these aspects, from the very beginning, helped us to understand the need to manage our Action through a robust project-management approach.

Fig. 4-2: Ingredients for project success.

When discussing project management, some frameworks and tools are already available and well known. The following is one internationally recognized example.

IPMA, INDIVIDUAL COMPETENCE BASELINE, VERSION 4.0 (IPMA ICB®)

The IPMA ICB[15] is a global standard that defines the competences required by individuals working in the fields of project, programme, and portfolio management. The IPMA ICB builds upon the prior editions and presents new insights and directions for a wider range of purposes. It serves a broad range of audiences, including educators, trainers, practitioners, Human Resource (HR) professionals and assessors. Within the IPMA 4-Level-Certification system, the IPMA ICB also serves as the baseline for assessments.

The IPMA ICB represents a major advance for successful and modern project, programme, and portfolio management. This version describes three domains of expertise in business practice today - project management, programme management and portfolio management. The IPMA ICB describes individuals who work in these domains, while avoiding role-specific terminology, because the underlying concept a role name remains valid, even though it may change.

The IPMA ICB takes the IPMA Eye of Competence into the next generation, with a redefinition of the Competence Elements (CEs) required by the modern project manager.
The 28 CEs are organized into three competence areas:

- *People*. People CEs define the personal and interpersonal competences required to succeed in projects, programme and portfolios (10 elements).
- *Practice*. Practice CEs define the technical aspects of managing projects, programmes, and portfolios (13 elements).
- *Perspective*. Perspective CEs define the contextual competences that must be navigated within and across the broader environment (5 elements).

The profession of project management has become a global profession. Organizations frequently engage in projects, programmes and portfolios across all organizational, regional, national and international borders.

Fig. 4-3: The IPMA Eye of Competence.

15 IPMA Individual Competence Baseline Version 4.0.1 – Project Management

Competence elements:

Perspective
- Strategy
- Governance, structure, and processes
- Compliance, standards, and regulations
- Power and interests
- Culture and values

People
- Self-reflection and self-management
- Personal integrity and reliability
- Personal communication
- Relationships and engagement
- Leadership
- Teamwork
- Conflict and crisis
- Resourcefulness
- Negotiation
- Results orientation

Practice
- Project design
- Requirements and objectives
- Scope
- Time
- Organization and information
- Quality
- Finance
- Resources
- Procurement
- Plan and control
- Risk and opportunities
- Stakeholder
- Change and transformation

HOW DID WE ADOPT THIS FRAMEWORK?

In the following table, we have summarized how we approached the RESTORE Action management, regarding the different competence elements described in the ICB standard, including the main tools that we implemented and used.

Competence elements	RESTORE approach	RESTORE tools
Perspective		
Strategy	We defined our vision and mission firstly in the Action proposal. We broke up its strategic goals into manageable elements.	Technical annex (Memorandum of Understanding - MoU) Critical Success Factors (CSFs) Key Performance Indicators (KPIs)
Governance, structure and processes	Since the kick-off meeting, we have established a governance structure, including: a project management office (PMO), a financial manager (Grant Holder manager), a communications manager, a human resources manager.	Organigram WG0[16]
Compliance, standards, and regulations	COST has a system[17] of rules, policies, documents and guidelines which form our main framework. Moreover, all main activities (from planning to reporting) are managed through an online platform (e-COST). Furthermore, we had to follow the internal rules (purchasing process, *etc.*) of Eurac Research, the Grant Holder institution. Finally, the safety measures deriving from the Covid-19 pandemics have added to the burden of constraints imposed upon RESTORE operations since March 2020.	COST Vademecum e-COST platform Guidelines for Action management, monitoring and final assessment Guidelines on communicating, disseminating and exploiting COST Action results and outcomes Financial reporting - External user guide
Power and interests	We often tried to detect the personal ambitions and the interests of our Action participants (especially Early Career Investigators - ECI), letting them understand how they might fit in with the accomplishment of Action tasks (informal power). We also directed interest towards the desired Action outcomes at an individual and group (Working Groups) level. The establishment of personal relationships has often been instrumental in influencing decisions.	Organigram with a formal structure in 5 working groups, and supporting offices (PM, GH management, Communication team, *etc.*)

16 WG0 was created to deal with the Action (project) management, including the Core Group of key figures. This is a pretty unique approach, looking at typical COST Actions.

17 https://www.cost.eu/funding/how-to-get-funding/documents-and-guidelines/

Competence elements	RESTORE approach	RESTORE tools
Culture and values	We worked to establish a common culture within our Action, starting from the 1st WP on 'Restorative Sustainability' where we explored, developed and defined a set of terms to define various levels of sustainability and the principles and values of Restore. Our continuous activities on social media have also been instrumental in keeping this sense of community alive, within a multi-cultural and multi-disciplinary environment. Finally, our focus was also on harmonizing our tasks and effects with the different cultures represented within a network of 160+ participants from 40 countries. Also considering our network as a temporary organization, this was the most challenging activity, which will hopefully continue. Restore participants will develop it further in each of their specific contexts.	Social media (Facebook, Twitter, website, LinkedIn, YouTube, SlideShare) Communication media (newsletters) CO_2 Restore strategy
People		
Self-reflection and self-management	Our purpose was to enable our colleagues participating in the Action to control and to direct their behaviour, by acknowledging their influence on the results of the Action. It was very demanding, given that a culture of project management was not in many cases within their personal skills. We have continuously been monitoring our members real engagement (participation in activities, producing outcomes, *etc.*).	Project management tools (Gantt, checklists, meeting minutes, *etc.*) Performance Management System (PMS) dashboard SMART[18] objectives
Personal integrity and reliability	Addressing the personal integrity of each person was not feasible, although we checked the alignment of each outcome with personal values and principles. Reliability has been evaluated more from the perspective of individual performance. A specific effort to move from a pyramidal structure to a horizontal network scheme has promoted the involvement of ECIs occupying apical positions, stimulating them to assume their responsibilities.	Peer reviews of the individual outcomes Sustainability frameworks

18 https://en.wikipedia.org/wiki/SMART_criteria

Competence elements	RESTORE approach	RESTORE tools
Personal communication	Open communication from participants has been widely promoted *e.g.*, alternating speakers at our events, and involving the greatest possible number of members in our outcomes (booklets, *etc.*). We set up some standardized documents (presentation templates, *etc.*) to facilitate communication while sharing a common approach. The new ways of communicating introduced during the Covid-19 pandemic (virtual teams, online meetings, events) facilitated and promoted open communication where all participants could provide their inputs freely. As a final comment, the atmosphere of the meetings was always relaxed and friendly, and humour often dissipated any stress.	Communication templates Events flyers Digital online communication platforms (Zoom, GoToMeeting, MS Teams)
Relationships and engagement	From the beginning, we understood the importance of establishing a good environment for relationships, both one-to-one and as a network. The multi-cultural, multi-disciplinary and international domain where a typical COST Action takes place enhances curiosity, openness, and empathy, thus facilitating this process. The importance of the social and environmental challenges behind Restore's mission acted as glue to consolidate a sense of community between members. We created a specific WhatsApp group for each event on social issues, making introductions, helping to navigate foreign cities, *etc.*	Restore social media (WhatsApp, *etc.*)
Leadership	Our purpose was to enable Restore individuals to lead and to assume ownership of a piece of the process, to increase personal and team performances. We developed and regularly updated a structure with Working Group (WG) leaders, vice-leaders, sub-group and task leaders, and other managers in key areas (Communication, Networking tools, Training, *etc.*). Moreover, country participation in a COST Action is also possible through a maximum number of Management Committee (MC) members, representing the country. This ensured many of the Restore members were actively managing a 'piece' of the project, which improved our network performance. We also always promoted a proactive approach from participants, which was extremely important considering the level of innovation required by the Action's challenge.	Emails Meeting minutes Working Groups (WG) and sub-groups

Competence elements	RESTORE approach	RESTORE tools
Teamwork	The core part of the Restore Action relies on teamwork (technical Working Groups, scientific publications, events management, *etc.*). The action network is multidisciplinary, with 160+ specialists in 40+ different disciplines, that had to work together to achieve complex outcomes. WG leaders, vice-leaders, *etc.* were typically responsible to overview their team's performances, while recurring meetings among Restore core people ensured the harmonization of global control and tasks.	WG Meetings Workshops Conferences Core Group (CG) meetings
Conflict and crisis	Managing a project with 160+ members, several goals, and expected outcomes inevitably meant that some points were addressed in a stressful atmosphere, with character conflicts and potentially dangerous situations undermining our teamwork.	No tools, in this case. Knowledge, skills, and abilities are needed. But we set up clear and honest communication channels.
Resourcefulness	We applied different techniques and ways of thinking to find alternatives and more effective solutions in dealing with challenges and problems to solve. We adopted creativity methods, system thinking, brainstorming techniques, *etc.*	Whiteboards Breakout rooms Mind maps
Negotiation	Our purpose was to enable our members to reach satisfactory agreements with others by using negotiation techniques.	Contract templates Legal provisions COST rules
Results orientation	From the very beginning and throughout the whole Action we have been focusing on the agreed outcomes, driving our members towards making the project a success.	Technical annex (MoU) List of deliverables (with milestones) Gantt chart with expected outcomes Meeting agendas
Practice		
Project design	The first design of the (Action) projects was further developed in the proposal submission phase. Then, it was further developed and enriched in the Action's start-up phase. We defined all main aspects (objectives, factors, and criteria) needed for successful project management. We identified and evaluated lessons learnt, to review our approach.	Action's proposal and MoU Meetings
Requirements and objectives	We have throughout the whole project been highlighting which goals were to be achieved, which benefits were to be realised, and which stakeholders' requirements (*e.g.*, COST Association rules) were to be fulfilled.	COST Vademecum and rules Technical annex (MoU) Website

Competence elements	RESTORE approach	RESTORE tools
Scope	The scope was clearly defined from the start – *'The RESTORE Action will affect a paradigm shift towards restorative sustainability for new and existing buildings across Europe'*. The outcomes (deliverables) and benefits and the work required to produce them (Work Packages – WP) were also clearly described and agreed between Action participants.	Technical annex (MoU) List of deliverables (with milestones) Work Breakdown Structure (WBS)
Time	Time is one of the main pillars of Project Management together with costs and quality. Starting with the project proposal, we planned and scheduled the activities needed to complete the project. Frequent checks (at least during Core Group meetings, *i.e.*, bi-weekly or every three weeks) were run at the WGs and global Action development level. In a few cases, we had to implement curative actions to recover some gaps, *e.g.*, adding resources to a WG or subgroup, running some tasks simultaneously, pushing our members to respect deadlines through reminders, intermediate checks *etc.*	WBS (General) Gantt chart with expected outcomes WP or single task Gantt chart
Organization and information	With the intention of ensuring correct, timely, and high-quality information, we established different levels of information and communication, for instance: we set up a Communications team, coordinated by a Science Communication Manager we set up an information and communications strategy addressed to our members, stakeholders, and external interested people we organized 5 training schools (each for each WP) we produced several articles, reports, booklets, and books we issued monthly newsletters we managed few social media we organized public events, *etc.*	Guidelines for the communication, dissemination and exploitation of COST Action results and outcomes WBS Social media Newsletters Mailing Events STSM Reports Scientific articles Booklets, books Training schools COST e-vote approvals

Competence elements	RESTORE approach	RESTORE tools
Quality	According to ICB4, quality in projects has two key drivers: the quality of the process, and the quality of the outputs and outcomes of the project. We have recurrently checked the quality of the process (verification) throughout its life cycle (during CG meetings, Management Committee[19] meetings – MCM, *etc.*) aiming to monitor, wherever applicable, the efficiency and the effectiveness of the Action and its development. The quality of the outputs has been checked in most instances with a peer-review system (for WP reports, articles, booklets and books, event presentations, *etc.*) based on our members. The quality of our outcomes was also submitted for evaluation to the COST Association, according to its own guidelines.	COST Vademecum and rules Rules for participation in and implementation of COST activities Technical annex (MoU) Recurring quality checks COST Action Progress Reports (due at 12, 24, 48 months) Editorial Committee (EC)
Finance	Following the COST rules, Eurac Research was approved by Restore members as the legal entity responsible for the administrative and financial implementation of the COST Action. Funds were provided by COST to cover all eligible expenses of the Action based on approved yearly work (first by the MC, and then COST) and budget plans. We recurrently reviewed these budgets (typically during CG calls and MCMs), checking sunken costs (already approved and paid out) and outstanding costs, to reallocate the underspent budget.	COST Vademecum and rules Guidelines for COST Action Management, Monitoring and Final Assessment COST Action Grant Agreement(s) Work and Budget (yearly) plans Recurring financial (budget) checks COST Action Yearly Financial Reports CG calls and MCMs COST e-vote approvals
Resources	People are crucial to a COST Action, based on collaboration between scientists across Europe (and beyond). At the beginning of the Action, we spent most of our time exploring the expertise (already on board or to be scouted) of our membership, to ensure a multi-disciplinary and holistic approach. With 160+ participants covering 40+ different key competences, the range of expertise was a key asset (see Figure 3-5). It was extremely helpful when approaching the structure of our Restore WGs and sub-tasks. The main roles have since been defined following the kick-off meeting. We launched internal calls, based on some requirements and assessment criteria, for other roles and specific tasks of importance to the Action	Chart of Restore expertise (PMS dashboard) Restore members CVs Organigram Calls and terms of reference COST e-vote approvals
Procurement	The procurement processes followed mainly COST rules and internal Eurac Research (the Grant Holder) procedures (*e.g.*, requests for quotes to at least 3 suppliers, assessment based on quality and price).	COST Vademecum and rules Eurac Research internal procurement rules Requests for proposals

19 https://www.cost.eu/actions/CA16114/#tabs|Name:management-committee

Competence elements	RESTORE approach	RESTORE tools
Plan and control	All elements of our Action came together in a balanced plan – the execution of which was controlled – mainly based on an 'enhanced' Gantt chart including WBS, expected outcomes, and other relevant information. We regularly reviewed and updated the plan, communicating its progress to our MC members.	(General) Gantt chart with expected outcomes List of deliverables (with milestones) Work Breakdown Structure (WBS)
Risk and opportunities	The main risks we anticipated included delays in the development of activities (conferences, workshops), insufficient level of quality for the deliverables (papers, books), lack of resources dedicated to the project by a partner (participation in STSMs), change of contact persons and/or project managers, and partner withdrawal. We set milestones every six months at a minimum and checked progress and completion during CG and MC meetings. We also defined a simplified table where the main activities of the project were evaluated with regard to the impact (I) of poor performance on success, its probability (P) and the magnitude of risk (R=IxP). Our first focus was on the higher-risk activities. We set up a simplified contingency plan including: Time contingency, *i.e.*, scheduling adequate preparation and execution times for the activities. Budget and cash contingency: through a close budget management and the timing of events in relationship to COST funding cycles (COST funds are typically allocated as follows: 50% after signature of the Grant Agreement (*i.e.*, at beginning of each one of the 4 Grant years); 35% after 8 months from the start; 15% remaining at the end of the Grant Period. Effective budget reallocation, especially within the final stages and months of the budget cycles was essential and closely managed, for instance through allocating underspent money to short-term activities.	List of deliverables (with milestones) Table of risks Contingency plan Work and Budget (yearly) plans COST Action Grant Agreement(s)

Competence elements	RESTORE approach	RESTORE tools
Stakeholders	The number of stakeholders was large, due to the wide spectrum of influence of our Action (addressing a restorative and/or regenerative concept of sustainability throughout the entire design and building supply chain): our funding program manager (the COST Association). all the organizations that were involved (100+) with which our members were affiliated. the target groups possibly taking advantage from our Action's results: architects, engineers, constructors, manufacturers, urban planners, academics, sustainability practitioners, *etc*. COST Countries (and national Coordinators). External participants to our activities (attendees, trainees, trainers, partner organizations, local organizers, *etc*.) Our effort was continuously focused on addressing both the Action goals and the stakeholders' expectations, through recurrent planning meetings and checks, amongst others.	Performance Management System (PMS) dashboard with the list of members and organizations of affiliation Technical annex (MoU) Core Group (CG) meetings Communication tools
Change and transformation	As defined in ICB4, there are two different concepts: change and transformation. Change entails the improvement of a current situation, keeping the past in mind. We adopted this concept continuously throughout the whole Action. Moreover, as most types of activities were repeated in the 5 WPs, *e.g.*, developing working-group reports both on the state of the art and on the progress that we desired to implement, training schools, STSMs, *etc*, it gave us an opportunity for continuous learning from past performance and for proposed improvements. Transformation is understood as the emergent development of new situations, based on future vision. In our situation, the Covid-19 pandemic has constrained our activities, since its outbreak in Europe, in February 2020. The impact was terrible for a COST Action, based on face-to-face meetings and activities between researchers travelling throughout Europe. The impossibility of organizing physical events - except a training school in Vienna that was held at the end of September 2020, in the 'window' between the first and the second waves of the current pandemic - led us to completely rethink all of our activities. We basically transformed all our events into digital or (on fortunate occasions, hybrid) formats. COST typically funds face-to-face events, so the financial impact on our Action (*i*.e., underspending) was obviously significant.	(General) Gantt chart with expected outcomes. Work and Budget (yearly) plans. Core Group (CG) meetings. COST e-vote approvals.

Fig. 4-4: RESTORE Gantt diagram.

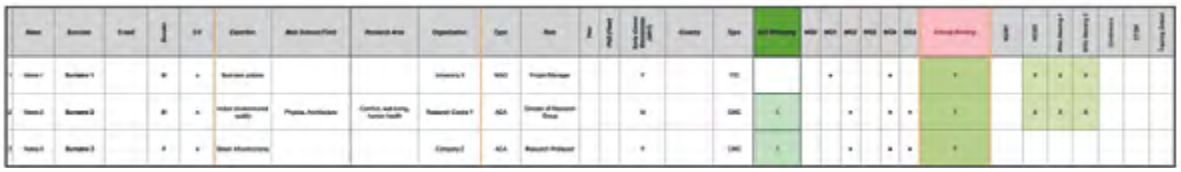


Fig. 4-5: RESTORE Performance Management System (table) example.

5 MY RESTORE EXPERIENCE: VOICES FROM RESTORE

Daniel Friedrich interviews Restore members

MARTIN BROWN
(Fairsnape – United Kingdom) / Vice Chair, WG1 Leader

Daniel: *What is your role in RESTORE and with what vision did you take up this position?*
Martin: My role in RESTORE has been a wonderful and truly inspiring journey, from co-writing and winning the original bid with COST, as vice chair, and as leader of Working Group 1 '*Restorative Sustainability*' and then participation in working groups 2 – 5. It is a role I am honoured to have held.

Daniel: *Have your expectations been fulfilled and how can you see that?*
Martin: My expectations have more than been met, through the fantastic sharing and learning across all the working groups and activities, but mainly from the collaborative community that has emerged as a regenerative family. We are so lucky in RESTORE to have many brilliant minds, with passion for a regenerative future in both research and practice and in life.
As we start to look towards the end of the action and reflect on our missions (to Rethink Sustainability towards a Regenerative Economy), it is fair to say we have certainly rethought sustainability and gained a far better understanding of what regenerative really means in the built environment. However, it is perhaps now, towards the end of the action that we have fully started to understand what a regenerative economy means, possibly hinting at future post-RESTORE activity.
My attention now turns to the FADs (Final Action Dissemination) and I am delighted to be heading the RESTORD 2030 FAD. This FAD will involve imagining a city ten years on into the future that embraces RESTORE work. The FAD will establish a guide to enable group workshops for academia, practice and industry to explore regenerative futures based on RESTORE and the imagined city of RESTORD.

GIULIA PERETTI
(Werner Sobek Green Technologies - Germany) / WG3 Leader

Daniel: *What is your role in RESTORE and was it your first participation in a COST Action?*
Giulia: I'm the leader of Working Group 3 '*Restorative Building and Operations*', a representative for Germany together with Daniel Friedrich and a member of the core group. My tasks within the Action include the coordination of WG 3 activities and contributions to the organization of the Action with the other Core Group members.
This project was my first participation in a COST Action.

Daniel: *What do you think are the prerequisites for participating in a COST Action and what do you take away from the four years of research as a special benefit?*
Giulia: Unlike most other Restore participants, I work for a private company and not in a university. Therefore, in my case a big point at the beginning of the action was to combine the (unpaid) activities of Restore with my daily business in the engineering office. I do not work on funded research projects and the "real" projects I work on were not always directly connected to the Restore topics. Hence, one prerequisite in my case, as well as motivation and knowledge, was to agree a participation-plan with the management of my company.
Motivation and willingness to act is finally the major prerequisite, as many activities are on a voluntary basis and in my case, I had to take vacation days from my work to participate at Restore meetings.
The 4 years of Restore enriched me, improving my organizational skills (*e.g.*, I organized a Training School for the first time), enlarged my network with many brilliant researchers and colleagues, and finally enhanced my own knowledge a lot in the field of regenerative sustainability. I'm already using this knowledge in my daily work to disseminate the regenerative approach in practice, making my own contribution to the paradigm shift.

ROBERTO LOLLINI
(EURAC Research, Institute for Renewable Energy - Italy) / WG4 Leader,
Grant Holder Scientific Representative

Daniel: *What is your role in RESTORE?*
Roberto: I am the RESTORE scientific representative and WG4 co-leader with Wilmer Pasut.

Daniel: *What was the main topic your working group was working on?*
Roberto: The overall idea was to define an approach to characterize a regenerative indoor environment and related enabling technologies. The work on technologies for a restorative environment was inspired by five driving questions: (1) What is a restorative indoor environment, and which its most representative parameters?; (2) How to measure and assess regenerative indoor environments?; (3) What is the impact of climatic and cultural differences on user perceptions and expectations?; (4) What is the technology for a restorative indoor environment? and (5) How can the environmental and social impact analysis be used to evaluate the technology for a restorative environment?
Four main conventional areas were considered and assessed in the literature over the last few decades: air quality, hygro-thermal environment, visual environment, and acoustic environment. These aspects are strictly connected, on the one hand, with occupants' wellbeing, potential sick-building syndrome and, on the other hand, energy, and sustainability issues. In addition to the classical IEQ parameters, the perspective of a regenerative indoor environment which boosts occupants' satisfaction, health, and wellbeing has been emphasized by adding some human-related values to the analysis. These are mainly related to the view of the outdoors and to the concept of biophilia, opening up new possibilities, not only to explore integrated regenerative performance, but also to create inspiring environments.
When designing indoor spaces, regenerative design entails placing the wellbeing of occupants and their expectations at the centre. Here, the emphasis is on the creation of wellbeing as per the regenerative paradigm, versus the reductionist approach of sustainable design that targets the absence of ill health.

Daniel: *What from your group work do you think provides the biggest impact on the community in terms of the goal of RESTORE, the 'paradigm shift'?*
Roberto: Technologies will be the key to promote a shift of paradigm in building design from "less bad" to "more regenerative". However, optimal choices of technology need a proper knowledge evaluation framework, as developed in WG4, for the collection of solution-sets to achieve the regenerative environment goals. The framework is a means of establishing the links between the environmental aspects, their sub-aspects and the functions required by the building systems and components, to define the technology clearly, enabling the achievement of the regenerative parameters.
Finally, the regenerativeness of an indoor environment goes beyond the physical walls of a building. Proper technology solution-sets can enable a regenerative indoor environment for building users and for the planet, ensuring wellbeing and health. Indoor environmental quality also means minimizing impact and the use of resources in the building life cycles, e.g., raw materials, energy, water, and emissions. The regenerative solutions must be evaluated throughout the whole life cycle.

JELENA BRAJKOVIĆ
(University of Belgrade, Faculty of Architecture - Serbia) / WG5 Vice Leader (since May 2020), STSM Coordinator (since January 2020), ITC Conference Manager and Open Access Publication Grants Manager

Daniel: *What is your role at RESTORE?*
Jelena: At RESTORE I am STSM Coordinator, ITC Conference Manager (OAG Manager too) and WG5 Co-Leader.

Daniel: *Looking back on all the topics dealt with in RESTORE, how do you think the results should be used to drive forward the economic and technical change towards regenerative sustainability?*
Jelena: I think that intensive multidisciplinary cooperation between academic and industry sectors is key to disseminating the results we obtained, in a proper way. Many results that we gained, in all five working groups, can be embedded in both relevant legislation and building regulations, as well as regenerative design and practice. We also dealt with the issue of regenerative education applied to all levels. What we need is a systemic paradigm shift and the broadest possible reach in disseminating our results.

Daniel: *Where are we further along the road, where are we still far behind?*
Jelena: In my opinion, we are furthest along the road at making a paradigm shift, especially through advancing and achieving holistic thinking goals. We have constructed a robust network of experts, as well as a rich information and knowledge base within diverse regenerative fields. We have had wide and diverse audiences to which we have introduced many important issues and results obtained. We have created a strong basis for further research that will continue the RESTORE legacy. We can say that we are still far behind in implementing systems thinking in all our diverse regenerative schemes. This goal is of course the ultimate and the hardest to reach. We started the journey towards it with RESTORE and will surely continue pursuing it through further collaboration, projects, and joint research.

6 RESTORE CARBON NEUTRAL

AUTHORS
Martin Brown and Lisanne Havinga

'CARBON IS NOT THE PROBLEM.
WE ARE THE PROBLEM.'

Paul Hawken, Buildwell, 2016

The WWF estimate that 84% of emissions arise from energy, transportation, and the built environment. Whilst RESTORE working groups, training schools and STSMs, through publications and papers have explored and suggested interventions to reduce carbon emissions from the built environment, these activities are in themselves significant sources of emissions associated with travel.

Over the four years of the RESTORE action, we have travelled an estimated 3 million kms., using a variety of transportation means, predominantly aviation. There is also a considerable impact arising from local travel to and from airports. At the end of the project, we had produced approximately 240 tonnes of CO_2.

In line with the RESTORE regenerative purpose, principles, and vision of doing more good, and not just being less bad, RESTORE has set itself the mission of achieving carbon neutrality.

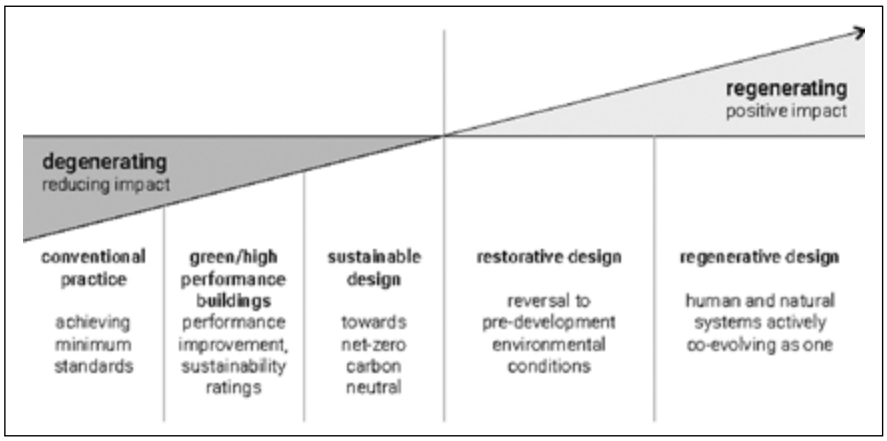


Fig. 6.1: Sustainability practices tend to focus on moving from the conventional practice of degeneration to a neutral impact. Instead, restorative design aims to restore ecosystems, and regenerative design is aimed at giving the chance to human and natural ecosystems to evolve.

Carbon Neutral – A Definition

A state of balance between the CO_2 emitted into the atmosphere and the CO_2 removed from the atmosphere. Concept of a state in which human activities result in no net effect on the climate system Synonymous with Carbon Positive and Net Zero Carbon.

(Intergovernmental Panel on Climate Change) (IPCC) (2018).

THE RESTORE CARBON NEUTRAL STRATEGY

(Proposed by Lisanne Havinga and Martin Brown and presented and approved at the RESTORE Management Committee meeting in Limassol in February 2020).

Assumptions

1. Humans are causing the Climate and the Ecology crises.
2. The built environment is a significant carbon problem.
3. We can and we must do something to address it.
4. Offsetting cannot be a substitute for continuing to emit carbon.

With respect to offsetting, the only truly regenerative options, or negative emission options, are those options that remove carbon from the atmosphere. These options include:

1. Tree planting and afforestation.
2. Soil sequestration.
3. Wetland and peatland restoration.
4. Marine planting.
5. Biochar.
6. Emerging carbon capture technologies.

Unfortunately, we no longer have the luxury to wait for carbon capture technology, so our best options are nature-based solutions (trees, wetlands, and soils).

THE RESTORE CHALLENGE

1. Avoid, Reduce and Replace at least 50% of the CO_2 emissions associated with upcoming activities

2. Offset all past and remaining CO_2 emissions, making RESTORE carbon neutral.

Based on CO_2 calculations from RESTORE events, it was estimated that the CO_2 emissions per attendee at a RESTORE event amounted to 500 kg per roundtrip. It equates to approximately 5 times the yearly CO_2 emissions per head of the population in Rwanda, and 20 times the emissions from a bag of cement. A tennis court filled with broadleaf trees might be sufficient to offset it.

We estimated RESTORE activities at approximately 225,000 kg CO_2 emissions for the 1st, 2nd, and 3rd grant period. A figure that is roughly equal to the yearly emissions of 45 people living in the UK/Italy/France, or 250 people living in most African countries. It is also roughly equivalent to 100 years of following a Vegan diet rather than a normal diet.

The fourth year of the grant period 2020-2021 was severely impacted by the COVID-19 pandemic, so it was not included in the estimates. However, with RESTORE activities moving online, the carbon impact of Zoom, Microsoft Teams, Google Meet and other platforms cannot be ignored, although they are considerably lower than the impact of physical transport

Offsetting our CO_2 emissions could hardly be the only step forward. Offsetting cannot eliminate any pollutant effects related to carbon emissions, such as highly polluted areas surrounding airports. While offsetting

might counter the effects of global warming, it does not eliminate the additional health effects associated with all greenhouse gases.

Considering the rapid reductions of CO_2 emissions that are needed to limit climate change to the Paris Agreement of 1.5°C, carbon offsets are only of any use after having done everything to avoid and to limit CO_2 emissions from taking place in the first place. As a guide, the RIBA 2020 Challenge requires the reduction of the embodied carbon of UK construction projects by at least 50-70% *before* offsetting can take place.

However, not only did we consider the CO_2 footprint of RESTORE activities, but we also considered the 'handprint', the positive outcomes that are achieved. What is the result of *e.g.*, educating young professionals and academics in a training school, raising their awareness and knowledge of regenerative sustainability and design? What is the result of publishing articles and booklets on regenerative sustainability? We need to consider a balancing-act between lowering our CO_2 footprint while enhancing our handprint.

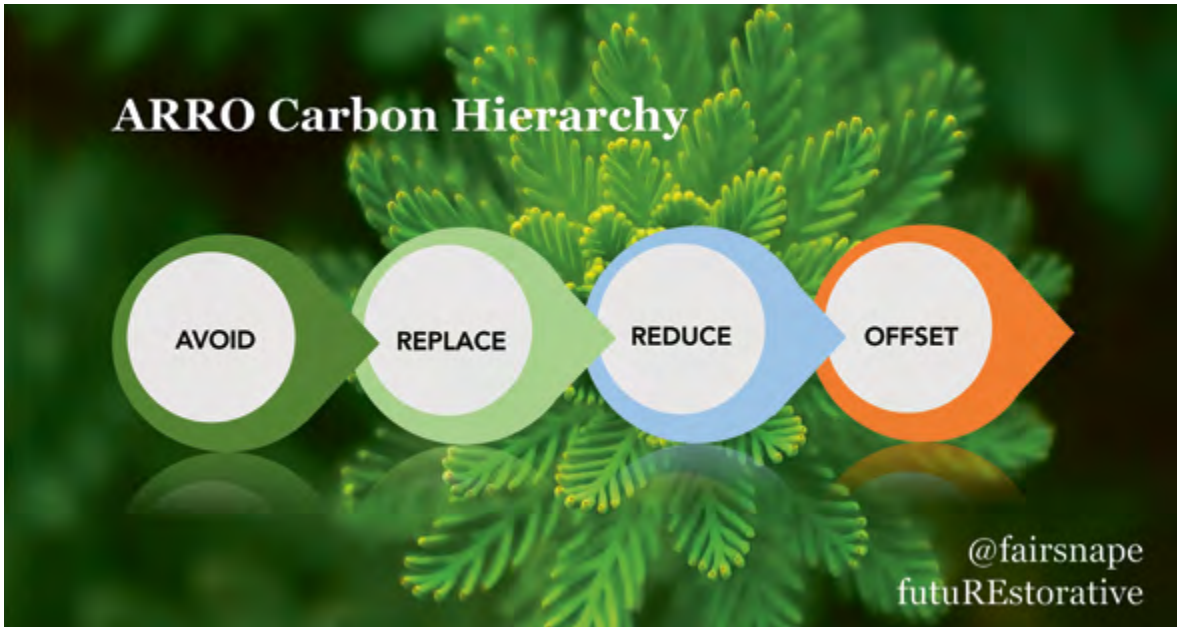


Fig. 6-2: The ARRO hierarchy.

Key principles of RESTORE regenerative travel policy are based on the ARRO hierarchy:

- **Avoiding, Reducing and Replacing** CO_2 emissions.
- **Offsetting** any remaining CO_2 emissions promptly, using a reliable CO_2 offset program.
- The overall carbon impact should be positive, meaning no remaining CO_2 emissions, combined with our positive 'handprint' of enhancing and disseminating knowledge on regenerative sustainability and design.

We therefore implemented a 4-step-plan to attain a 'Regenerative Travel Policy' for RESTORE, illustrated in Figure 6-2.

The RESTORE Manifest guided regenerative travel decision-making. We encouraged all RESTORE participants to follow these guidelines, both in their upcoming RESTORE trips as well as in their other work-related journeys.

Our Avoid, Reduce, Replace and Offsetting approach was taken in full alignment with the COST inclusiveness policy, the general principle of giving a fair opportunity to any Action participant to host meetings and the COST Vademecum. It must also be said that our approach will be only applied in conjunction with the COST rules (CSO documents, in their current form or in future versions), and as such, COST rules will always take precedence over any inconsistency or contradiction.

Avoid
In planning upcoming activities, the management of the Action will, on a case-by-case basis, consider web-based options for activities with a low 'handprint' (the expected outcomes resulting from the activity) in relation to the expected footprint. The invitation to upcoming activities will include the explicit option to join the meeting through dial-in options such as Skype/GoToMeeting. RESTORE also considered web-based dissemination possibilities such as webinars, MOOCs, *etc*.

Reduce
In planning meetings, the management of the Action considered on a case-by-case basis, combining meetings and activities, both for RESTORE and in conjunction other external events, the CO_2 impact of possible locations, and selecting a location that has a good combination of a positive 'handprint' and a low footprint.

Replace
The invitation to meetings included the suggestion to consider low-carbon transport, such as travelling by train. Participants were encouraged to consider taking a direct flight instead of a connecting flight. Where flights were taken, consideration should be given to low-budget airlines which typically have lower carbon footprints. Flights should be discouraged for short-distance travel <300 km or where there are direct train connection options,

Offset
After the conclusion of the Restore group, we will offset remaining emissions, to ensure that RESTORE has a regenerative, and thus a positive, environmental impact, in addition to emissions that have already taken place. For this purpose, the total CO_2 emissions of RESTORE will be estimated and communicated.

When should we offset our emissions?
RESTORE selected reliable and short-term offsetting scheme options, to offset remaining emissions within 15 years.
All members of RESTORE and all participants of past RESTORE activities were invited to make a voluntary contribution to the offsetting scheme with the idea of offsetting the CO_2 emissions of the first three grant periods.
Participants who had taken long-distance flights (*e.g.*, >5.000 km / to other continents) were invited to make a specific contribution in line with the CO_2 emissions of their flights.

Our Recommended Offset Scheme was The Gold Standard https://www.goldstandard.org. We also explored the purchase of a RESTORE 'Grove' through Trees for Life (https://treesforlife.org.uk), so that trees could be planted in a RESTORE Grove. Through this scheme, trees will hugely contribute to climate, biodiversity, and carbon improvement. We are assuming an offset of 2 trees per tonne of carbon, which would be 3 trees for offsetting RESTORE grant years 1, 2, and 3 and one tree per year per event. Trees planted through the Trees for Life RESTORE Grove could be purchased for any activity within or outside of RESTORE, or as a gift, and beyond the life of the RESTORE Action.

We have regularly reported progress on carbon reduction through RESTORE Meetings, Newsletters and on our RESTORE webpages. At the time of writing this booklet, we have

1. Offset over 60% of all our emissions.
2. Reduced travel in the fourth year.
3. Raised awareness of carbon reduction and offsetting.

Ongoing contributions are welcomed through The Gold Standard scheme https://www.goldstandard.org or through the Tree for Life Forest Grove established by Fairsnape (Vice-Chair, Restore), in recognition of the carbon and the ecology impacts of attending both face-to-face and remote classes and in recognition of the resources used in downloading RESTORE publications (paper, printing, postage, reading online).

LESSONS LEARNT

From our experience in implementing a Carbon Neutral Strategy, we would recommend the following lessons learnt for other COST Actions that may be considering a similar course of action:

1. Do it.
2. Do it early on in year one of an action.
3. Consider all forms of carbon emissions, travel, IT, and paper.
4. Win commitment from all members and institutes to support ethos, strategy, and actions.
5. Embrace ARRO but place the focus on ARR not on O.
6. Share progress and success.

Be aware of and use motivational and behavioural patterns:

1. Make it easy.
2. Make it the Norm.
3. Make sure everyone sees a personal benefit.

Be aware of cognitive dissonance and the deeper drivers of climate 'head-in-the-sands' denial, in particular:

1. Reduced responsibility "too big a problem for me to deal with".
2. Arrogant - "I'm working on climate solutions; my impact is justified".
3. Projection of blame - "it's the 1% not me, its other nations not us".
4. Displacement - "we already do our bit on other climate actions".
5. Cornucopian - "we don't need to do anything today; technology will find a solution soon".
6. Accommodationalist "I will do it – but only when its law".
7. Apathy "not my problem, climate change won't affect me in my lifetime".

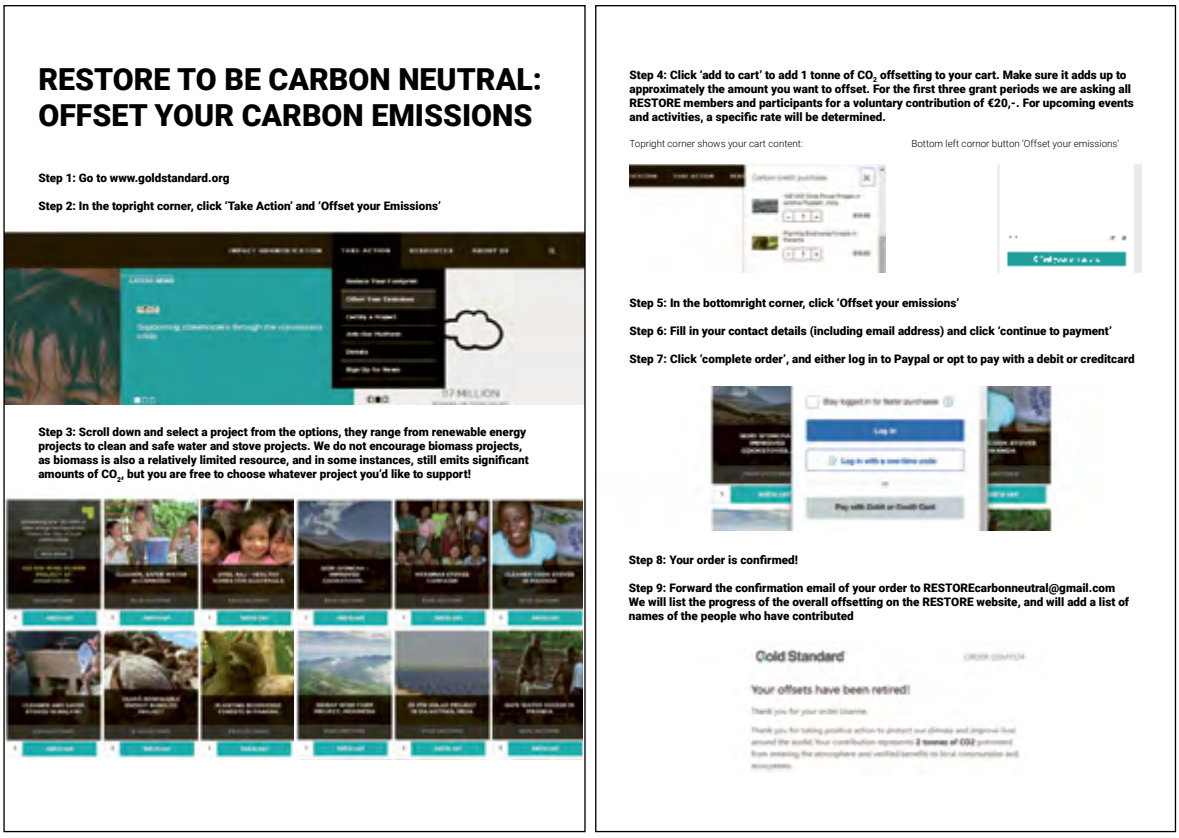
One question we could ask is whether the knowledge shared, explored, analysed, and reported on through RESTORE been worth the estimated 225 tonnes of CO2. Future studies could explore the correlation between academic papers that improve our knowledge of carbon and the interventions that people and organizations are ready to undertake because of academic dissemination.

Related: The RESTORD 2030 FAD includes education and awareness modules for Climate Literacy. Climate Literacy furthers our understanding of carbon and how we perceive the climate emergency as it develops. It helps us understand our impact as individuals and the built environment and the actions we can and must take to join hands against climate and ecological breakdown.

1. Understanding Carbon 101.
2. Understanding our Climate and Ecological Emergency.
3. Understanding our impact.
4. Understanding the impacts that built-environment interventions have upon people and planet.
5. Understanding the actions we can and must take.

RESTORE TO BE CARBON NEUTRAL: OFFSET YOUR CARBON EMISSIONS

MEDIA KIT



RESTORE TO BE CARBON NEUTRAL: OFFSET YOUR CARBON EMISSIONS

Step 1: Go to www.goldstandard.org

Step 2: In the topright corner, click 'Take Action' and 'Offset your Emissions'

Step 3: Scroll down and select a project from the options, they range from renewable energy projects to clean and safe water and stove projects. We do not encourage biomass projects, as biomass is also a relatively limited resource, and in some instances, still emits significant amounts of CO_2, but you are free to choose whatever project you'd like to support!

Step 4: Click 'add to cart' to add 1 tonne of CO_2 offsetting to your cart. Make sure it adds up to approximately the amount you want to offset. For the first three grant periods we are asking all RESTORE members and participants for a voluntary contribution of €20,-. For upcoming events and activities, a specific rate will be determined.

Topright corner shows your cart content:

Bottom left cornor button 'Offset your emissions'

Step 5: In the bottomright corner, click 'Offset your emissions'

Step 6: Fill in your contact details (including email address) and click 'continue to payment'

Step 7: Click 'complete order', and either log in to Paypal or opt to pay with a debit or creditcard

Step 8: Your order is confirmed!

Step 9: Forward the confirmation email of your order to RESTOREcarbonneutral@gmail.com We will list the progress of the overall offsetting on the RESTORE website, and will add a list of names of the people who have contributed

Gold Standard

Your offsets have been retired!

Fig. 6-3, 6-4: Instructions flyer.


This Earthday 2020,
contribute to make
RESTORE
carbon neutral
cost
EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY
Funded by the Horizon 2020 Framework
Programme of the European Union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Figs. 6-5, 6-6, 6-7, 6-8, 6-9: Email buttons.

7 OPPORTUNITIES, MISSTEPS, AND SOLUTIONS

AUTHOR
Carlo Battisti

MAIN MILESTONES FROM THE PROJECT

From the beginning, we set up a list of deliverables to manage and to check the overall performance of our Actions. The two types of deliverables were related to the main outcomes from RESTORE's key tasks, shown in the following table: some 'internal' deliverables (in *italics* in the table), *i.e.*, reports and documents required by COST according to the program's rules, and 'external' deliverables (the others in the table), *i.e.*, outcomes deriving from our tasks, demonstrating full accomplishment.
In the Gantt chart we also defined some 'milestones' for the Action proposal, each with a frequency of at least 6 months, *i.e.*, points in time when we checked whether all the tasks due by that date were accomplished, in quality and compliance with our goals and requirements.

No.	Cod.	Type of Deliverable	Month	Deliverables
	WP0	**Project Coordination and Communication**		
	0.1.1.#	*Report*	*12, 24, 48*	*PM reports (Progress reports, Final achievement report)*
	0.2.1	*Report*	*14, 24, 26, 38*	*Accounting reports (Intermediate Financial Report, etc.)*
1-2	0.2.2.#	EU funds application	24, 36	Evidence of bids submitted to further work of action
3	0.3.1	Website	12	Website
4	0.3.2.1	Conference presentation	21	Reports, slides, transcripts from Mid-programme conference
5	0.3.2.2	Database	36	Atlas of solutions
6	0.3.2.3	Conference presentation	48	Reports, slides, transcripts from Final conference
7	0.3.2.4	Booklet	44	Booklet
	WP1	**Restorative sustainability**		
8	1.1.1	Report	7	State of the art + new paradigm report
	1.2.1.#	*Report*	*9, 21, 33, 45*	*STSM reports*
9	1.3.1	Content for training school	9	Reports, transcripts from Design competition
10	1.4.1	Scientific paper	13	Publications (scientific papers, Journal article, etc.)
	WP2	**Restorative design process**		
11	2.1.1	Report	13	State of the art + new paradigm report
	2.2.1.#	*Report*	*4, 14, 37*	*STSM reports*
12	2.3.1	Content for training school	15	Reports, transcripts from Design competition

No.	Cod.	Type of Deliverable	Month	Deliverables
13	2.4.1	Scientific paper	19	Publications (scientific papers, Journal article, etc.)
	WP3	**Restorative building and operations**		
14	3.1.1	Report	21	State of the art + new paradigm report
	3.2.1.#	*Report*	*11, 23, 35*	*STSM reports*
15	3.3.1	Content for training school	23	Reports, transcripts from Design competition
16	3.4.1	Scientific paper	27	Publications (scientific papers, Journal article, etc.)
	WP4	**Rethinking technology**		
17	4.1.1	Report	29	State of the art + new paradigm report
	4.2.1.#	*Report*	*18, 30, 41*	*STSM reports*
18	4.3.1	Content for training school	31	Reports, transcripts from Design competition
19	4.4.1	Scientific paper	35	Publications (scientific papers, Journal article, etc.)
	WP5	**Scale jumping**		
20	5.1.1	Report	38	State of the art + new paradigm report
	5.2.1.#	*Report*	*6, 26, 43*	*STSM reports*
21	5.3.1	Content for training school	40	Reports, transcripts from Design competition
22	5.4.1	Scientific paper	44	Publications (scientific papers, Journal article, etc.)

OPPORTUNITIES

The COST programme[20] offers an incredible opportunity for collaboration between researchers, academics, and practitioners across Europe and abroad. COST is an intergovernmental framework consisting of 38 Members, 1 Cooperating Member and 1 Partner Member. The 38 COST Member countries govern COST via their representatives in the COST Committee of Senior Officials (CSO) – the General Assembly of the COST Association.

The 38 COST Members are: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Republic of Moldova, Montenegro, the Netherlands, the Republic of North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, and the United Kingdom.

20 https://www.cost.eu/

Israel is a Cooperating Member. A Cooperating Member implies non-voting rights in the COST CSO. However, researchers from a COST Cooperating Member enjoy member rights in COST Action participation. South Africa is a Partner Member. A Partner Member has no rights to attend the COST CSO. However, researchers from COST's Partner Members enjoy observer rights in COST Action participation. Moreover, COST supports and encourages the participation of international partners coming from non-COST Members in all its Actions. It does so by providing financial support (to its Near Neighbour Countries) and offering Partner Member status (to its International Partner Countries).

The COST RESTORE network numbers 40 countries, including almost all the COST members, plus Israel (CM), Kosovo (NNC), the USA and New Zealand (IPC). A specific focus has been placed on collaboration with Inclusiveness Target Countries (ITC); COST is committed to bringing out excellence and inclusiveness in science Europe-wide and clearing away obstacles by offering low-barrier entry research networks and creating interdisciplinary research cooperation opportunities for researchers.

Relying on the involvement of 100+ organizations, including the International Living Future Institute[21] and the International WELL Building Institute from the USA and the University of Auckland (NZ), plus 160+ participants covering 40+ types of expertise, the opportunities for collaboration to advance and to progress towards the sustainability of the built environment has been immense.

MISSTEPS

Nobody is perfect … and even if we did our best to plan everything to run the project smoothly, there were some missteps on the way, tasks that we were incapable of developing better or more effectively at the time. Here are some points we missed (if the opportunity arose, we would surely manage them much better the next time,).

ADDRESSING THE REGENERATIVE ECONOMY ANGLE OF SUSTAINABILITY

RESTORE's focus was on redefining a concept of sustainability in the built environment, starting from the recognised three pillars of the triple bottom line (John Elkington[22], 1994) *i.e.*, environmental, social, economic. Our impression is that we conducted quite an extensive analysis of the technical aspects related to environmental impacts, how architecture and engineering might be more effective at addressing the climate emergency from the building perspective (which we know is impacting 39% of global greenhouse gas emissions[23]).

We also addressed the social angle. But we may not have fully explored the economics aspects behind a new regenerative concept of sustainability, *i.e.* 'Are there additional costs under the new framework? If so, how are we able to address them, creating regenerative building solutions for all pockets? Do we have all the financial tools that might facilitate both a transition towards regenerative sustainability and its application?

21 https://living-future.org/

22 https://en.wikipedia.org/wiki/Triple_bottom_line

23 Bringing embodied carbon upfront. Coordinated action for the building and construction sector to tackle embodied carbon, World Green Building Council (2019).

Our lack of focus was perhaps a consequence of the very few economic experts within our network, while architects, engineers, and green building experts were well represented. Something that we might explore further in a future collaboration project.

SCALING UP OUR IMPACT

Another area where we could have shown greater effectiveness is our outreach. The Restore Action lasted just over 4 years (Mar 2017-Apr 2021), where we have been developing the topics of regenerative sustainability across the built environment. When seeking to change the *status quo*, clearly the level of impact you can reach – in the building industry, among policy makers, in the community of academics and professionals – is an issue.

What is the final analysis? We did amass a very high number of academics, mostly in the architectural and engineering fields (more than 75% of our members) with around one hundred universities and research centres. Thanks to our training schools (co-organized with local universities and research centres: Lancaster, Malaga, NOI Techpark Bolzano, Venice, and Vienna), with 110+ trainees, we have been able to implement Restore principles and findings at various education centres, placing them firmly on the academic curricula.

Unfortunately, the impact we provoked within the building industry itself was less apparent, in so far as we were mostly addressing practitioners, but with scarce participation from design firms, manufacturers, construction firms, *etc*. This weaker impact was mainly due to the reluctance of private companies to partake in research activities, if their commitment is not defined and adequately funded from the outset (the companies said it was a matter of budgeting, resources, and effort that has to be dedicated to the research, which in some cases might compromise their daily business engagements).

The involvement of policy makers, public officers, and public bodies was likewise relatively low, for various motives, except for the commitment of the city of Malaga (TS2) and Vienna (TS5). It was probably due to an as yet embryonic interest in the new trends that our Action has been pushing to introduce.

Having said as much, we did perceive the strategic importance of focusing on the building industry and policy development environment in a potential follow-up to the project. This different approach might also focus on the concrete implementation of the outcomes from the project. As an example, brilliant solutions developed throughout the training school workshops in both Malaga and Vienna might be implemented – either partially or fully – in the next urban planning activities run by these municipalities. The same regarding the implementation of the new approaches developed within the Restore WPs.

HOW TO A MANAGE UNEQUAL WORKLOAD AMONG PARTICIPANTS?

In Chapter 6, we mentioned that resource management is to some extent crucial to a project. One of the biggest criticalities we have been asked to address during the project was how to maintain a high (enough) level of engagement and commitment towards our participants.

One strategy was working on strengthening a sense of community within the Action, driven by our challenging goals. Secondly, we set up a Performance Management (Measurement) System (PMS), as previously described, tracking the participation of our members within the project. This approach was officially submitted to our MC members and approved not later than six months after the beginning of the Action (we soon realised this was a tricky point). Our MC members accepted and committed themselves to the implementation of a 'performance monitoring system' tracking the main past and future activities of all RESTORE participants (*e.g.*, meetings attended, calls taken, contribution to technical, scientific papers and other project documentation, application/participation to STSMs, ITC conferences, training schools, *etc.*).

In the case of participants whose active contributions to the action were limited or non-existent, we reserved the right to ask them to reconsider their participation in the Action. Nevertheless, this point was a difficult one right up until the end of the Action, becoming even more critical in the final closing phase – approximately the last four months –, which is typical of a project when participants are engaged elsewhere, and their interest starts to wane in the project that is to be completed.

It is difficult to envision alternative smart solutions, apart from the monitoring system we implemented (please note that a documented analysis of the Action's progress, results and outcomes and networking activities is always a COST requirement that must be carried out during and at the end of the Action). As a matter of fact, unlike other EU funded programmes – where personnel costs are directly funded to cover the project activities – COST Actions are based on a collaborative model that is not always continuously maintained at the same high level of engagement.

THE PANDEMIC CONSTRAINTS

The outbreak in Europe of the Covid-19 pandemic around February 2020 was obviously quite impossible to foresee. After one year (at the time we are writing this booklet), we came to the conclusion that similar situations are unfortunately not impossible, even if we would prefer to think that they are very unlikely to happen.

If management of change is one of the competences that is needed for a project, as we mentioned in Chapter 6, then the situation was clearly a tough one to address. After our MC meeting in Limassol in February 2020 and with the exception of the training school that we were able to organize in Vienna, in September 2020, thanks to a 'time window' in the development of the pandemic (between the first and the second wave), we had to move all activities online to digital channels (meetings, workshops, working groups, events, even including the final conference).

The whole situation was also continuously monitored by the COST Association. They recommended, for instance, that all individuals purchase travel cancellation insurance, which was an eligible expense, and allowed participants to cancel their attendance at events, where the prohibitions for the pandemics applied 48 hours before the date of travel, *etc.*

As the Introduction to this booklet indicated, COST basically funds the networking activities of researchers and practitioners, so the travel restrictions had a direct impact on our budget. At the time of drafting this booklet, we have delivered our final Restore 'READY[24]' dissemination events with a hybrid format in seven macro-European regions[25] – with some people from among our local organizers to participate in person and other attendees connected online.

BRILLIANT SOLUTIONS

As mentioned, we passed through a phase of (continuous) on-the-job learning. Participating in and managing a COST Action was something completely new for the great majority of us. Some of the strategies, tactics, and techniques we set up for the development of our Action in effective and successful ways are outlined below. Again, please consider them as suggestions and tips, the adoption and implementation of which may in some cases be difficult within other COST Actions.

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24 'REstore Action Dissemination Yield', a term we coined for this type of final Action dissemination workshops

25 Southern Europe (Athens), Eastern Europe (Warsaw), Northern Europe (Paris), Western Europe (Madrid), Balkans (Belgrade), Scandinavia (Malmö) and the United Kingdom (Sabden).

STRUCTURING THE PROJECT WITH CONSECUTIVE WORK PACKAGES

What we noticed when observing other COST Actions is that in many cases the Action were developed by dividing participants into Working Groups (WG) operating on Work Packages (WP) that run in parallel with the same timing throughout the life span of the Action. This arrangement might somehow complicate the development of an Action, specifically when it is particularly complex and/or when the radius of influence, as in our case, is very broad.

RESTORE decided upon a different approach, structuring the project into five consecutive Work Packages (WP) in such a way that each WP was to start after the completion of the previous one, and inheriting the results from it, in an internal customer analogy. As mentioned, this was due to the large number of participants, but also to the extensiveness of the topic – redefining the sustainability framework for the whole built-environment sector.

Moreover, the structure of the WPs followed a logical sequence according to a typical construction supply chain, *i.e.*, with a first WP setting the bases and terminology for a new concept of sustainability (*WP1. Restorative Sustainability*) and then the following on the design process (*WP2. Restorative Design*), construction and operations (*WP3. Restorative Building and Operations*), solutions and building products (*WP4. Rethinking Technology*), finally to scale up from the building level to the district and city level (*WP5. Scale jumping*).

This strategy also gave us the chance to address one WP at a time, reducing the complexity of management, while providing the opportunity to the largest number of members for active participation in all the Working Groups (on a total of more than 160 members, an average of more than 60 took part to each WG, with most of them participating in more than one WG). One downside was that people only interested in the final WPs, *e.g.*, WP4. Rethinking Technology or WP5. Scale jumping, did not engage in the action until later, and those primarily interested in social aspects of sustainability left after the end of WP1. Restorative Sustainability.

STANDARDIZING THE WORK PACKAGE STRUCTURE

Another strategy we adopted was to structure each Work Package in the same way, once again to reduce the complexity, but above all so that the research methodology could become a common factor for all the participants and in all the WGs and to define the same procedure in addressing the different research topics: analysis, definition of a new paradigm, including possible solutions, gap analysis and finally dissemination and education activities to increase awareness.

Each WP was divided into the same number of tasks, providing the same type of outcomes, as shown below in the following scheme:

Work packages / Methods		**Activities**	**Deliverables**
WPx	**Restorative sustainability**		
WPx.1	Analysis of the state of the art + definition of a new paradigm	New paradigm definition + gap analysis	State of the art + new paradigm report
WPx.2	Increasing awareness	Short term scientific missions	STSM reports
WPx.3	Mentoring of practitioners and professionals	Training school	Reports, transcripts from Design competition
WPx.4	Dissemination; influencing the eco-system	Events, papers	Publications (scientific paper, Journal article, etc.)

SCOUTING OF EXPERTISE

A holistic and multidisciplinary approach was needed, to address our ambitious program of redefining the rules of sustainability in the built environment. For this reason, once our proposal was approved and we had set the process in motion to start our Action, we firstly mapped the competences of the members already on board and then proceeded to look for those who were missing and whom we thought were needed to address our challenge from different perspectives.
As previously mentioned, once an Action has been approved, COST countries have the opportunity to join it by signing the Memorandum of Understanding, which means that researchers and practitioners from these countries can participate in the Action. COST encourages the Actions to ensure the widest possible participation and we received an impressive number of requests to join the Action right from the very beginning, which was very likely due to the wide spectrum of topics the Action was covering. This situation was accompanied by some issues, such as for instance the risk of having too many participants with the same competences (example: sustainable design), while on the other hand we were missing some other important expertise (example: industrial ecology).

After the first year of the Action, we set up a procedure to manage this situation and to evaluate every incoming application through a set of structured questions and requirements; through which we could discover and proactively search for some of the important competences that might be missing, as previously outlined. This set of requirements included: CV, competences, expertise, potential added value that the person could bring to the project, compliance with WGs needs (after a previous 'filter' from the WG0 team, the request was submitted to the WG leaders of reference), and alignment with the Action strategy. After this selection process the list of approved participants was submitted to the Management Committee for final approval.

INVOLVEMENT OF COST COUNTRIES ... SINCE BEFORE THE KICK-OFF MEETING

As previously described, within a period of twelve months after the approval of the Action, any COST Member Country or Cooperating State can join the Action. After this period, additional COST Member Countries or the Cooperating State may join the Action subject to the agreement of the Action Management Committee[26].

Another important fact we learned at the beginning was that the budget allocated for the first Grant Period was calculated on the basis of the number of countries participating in the Action. This approach is reasonable considering that the number of Action participants is somehow related to the number of countries involved. But given that the 1st Grant Period had been defined and allocated by COST before the Action kick-off meeting, it meant that there were no additional budget allocations whenever a country joined the Action after the kick-off meeting.

When we learned about this procedure, knowing that our Action – given its cross-disciplinary approach and its commonly known theme of sustainability – would have attracted many COST countries, we tried our best to invite participants from the countries that had yet to subscribe to the Action at the time, to join us before the kick-off meeting! It was an agreeable surprise when one COST country did indeed join the Action the night before the kick-off meeting. It was another sort of scouting process, that in fact increased the budget allocated for the first Grant Period and the number of participants.

26 Guidelines for COST Action Management, Monitoring and Final Assessment

PERFORMANCE MONITORING (MEASUREMENT) SYSTEM - PMS

We have already mentioned the Performance Monitoring (Measurement) System (PMS) that we set up, in Chapter 6 on 'Managing an Action as a Project'. COST implements transparent and efficient monitoring procedures, but the Action MC is also requested to monitor the progress of the Action. We soon came to the conclusion that monitoring the performance of our Action was somehow related to the performance of the different WGs as teams and, in the end, to the individual performance of participants.

One critical aspect linked to managing a complex Action like RESTORE, with so many participants, is to ensure that each one can play an effective role in the Action. As simple and trivial as it might seem, this point is a crucial point in our opinion. Apart from the goals, tasks and deliverables described in the Memorandum of Understanding (MoU) signed by the participating countries, there is no specific agreement that binds individuals (researchers, practitioners) or their organizations, to the tasks and results of the Action. Nevertheless, the work provided by the members of the Action was in fact compensated by their respective organizations (universities, companies, *etc.*).

This situation is understandable, given that it should be in the interests of all participants to exploit this research and network opportunities, providing the best possible contribution. But, sometimes, it is not so… or it is not taken for granted, and in other words it should be monitored for overall optimal performance of the Action.

For this reason, we set up a simple performance monitoring system that tracked the participation of each individual participant. This monitoring task was mainly run by our WG0 vice-leader whose work was to include not only the main information on all participants (some data are automatically available on the e-COST platform), such as for example main expertise, affiliation, country *etc.*, but above all to trace participation in their main activities and events, including: MC meetings, WG meetings, STSMs, publications, and conferences, among others.

This procedure was submitted and unanimously approved by the MC through the e-vote procedure a few months after the start of the Action. With this approval, the MC substantially authorized the monitoring of the performance of each member, following the simplified approach described above (participation/no participation, yes/no). Power was granted to reconsider the participation of those members who were not actively contributing to the Action. A decision that was also motivated by the fact that we were receiving several requests to join the Action each week, so it was conceivable that RESTORE participants with no interest in playing an active role might do better to leave their place open to newcomers willing to provide even stronger contributions to the Action.

8 LESSONS LEARNED

AUTHOR
Carlo Battisti

SOME FEEDBACK FROM RESTORE MAIN ACTORS

At the fifth and final Management Committee meeting in December 2020, we organized a short 'lessons learned' round table with some of the key actors of RESTORE: Martin Brown (WP1), Emanuele Naboni (WP2), Giulia Peretti (WP3), Roberto Lollini (WP4), Jelena Brajković (WP5). Here is what emerged from the discussion.

Carlo: *What are main takeaways from your WP activities? Plus, one result you are very proud of?*
Martin: a new language, collaboration, publications, we re-thought the 'sustainability' term, abandoning it.
Emanuele: a sense of community, the great value of the activities we have been running, the network, a new way of 'research life', the WP2 booklet.
Giulia: the training school, 'good people of good will'.
Roberto: the WP4 booklet, the definition of 'regenerative indoor environment', the technologies we investigated, the table of indoor quality indicators, the many contributions to all the activities, with the booklet as the final output.
Jelena: the fact that we completed all forecasted activities, efficient work of good quality, the WP5 booklet, all the new ideas that came out along the way, collaboration, a perfect training school 5, the RESTORD[27] 2030 concept.

Carlo: *What could have worked better (if any, lessons learned)?*
Martin: extending WPs duration, all working in the group (we started with ~ 80 people – in our Working Group - but then only 20-30 have really been working on the tasks), going more in depth into regenerative thinking.
Emanuele: we struggled at the beginning (the start-up phase was critical), producing the booklet after the Training School 2 was critical, it should have started earlier, we lost a lot of time in the first six months.
Giulia: it was difficult to assemble people two years after the start of the action, some people were active at the beginning, then disappeared, which was sometimes disappointing.
Roberto: same concern as above, if we should restart from scratch, it will be better to define a clearer plan with expected results and responsible persons, it was good to define the table of contents from the very beginning.
Jelena: more time to work, to define clearly who is doing what.

LESSONS LEARNED FROM THE ACTION.

10 TIPS TO SUCCESSFULLY MANAGE A COST ACTION

Here we present our main lessons learned from Restore, which may be helpful for people either thinking of applying for a COST Action call or running a COST Action.

1. **Close-out phase may will be critical, more so than the start-up**

Dwelling on project management, the closing phase may be critical, sometimes the most critical. Unlike the start-up phase, which might even be considered similar or symmetrical to the closing phase – in so much as both phases are not addressing the core, that is a much lengthier and central part of a project – the

27 RESTORD 2030. A guide for educators, students, and practitioners, is another Final Action Dissemination result from RESTORE

close-out phase often lacks enthusiasm and a sense of novelty which might otherwise positively influence participants at the outset.

When starting up a project, members are eager to address something totally new, which is full of optimistic plans and energy. Everything is still on paper, and may be changed rapidly, nothing has been done, thus there are no mistakes. As the project advances, its story acquires its final shape.

When you are close to the end, most of the work come rain or shine has been completed. Project participants tend to become distracted (because the project was too long, too tough, some tasks were complicated and the results were a bit frustrating, *etc.*). Moreover, members will typically have already started their involvement in other new projects, which reduces the amount, efficiency, and effectiveness of the *de facto* availability of resources.

This perhaps rather dangerous situation must be carefully addressed. In the Restore project, this situation was observed during the final four months before the end of the Action (April 2021), after the final conference in December 2020. There was a high risk of underspending due to the impossibility of running previous activities due to the Covid-19 pandemic[28]. This is not a financial problem – money that is not spent is not reimbursed – but it may be seen as a missed opportunity (COST funds are the fuel to run the activities that address the main challenge which the COST Action represents). So, the morale is to treat the last months of the Action and of each Grant Period with care.

2. **Scouting for expertise and countries before they join the Action**

Searching for the best expertise and the involvement of the greatest number of countries at the beginning was instrumental. Scouting and finding excellent and appropriate expertise for one of the main topics of Restore ensured a better capability to find the solutions that our challenge called for. In the end, we were able to gather members from over forty different areas of expertise, from geography to structural engineering, from sustainable design to industrial ecology, which gave us the possibility to adopt a truly multi-disciplinary holistic approach.

We also worked hard at the beginning of the project to ensure the highest participation from COST countries. Participating in a COST Action works this way: once the proposal has been approved by COST and the Memorandum of Understanding (and Technical Annex), accepted and signed by at least seven COST Full or Cooperating Members, the other COST member countries have the possibility of joining the Action (with up to two members in the Management Committee).

This happens with no previous formal request to the main proposers of the Action. The budget for the first Grant Period is also allocated by COST, depending on the number of COST countries that are involved, until the kick-off meeting (countries joining the Action after that meeting bring no additional funding). In other words, more countries, more money needed to cover the expenses of the MC members.

This much said, once we discovered this unwritten rule, considering that most COST countries would have had to join a multi-disciplinary Action such as Restore, we did our best to invite countries (firstly reaching out to some previously known potential candidates) before the kick-off meeting (one country joined the Action the night before!), to ensure an adequate budget for running our activities. So, our suggestion is, attract as much participation from experts and countries while still in the submission phase, then focus on the remaining countries soon after the approval of the Action.

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28 At the end of each Grant Period (year) unspent money from the approved yearly budget, cannot be reallocated and is paid back to the COST Association.

3. **Establish a performance system**

We have previously described our Performance Monitoring (Measuring) System table in Chapter 6 and the real risk of having some (or many) members (hardly surprisingly) not actively participating to the Action activities. An evenly shared workload among participants ensures higher efficiency (and effectiveness) of the Action. It is an approach that discourages the most active participants from complaining about lack of commitment or poor-quality results from other colleagues associated with the Action. This problem is clearly not only applicable to COST Actions, but to organizations and projects in general, though we observed that this event, in an open collaborative model such as COST, might bring with it greater risks.

4. **Define a structure and assign roles**

Dealing with a large number of participants from the outset (33 proposers from nineteen countries in the application phase that rapidly multiplied to over 160 from forty countries following the approval of the Action) required structuring an organigram in a clear way with key action roles (most of them approved during the kick-off meeting), for example Working Group leader, Grant Holder manager, coordinators of key activities (communication, training schools, STSM, *etc.*). This organigram was subsequently enriched when we started addressing the Work Packages, aware that we also needed sub-groups and sub-group leaders to deal with some specific topics.

5. **Involve all the members through a rotation of roles**

Assigning roles and responsibilities was also a good way to keep a larger number of participants engaged. Assigning these roles to young researchers (Early Career Investigators, following COST definition) also created good opportunities for them to develop their expertise. A COST Action is an incredibly enriching experience.
Moreover, play to people's strengths – maybe someone has little interest in being a leader, but may have a passion for communications, working group participation, ideas generation or may be an expert in a subject matter.

6. **Allocate contingencies and B-plans to buffer negative impacts and gaps**

We described in Chapter 6 how we planned to manage the risks related with technical difficulties, lower quality of outputs, respect for timing, *etc.* Planning in advance for the progress of the project and in case of contingencies and precautionary actions prevents the main interruptions that can occur due to negative outputs and delays. The biggest critical event we have had to confront was without any doubt how to manage the Action differently, due to the Covid-19 pandemic which restricted face-to-face gatherings after February 2020.

7. **Connect the Action network to other networks to ensure a legacy**

Every action participant brings the baggage of a previously existing network. Under this angle, the richness of a multi-disciplinary project such as Restore was the possibility of access to an even wider 'network of networks', thus amplifying the chance to involve the best experts and skilled investigators in our environment and to take advantage of other studies, projects, initiatives, *etc.* One example is for instance the connection with other projects (Eurac Research and other RESTORE organizations with which the participants were affiliated were involved in many EU funded research projects on similar topics) or the contiguity with

other networks such as Living Future Europe[29], which is actively promoting a culture of regenerative design across Europe, implementing frameworks that include Living Building Challenge and others from the International Living Future Institute. Other COST Actions, including members from RESTORE, also represent exciting opportunities for scientific networking.

8. **Increase effectiveness through digital tools**

Forced by the constraints of the Covid-19 pandemics, our working model changed quite dramatically, due to the impossibility of holding physical meetings. In a similar way to what we saw happening in other COST Actions, we moved almost all our activities to the virtual domain starting from the final months of our 3rd Grant Period (May 2019-Apr 2020). These implied the need for new skills, different approaches, and in some cases greater time-management efficiency and resources to accomplish our tasks successfully.

9. **Develop the Action with a centre of competence in mind**

As we progressed with our Action and advanced our ambitious project (in a word, redefining the rules of sustainability for the built environment), our project had the potential to become a reference initiative in our field of action. This awareness provoked a different mindset in many of our participants and we have the feeling that it drove us in a more effective way to increase our impact and recognition. We developed a robust body of knowledge, making RESTORE become not only a great network of experts, but a sort of virtual centre of competence.
We developed a vibrant Community of Practice – it is said that the ideal number of people in a manageable network is 150 (Dunbar's number[30]) – numbering slightly over 160 - and that, for an active group of 30 people, there will be 70 inactive people in a community.

10. **Combine technical tasks with social moments**

In almost all our meetings and events, we alternated our work sessions with social moments, with the aim of establishing long-lasting relationships among the participants. Networking is key for the success of a COST Action, and we do think that organizing social moments enriched our experience, not only within the Action, but also with a longer-term vision of collaboration in mind, beyond the natural end of RESTORE.

And finally, the main lesson is to adopt a project management approach towards the COST Action; we think it is needed and might create a huge difference for successful development.

29 https://www.living-future.eu/

30 Purves, Dale (2008). Principles of Cognitive Neuroscience. Sunderland, Mass.: Sinauer Associates.

9 WHAT WE ACCOMPLISHED

AUTHOR
Daniel Friedrich

RESTORE DISSEMINATION AS A MAJOR ACTION TARGET

One of the main research tasks is rapid dissemination of scientific results in a highly target-group oriented manner. Effective dissemination of the RESTORE output depended on the Scientific Communications Manager, nominated at the beginning of the Action, whose role was to disseminate the results regularly through a broad repertoire of communication channels. In the first two Action years, Bartosz Zajaczkowski filled this post and in the second half of the Action, Daniel Friedrich assumed responsibility.

Dissemination had a special significance within the RESTORE Action, because each Working Group (WG) approached the topics in a chronological and sequential way, so they always had to pass on their results to the next Group. As if in a hermeneutic circle, the focus of the Action was thus increasingly shifted from the general to the specific. The Memorandum of Understanding (MoU), a quasi-constitution of the Action, defined the specific attributes of an output of the RESTORE project. It contains so-called D-Outputs (D=Dissemination), which are on the one hand explicitly defined as the printed documents of the individual Working Groups and, on the other hand, the documents of the Action as a whole, which are considered binding.

In addition to printed versions, however, scientific work also generates numerous statements, position papers, announcements, minutes, and documented exchanges between participants. RESTORE used several online channels to archive these, such as Twitter, Facebook and the ResearchGate profile of the Science Communications Manager. In addition, there was an offline alternative, namely RESTORE's own MS SharePoint platform, which stored all internal documents and protocols, image material, *etc.* with access limited to the Core Group Members.

At first glance, these varied dissemination channels might appear very extensive, but it turned out to be a very effective way of archiving each individual output, depositing each one in terms of its specific quality and quantity. Thus, RESTORE has left a permanent mark at several levels, in strictly scientific databases and online chats; a testimony to its four years of cooperation. In the following section, the individual RESTORE outputs will be explained in more detail and their respective depositories will be presented.

DIRECT RESEARCH OUTPUT OF THE RESTORE ACTION

D-OUTPUTS AS PRINTED MEDIA

According to the MoU of the Action, each WG was responsible for summarizing its outputs in the Final Booklet. This work resulted in a total of 5 WG Booklets, D8, D11, D14, D17 and D20, which are depicted in Figure 1 as the outputs of each WG. The Booklets are 180 to 400 pages long and have their own ISBN number. They are available for download on the RESTORE website[31] and are freely accessible. As collected works, they reflect the thematic sequence of our Action in terms of content, starting with a general discussion of all facets of the topic of restorative sustainability.

31 https://www.eurestore.eu/publications-and-articles

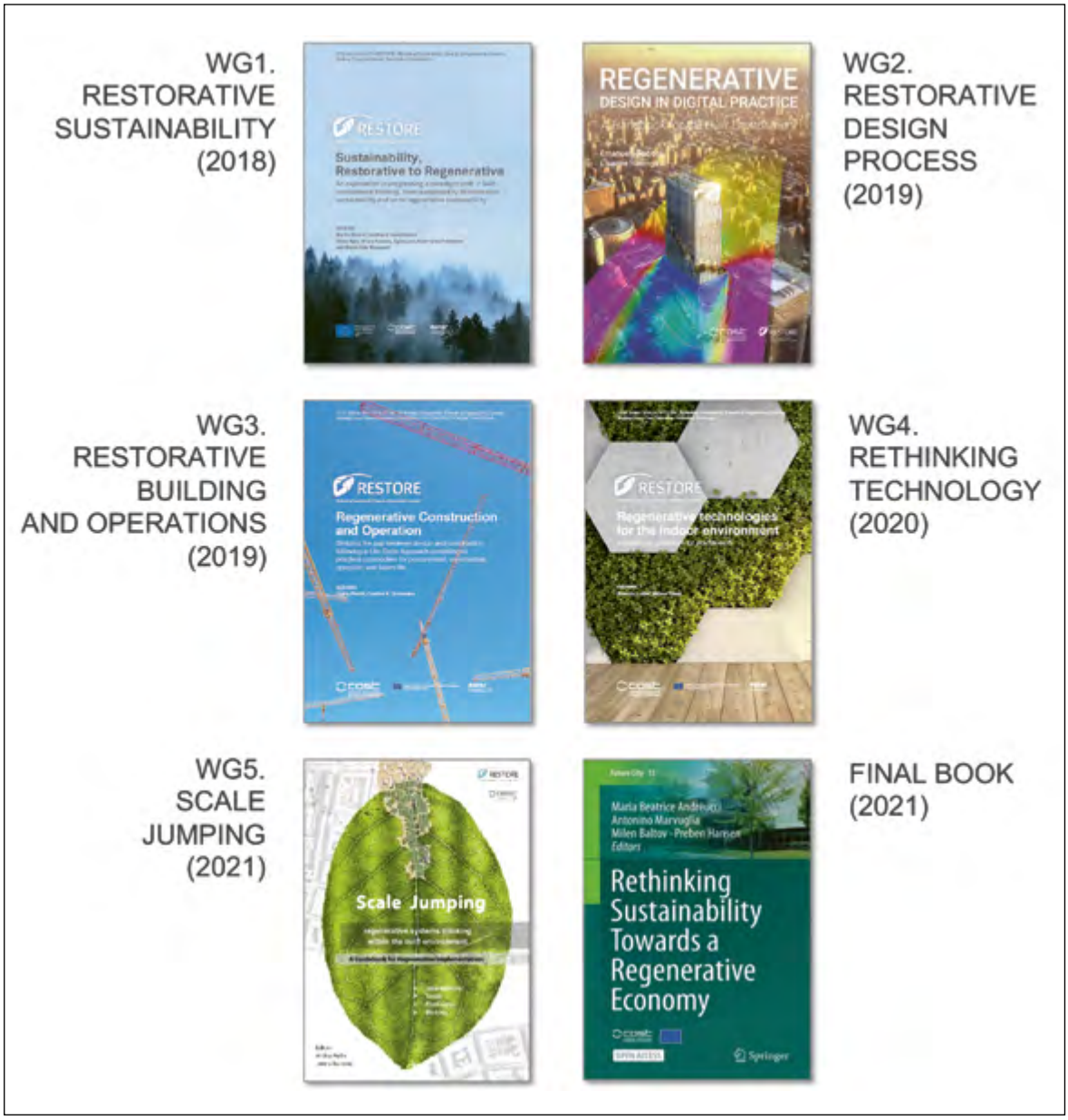


Fig. 9-1: Overview of the D-Outputs publications of the Working Groups and the overall Action.

The concept and content of the Final Booklets were the responsibility of the individual Working Group Leaders and Co-Leaders in consultation with the Group participants. It can be said that they reflect the competences from more than forty disciplines and that they do justice to the thematically broad ambition of the RESTORE Action.

Figure 1 also points to output D7. This is the RESTORE Final Booklet, the complete work of the Action. More than thirty authors have contributed to the content of the booklet, all of whom participated in the Working Groups. Each RESTORE topic contributes to a wide range and each chapter has been peer-reviewed by the RESTORE Editorial Board according to scientific criteria and represents solid research work. These chapters with their own ISBN numbers can be obtained from Springer Publishers or as an open-access download from the RESTORE website under “Deliverables”.

ONLINE OUTPUTS

RESTORE Website

At the start of the RESTORE Action, a project website was designed (Fig. 2), which has been continuously updated with content over the four years. It is an open access[32] site with 51 sub-pages to date that have been viewed by almost 38,000 visitors.
The main sections include the "About" page, which introduces the project and its objectives, participants, and organization. This page is followed by the sub-pages of the respective Working Groups, supplemented with their dissemination activities through Training Schools (TS) and Scientific Missions (STSM), each presented on its own thematic sub-page.
There are links to other pages that provide general information on the Action's special activities, namely publication grants, CO_2-offsetting from Action-related travel activities and the Final Conference held in December 2020.

In addition, the RESTORE website offers an archive of all published outputs in the form of Booklets (Figure 1) and further outputs from individual participants presented at conferences and in publications where RESTORE was mentioned in the Acknowledgement.

The RESTORE website also includes regular communication of current events in the Action, such as the completion of outputs, announcements of activities, calls for participation in Working Groups, nominations of members to relevant positions and calendar entries.

These Short Communications are stored as posts on the homepage. To date, they number 55 and can be traced back chronologically over the entire duration of the action. The website's own calendar also provides an overview of the progress of the RESTORE events, meetings of the Working Groups, and the Management Committee.
The website finally provides news via the RESTORE Newsletter Archive, updated almost monthly and likewise documenting the entire chronological course of the Action.

32 https://www.eurestore.eu

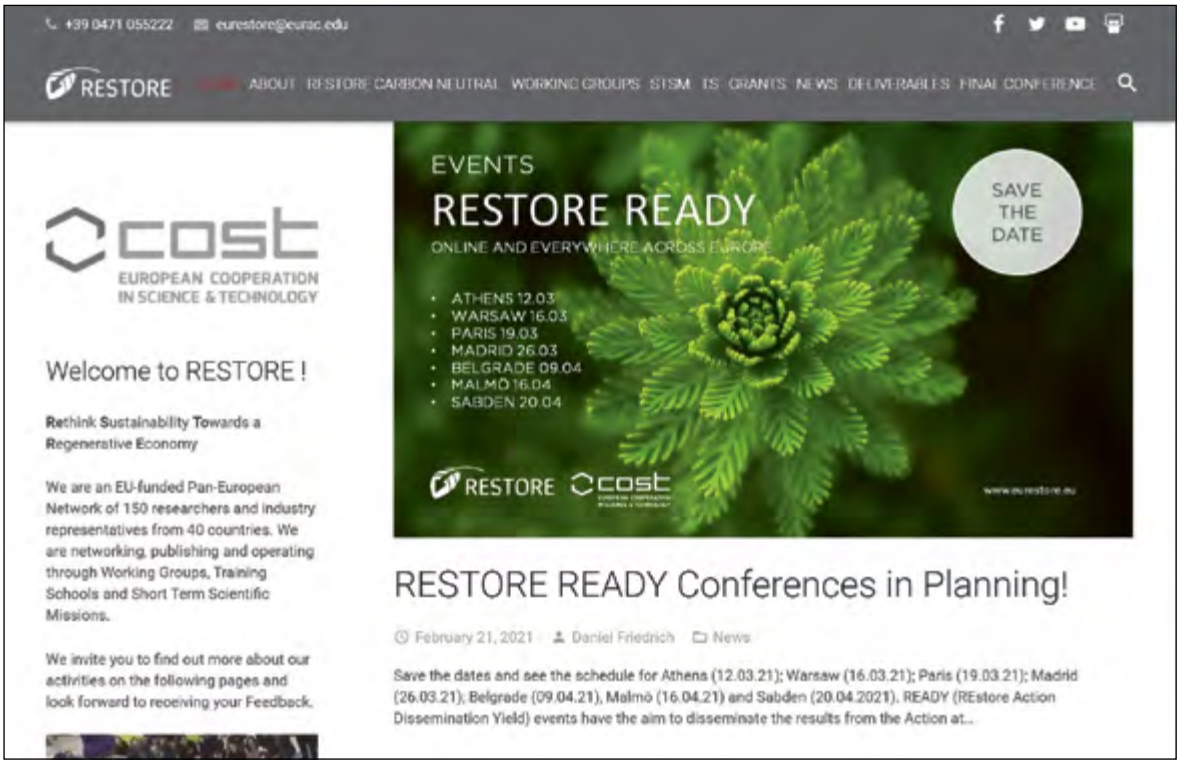


*Fig. 9-2: Welcome page of the RESTORE website (*https://www.eurestore.eu).

RESTORE Newsletter

In addition to the RESTORE Action website, a newsletter was produced almost every month (Fig. 3). Compared to announcements on the website, its advantage was that a targeted group of subscribers could be reached, comprising around 250 members at the end of the Action.

The Newsletter was created via Mailchimp and reported on current outputs, dates, congresses, nominations, completed STSMs, member publications, acknowledgements, and feedback from participants as testimonials. Over the four years, 45 newsletters have been circulated, reflecting the volume of work that the RESTORE participants have achieved. The content is mostly illustrated and includes links to further sources. An archive of all RESTORE newsletters is available online at www.eurestore.eu

In the context of the COST Action, the regular Newsletters proved to be very effective, as it gave the RESTORE Core Group members the opportunity to report from their respective Working Groups and to discuss important issues from the project administration that needed to be resolved at short notice, such as regulations on travel expenses, face-to-face meetings during the pandemic, *etc.*

The preparation of a Newsletter usually took 3-to-5 hours, using Mailchimp that offers ready-made formats and applies the previous Newsletter as a template. Nevertheless, it is advisable for the designer to record regular activities from the current Action, so that a pool of information is always available for the preparation of the Newsletter.

A reminder email was sent to the RESTORE Core Group in the middle of each month to ask for updates so that the Core Group was fully informed on all ongoing events. The draft Newsletter was then prepared step by step and sent to the members shortly before the end of each month.

Fig. 9-3: The monthly RESTORE Newsletter to Action members.

RESTORE ATLAS of SOLUTIONS (AoS)

Another key output from the Action is the ATLAS of Solutions (AoS, Fig. 4), which is declared as a D5 output in the MoU. This was created by Working Group 4, Sub-Group f) and is an interactive online map in which 36 worldwide construction projects are described. They use sustainable technologies in a unique way.

The ATLAS of Solutions was deliberately created as an online tool to be updated with current projects after the RESTORE Action ended. Designed with Google-Maps, it is accessible from the RESTORE website under “Tools”.

In addition, the WG4 Booklet (Fig. 1, D17) provides detailed reports on both the online tool and the Working Group members who created it. The ATLAS of Solutions complements the print versions of the outputs in that, on the one hand, it remains dynamic and is regularly updated, and on the other hand, it can be spontaneously used, regardless of location.

With this output variant, RESTORE also offers access to information on the research associated with the Action, especially on professional practice, which in turn receives ideas on new technologies and is to be encouraged to implement them in their own projects.

Younger academics can also work with the ATLAS of Solutions on a regular basis, which is why another target group is university lecturers, who can effectively use the ATLAS in their lectures for group work and final theses. If offers students a tool to perform interesting comparisons of technology.

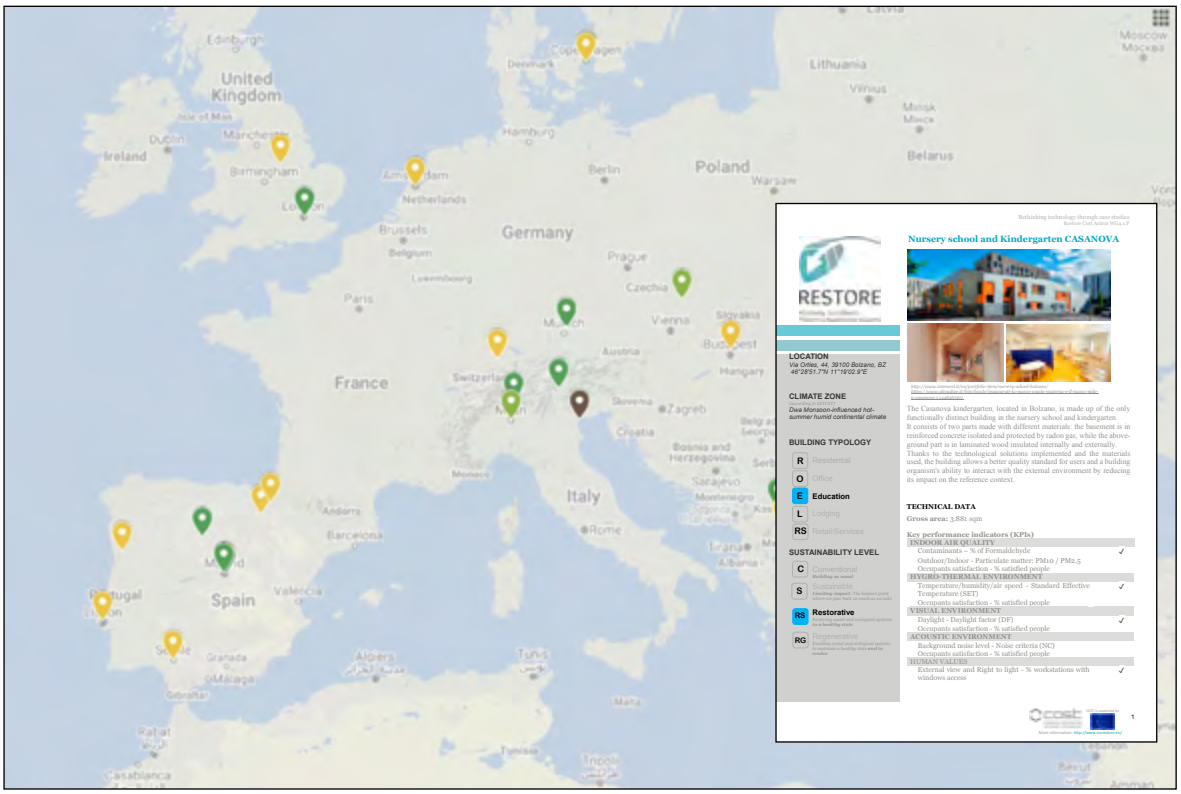


Fig. 9-4: RESTORE Output D5 'ATLAS of SOLUTIONS (AoS)'.

Online repositories

The variety of outputs within RESTORE also includes original presentations and videos recorded at meetings and conferences. These include speeches from the Final Conference in December 2020, talks at the five annual Management Committee Meetings, a video of the WG3 Training School in Bolzano, 2019, and videos of the five Working Groups summarizing their work. Presentations are publicly available on SlideShare[33] and account for 33 entries at the end of the Action. Videos are published on YouTube[34] (Fig. 5). Both repositories are accessible via the RESTORE website under "Deliverables". The videos were created in cooperation with professional marketing agencies and designed by the working groups on their own initiative according to their respective research priorities.

33 https://www.slideshare.net/CostRestore

34 https://www.youtube.com/channel/UCNypx4aEhXx7bejh21gwo7w

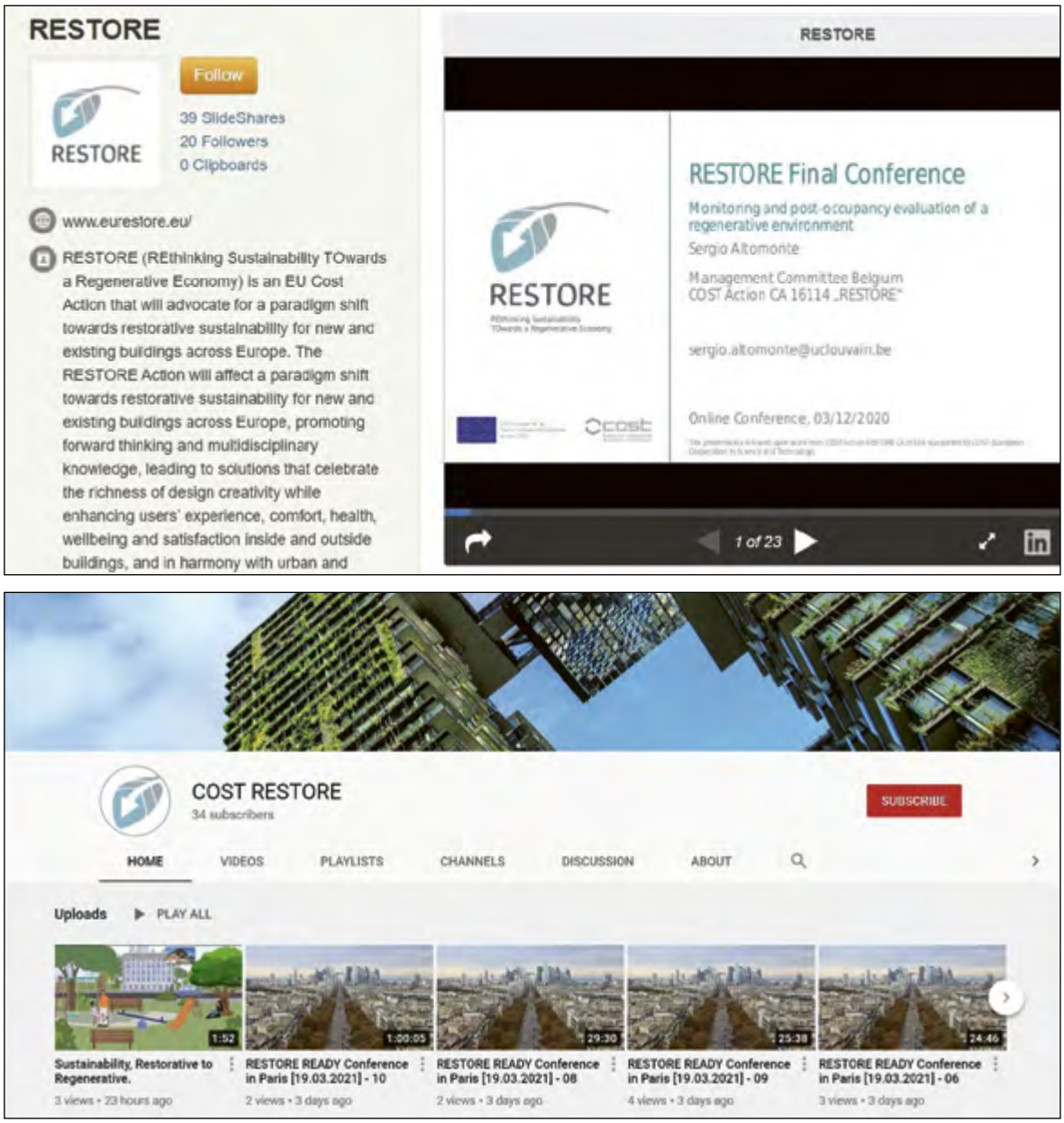


Fig. 9-5: RESTORE Online Media on SlideShare and YouTube.

Chats & Postings

Posts are another instrument of rather sporadic and thus less formalized communication within the Action. RESTORE has its own account on Twitter (https://twitter.com/costrestore) and Facebook[35] (Fig. 6). Both are linked to the RESTORE website, with a Twitter wall also set up on the RESTORE start page. By doing so, the Action is also represented in the most widely used chat forums and there are reports every few days on current WG events. All research members were called upon to either create their own posts from the Action or at least re-tweet posts from colleagues. At the end of the Action, the result was over 1300 tweets with 250 followers on Twitter and 350 Facebook entries that were regularly visited by 350 followers.

35 https://www.facebook.com/COSTRestore

Use of Twitter enabled us to reach beyond the RESTORE membership; for example, “Recent tweets” (18 number over 7 days) from @costrestore generated 44,425 total potential impressions and a unique potential reach of 19,523. (Source: TweetReach)

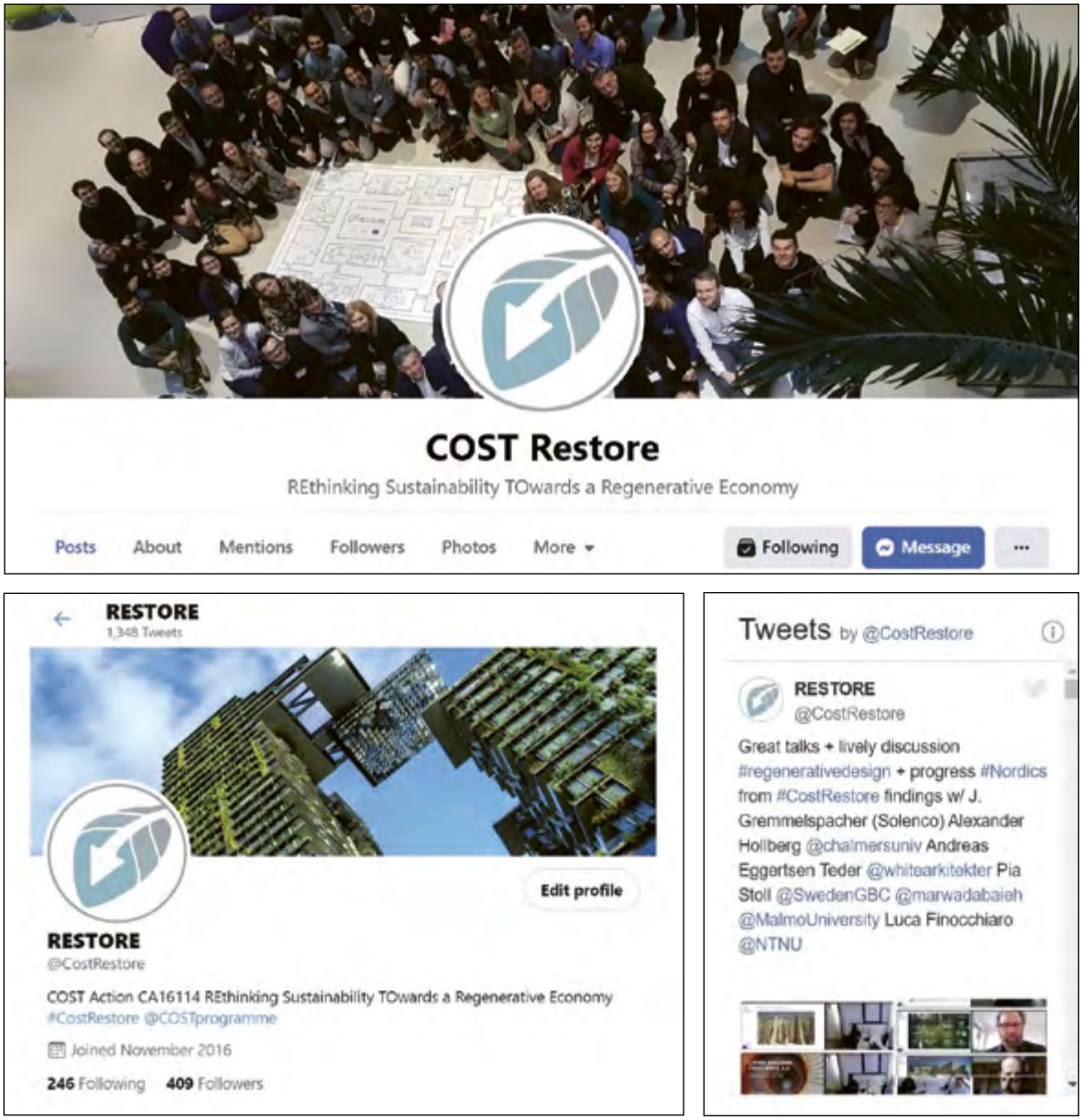


Fig. 9-6: RESTORE Chats & Postings via Twitter und Facebook.

RESTORE Science Communications also posted directly on the RESTORE website (Fig. 7). At the end of the Action, around 60 *ad-hoc* messages had accumulated on the start page, which reported on the latest news from the Working Groups in the form of texts and images. The start page proved to be the most visited sub-site on RESTORE and with almost 13,000 clicks, the postings were very effectively placed so as to catch the visitor’s eye immediately after entering the site.

Fig. 9-7: Postings on RESTORE Website.

INDIRECT RESEARCH OUTPUT OF THE RESTORE ACTION

As previously mentioned, our Action members have also regularly disseminated their work outside of RESTORE research. If these were indirectly related to their participation, they had the opportunity to establish a link to their Papers on the RESTORE website. The condition was that RESTORE was mentioned in the acknowledgement and that the Paper content was thematically linked to the Action.

Numerous researchers took advantage of this opportunity, and by the end of the Action, 25 links had been established, which can be accessed via the "Member Publications" sub-page[36]. Since the peer-review publication process is often lengthy, and especially in times of the current pandemic, an increasing number of Papers can be expected here in the medium term after completion of the Action.

Most of the publications listed there were also mentioned by name in the newsletter, which was an additional incentive for researchers to share regular reports on their publications with RESTORE Science Communication.

The website also gives details of congress and conference attendance, where members not only reported on their own research activities but also on their involvement in the RESTORE research network (Fig. 8, background). This information is also accessible under "Deliverables", often accompanied by pictures from the congresses.

Finally, all members could also announce future congresses of interest regardless of their participation, which were then listed on the "News" subpage together with the archived RESTORE newsletters (Fig.

36 www.eurestore.eu

8, foreground). These announcements were then also inserted in the monthly newsletters. It was a good opportunity for the researchers to advertise congresses at their universities and thus to promote them effectively.

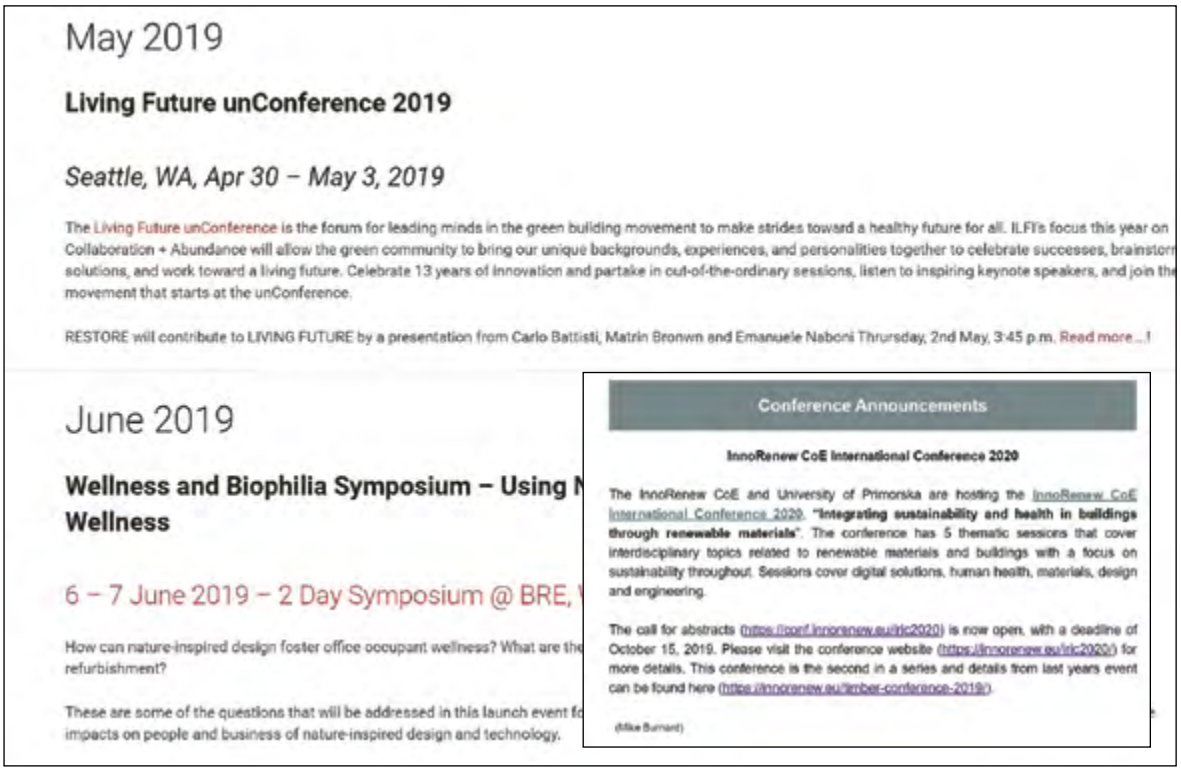


Fig. 9-8: Announcement of conferences by RESTORE members via the Action website and the Newsletter.

EXPERIENCES FROM FOUR YEARS OF RESEARCH COMMUNICATION IN THE RESTORE ACTION

All the dissemination activities over the four years proved to be very effective and reached specific target groups. Although COST Actions usually have a very intensive scientific character, not least because of the large number of participating researchers, RESTORE also focused on practitioners' involvement from the very beginning.

The outputs therefore do justice to both groups of experts, *i.e.*, they are published in leading Journals after peer-review, and planning and administration offices can use them at any time as practical aids.

All activities within the Action were always made transparent and accessible to the public. Especially for this purpose, popular and widely accessible chat forums were used, which participants could enter online at any time and everywhere. This allowed information to be quickly disseminated and received.

The regular RESTORE Newsletter proved to be equally effective. In contrast to the postings, its reports were in greater detail and targeted a known group of subscribers. This gave RESTORE Science Communication a good overview of subscribers with an interest in the activities associated with the Action.

However, the wide range of communication work also required considerable time inputs. The most time-consuming task was to collect all relevant information from the many members. Even though the flow of information could theoretically have been very simple via the hierarchical structure from the individual Group members via their Group-Leaders and then via the Core Group, in practice this often proved to be somewhat sluggish.

It required regular commitment and effort on the part of the Communications Team to maintain a comprehensive overview of all activities taking place and then to ask those responsible when the outputs were due; a problem that likewise occurs in most organizations.

Another aspect is the exact role of Science Communication in a COST Action. Here, it should be clarified in advance whether it is a matter of communicating the finished outputs of the Working Groups to the respective channels or whether the research output still has to be processed into communicable end products. The latter could then mean that Booklet content is transferred into a graphic abstract, science posters, *etc.*

Likewise, the role of Science Communication in an Action must be clearly distinguished from marketing and should not be confused with promotional marketing measures that involve the design of work templates, congress flyers, roll-ups, *etc.*, which are intended to give the Action a corporate identity. Formalization of the research work is desirable but requires the commitment of all members for their common creation and application and the provision of additional resources.

The greatest support for the Science Communication Manager turned out to be the use of strategic planning tools, especially rolling planning. All due outputs were structured in advance in terms of type, quantity, and timeframe, so that delays could always be adjusted to the schedule.

The strategic planning documents were likewise presented to around fifty national representatives at the annual Management Committee Meetings, so that all members of the management board of the Action were involved in the strategic process and informed of progress on their obligatory contributions. Thus, the Communications Managers of the RESTORE Action can draw a positive overall conclusion from the four years and learn from a wealth of experience for planning future projects of similar scope.

10 THE RESTORE LEGACY

AUTHOR
Martin Brown

Over four years, over 160 members from over 40 countries in 5 working groups have produced 6 publications, many papers and articles, and countless dissemination presentations.

We now ask, what then is the legacy of the RESTORE action that set out to Rethink Sustainability and set the agenda for a Regenerative Economy in the Built Environment.

The volume of outputs will undoubtedly inspire and encourage others, individuals, and academic and business organizations alike, serving as a route map, from Sustainability to Restorative to Regenerative, seeking a future that can be socially just, ecologically sound, and culturally rich.

As noted in FutuREstorative[37] one of the regenerative responsibilities of any organization or project must be to *inspire the next generation proactively, the next project, (the next action, paper) to reach higher, and to be bolder and braver.*

Yet, have we lost the capability and capacity to think outside of our boxes, are we losing the skill to imagine what a future could look like? And as Rob Hopkins notes in From What Is To What If[38] - if we cannot imagine a future, based on what we think good should look like, then we will have great difficulty in getting there, if we knew where 'there' was: as the old saying goes, if we do not know where we are going then any road will get us there.

WHAT JUST IS ... ISN'T ALWAYS JUST-ICE[39]

One of the powerful legacies of RESTORE is the concept of Seva and that progress towards a regenerative future is dependent on the correct worldview mindset.

Regenerative thinking, the Seva mindset, developed in WP1, and promoted through RESTORE, is focused on developing capacity and capability for systems evolution. It is not about sustainability that maintains what is, nor is it about attempting to restore something to what it was by only reducing impacts. Rather, it is about creating systems (places, buildings, communities, organizations) that have the capacity to evolve toward states of health that thrive over time.

The first four RESTORE working groups and their publications, papers and outputs have demonstrated that we have the tools, the metrics, the approaches, and the solutions for a symbiotic Human Nature Built-Environment relationship (Cost RESTORE, 2020). What we arguably lack in our mindset is the jump in scale that is to be applied. The mindset scale jump to where nature is seen as both a stakeholder and mentor is for some a big jump in scale, but is born out of necessity. The degenerative discourse and path we are on are too dominant (Brown, 2020).

As the contents of the final WG5 Booklet have demonstrated, a collection of perspective papers, articles, and thoughtful pieces from WG5 Sub-group looking at the Human-Nature-Built Environment nexus, is how new regenerative paradigms can be applied, not to be in competition or opposition to the current paradigms, but to be so obvious, so rewarding and effective that the old ways of doing things will become redundant. Within the context of buildings and cities, we draw from the definitions advanced in Working

37 Brown, M., 2016. FutuREstorative: Working Towards a New Sustainability. RIBA Publishing.

38 Hopkins, R., 2019. From What Is to What If: Unleashing the Power of Imagination to Create the Future We Want. Chelsea Green Publishing.

39 Amanda Gorman, The Hill We Climb, President Biden Inauguration, January 2021

Group One and in particular, we will scale jump the definition of the regenerative building, as the key concept, that regenerative buildings exist to enable all life to thrive.

Behaviour theory notes that for change and tipping points to occur, we need to reset the conditions to enable the regenerative paradigm to become easy, commonplace and rewarding. To do so, RESTORE work has to date set out tools, methodologies, and approaches; their effective application within this process is vital.

RESTORD 2030

A RESTORE exercise set out to imagine and to address the question *What If a city embraced the work from RESTORE*. That city took the name of RESTORD 2030.

RESTORD is a small to medium-size seaboard city, at the foot of the Central Mountains with a mid-European climate. It has a population of 102,000. Its city politicians, planners and officials adopted an approach inspired by the work of the EU Cost Action RESTORE and the publications from the 5 working groups. It embraced regenerative principles and definitions, mandated regenerative design, construction, facility operation and technologies and scale jumped to become an exemplary regenerative city

RESTORD 2030 is founded on the patterns that now govern development and infrastructure. The patterns, known as the 'leaves' that represent the growth and health of the city, are system-thinking based and fractal, each complementing and supporting other patterns, never limiting or overshadowing other patterns and they emerge organically. In this chapter, the vital patterns of Human, Place and Space, Design, Energy, Materials, Education, Equity and Economics are described.

When considering the human, nature and built-environment nexus, there are approaches and techniques available to us, based on a deeper understanding of and learning from nature. The following alternatives are explored throughout this chapter from differing perspectives on the patterns, considering our connectivity with nature and the scale jumping that connectivity entails.

EDUCATION

One of the key triggers identified at the outset of RESTORE, primarily in WG1 and echoed throughout the Action, is the need for education. Education and awareness for all ages within the education system, but also in practice.

Over the four years of RESTORE, we have seen the emergence and declaration of Climate and Ecological Emergencies. Communities, businesses, advocacy groups, local authorities, cities, and countries around the world have made declarations. And contained in all those communications is the need for greater awareness. It is no surprise therefore to see that Climate Literacy has established itself as a key need.

Our RESTORD FAD (Final Action Dissemination) focuses on the two aspects - increasing our climate awareness through dissemination guides for education and training with the focus on imagining a city ten years into the future. A truly powerful legacy.

PEOPLE

Over the four years, we have seen action members and those engaged with RESTORE develop and mature sustainability thinking from a degenerative business-as-usual sustainability, into a powerful regenerative approach to the built environment.

This approach has been fostered by:
- the many STSMs that have seen members learn to develop skills around Europe and beyond;
- the brilliant papers and articles produced for leading sustainability journals, powerful and inspiring dissemination events around the world;
- commitment through carefully considered and passionate contributions to the 6 main publications (WG1, 2, 3, 4, 5 and our Final Booklet).

Aside from the outputs are the wonderful friendships, collaborative partnerships, academic and business opportunities that have arisen and flowed throughout the RESTORE Community. The test of the legacy will be to see this community of practice continue and thrive.

Perhaps a lasting legacy is that the collective work of RESTORE will significantly move us towards a built environment that is socially just, ecologically sound, and culturally rich.

As we now prepare for COP26 in 2021, we need to ask ourselves:

are we brave enough,
bold enough,
disruptive enough,
clever enough
passionate enough …

to really address the climate and the ecological breakdowns that we are witnessing and to implement the recommendations and action plans from RESTORE.

A SCALE JUMPING LEGACY

We are on the cusp of a transition to a new paradigm and a new era of regenerative sustainability, driven by a number of factors including the deepening acceptance of contributions from the built environment to our climatic and ecological crisis, both as a problem and as a solution, and as we move into an era of living with Coronavirus.

Application of complexity theory thinking and distilling the pattern of interventions down to three simple rules provides a simple but vital set of rules for Scale Jumping towards a regenerative built environment

DECARBONIZE EVERYTHING within the built environment,

HEAL THE FUTURE, repair past damage, enable ecosystems to thrive through a connection with nature and the Seva mindset.

CLIMATE + ECOLOGY LITERACY improve the awareness and knowledge of climate and ecology throughout all aspects and sectors of the built environment, on a par with language and cost literacy.

11 REFERENCES

1. Andreucci, M. B., Marvuglia, A., Baltov, M., Hansen, P., (Eds.) (2021). Rethinking Sustainability Towards a Regenerative Economy. Cham (CH): Springer Nature. Available at: https://www.springer.com/gp/book/9783030718183
2. Brown, M., Haselsteiner, E., Apró, D., Kopeva, D., Luca, E., Pulkkinen, K., Vula Rizvanolli, B., (Eds.), (2018). Sustainability, Restorative to Regenerative. COST Action CA16114 RESTORE, Working Group One Report: Restorative Sustainability. Available at: https://www.eurestore.eu/publications-and-articles/
3. Brown, M., Battisti, C. et al. (2021). RESTORD. Regenerative Guide for Educators, Students and Practitioners. COST Action CA16114 RESTORE, printed by Eurac Research (Bolzano, IT). Available at: https://www.eurestore.eu/publications-and-articles/
4. IPMA Individual Competence Baseline Version 4.0.1 – Project Management © 2015 International Project Management Association (IPMA®) https://www.ipma.world/individuals/standard/
5. Lollini, R., & Pasut, W. et al. (2020). Regenerative technologies for the indoor environment: Inspirational guidelines for practitioners. COST Action CA16114 RESTORE, Working Group Four Report. Available at: https://www.eurestore.eu/publications-and-articles/
6. Naboni, E & Havinga, L. C. (2019) Regenerative Design in Digital Practice: A Handbook for the Built Environment. Bolzano, IT: Eurac. Available at: https://www.eurestore.eu/publications-and-articles/
7. Peretti, G., Druhmann, C. K., S., Bleiziffer, J., Brown, M., Campama Pizarro, R., del Río Merino, M., Gremmelspacher, J., Kontovourkis, O., Nenonen, S., Purs, I., Villoria Sáez, P., Vula Rizvanolli, B., (Eds.), (2019). Regenerative CONSTRUCTION AND OPERATION. COST Action CA16114 RESTORE, Working Group Three Report: REGENERATIVE CONSTRUCTION AND OPERATION. Available at: https://www.eurestore.eu/publications-and-articles/
8. Reith, A., & Brajković, J. (2021). Scale Jumping: Regenerative Systems Thinking within the Built Environment. COST Action CA16114 RESTORE, Working Group Five: Scale Jumping, printed by Eurac Research (Bolzano, IT). Available at: https://www.eurestore.eu/publications-and-articles/

12 PEOPLE

EDITORS

CARLO BATTISTI

A Degree in Civil Engineering from the Politécnico di Milano and twenty years of experience in construction companies. Master of Management and Organizational Development at MIP. Certified Project Manager IPMA®. LEED®, Living Future, WELL Accredited Professional. USGBC®, WELL Faculty™.
Since 2009, he has been working as a sustainable innovation manager in the building industry, consulting regional development agencies (IDM South Tyrol, the Energy and Environment District of Trentino), companies, manufacturers, R&D projects, and green buildings.
He is Chair of RESTORE.
Since 2018, he has acted as European Executive Director for the International Living Future Institute and is currently the President of Living Future Europe.

MARTIN BROWN

is an innovative sustainability 'provocateur', advocate, and business improvement consultant with his Fairsnape practice, based in the Forest of Bowland, Lancashire, United Kingdom.
He is Vice Chair of RESTORE and Vice President of Living Future Europe, a Living Building Challenge Ambassador, and a firm believer that sustainability needs to be regenerative and salutogenic, not just doing less bad, but doing more good.
A project manager and strategic consultant with over 45 years of experience in the built environment, Martin is a respected expert and advocate for regenerative sustainability innovation, with an interest in all that will help bring about a healthier future for us and for the planet.

CONTRIBUTORS

JELENA BRAJKOVIĆ

Researcher, General Manager, Architect and Designer. Specialized in new media architecture and environments – expanded boundaries of architecture at the intersection of technology, science and art. Interested in the application of nature-inspired solutions and biophilic principles in designing new media spaces, environments and landscapes – merging of biophilic and new media design. Besides her academic endeavours, she has a wealth of experience in architectural practice and management, as well as design and has been awarded prizes for design achievements.

DANIEL FRIEDRICH

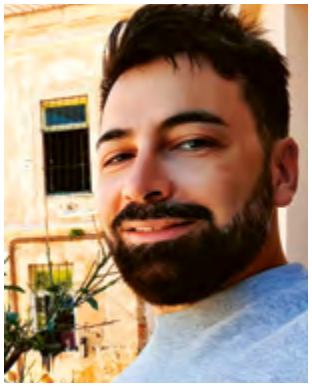
Daniel Friedrich teaches civil-engineering and economics at three universities. He researches biobased plastics in products and the economic effects of the transition to a resource-efficient plastics economy. While lecturing, he is also active in educational research and has conducted studies and published on the Class-Peer-Review Method.
He is the founder of “Compolytics” Independent Research, publishes in peer-reviewed Journals, is a reviewer, Springer book-author and expert in CEN-TC249-WG13.
At COST RESTORE, he is a Science Communications Manager and WG3-/4-/5-Member. He has conducted research in his PhD studies in Economics at the University of Bayreuth and holds a Diploma in Engineering from the University of Karlsruhe, among other qualifications.

LISANNE HAVINGA

An Assistant Professor at the Building Performance group at Eindhoven University of Technology (TU/e) in the Netherlands, she is also Principal Scientist System Integration of the Eindhoven Institute for Renewable Energy Systems, and part of the management team of the institute.
Her team focuses on developing modelling and simulation strategies to support decision-making in the energy transition of the built environment. A holistic assessment of environmental impact, incorporating life cycle assessment and circularity is a priority in her work.
She was leader of WG2 (together with Emanuele Naboni) and in this role chief editor of the publication ‘Regenerative Design in Digital Practice’.

ROBERTO LOLLINI

Roberto is responsible for the research group “Energy Efficient Buildings” within Institute for Renewable Energy at EURAC Research in Bolzano/Italy, with a background in methodological approaches for the assessment of building performance, building stocks management and definition of renovation strategies. User satisfaction and building value are the drivers of architectural, constructive and technological solutions at the core of his work, in particular with regard to complex façade systems, zero energy and flexible buildings



EMANUELE NABONI

Emanuele Naboni is Associate Professor at the Royal Danish Academy (KADK) in Copenhagen and visiting Professor at ETH Future City Lab, in Singapore. He was a researcher at the Lawrence Berkeley National Laboratory (LBNL) and Performance Designer at Skidmore, Owings and Merrill LLP (SOM) in San Francisco. He has taught as a visiting professor at the Ecole Polytechnique Fédérale de Lausanne (EPFL), the Architectural Association (AA) and UC Berkeley.
His expertise is in sustainable design solutions, strategies, methods and digital simulation seeking adaptation to climate change, ecosystems quality, sustainable performance of urban environments/buildings and human health.

GIULIA PERETTI

is an architect working as a sustainability consultant and team leader for the international engineering company Werner Sobek in Stuttgart/Germany and, in particular, for its sustainability and energy efficiency department: WSGreenTechnologies. Her field of competence is green building certification, indoor comfort and in particular visual comfort, and project management. With more than 10 years of experience in projects worldwide, among commitments is the integration of sustainable and regenerative principles and practical approaches to those principles, through consultancy services to architects and engineers. She leads Working Group 3 and was the scientific director of the TS3 in Bolzano.

13 PHOTOS

Kick-off meeting (Management Committee Meeting) – Brussels (Belgium), 9 March 2017

WG0+WG1+WG2 Meeting – Faro (Portugal), 30-31 May 2017

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WG1+WG2 meeting – Sofia (Bulgaria), 4-5 October 2017

WP1 Training School – Lancaster (United Kingdom), 14-17 November 2017

Conference – Budapest (Hungary), 13 February 218

WG2-3 meeting – Koper (Slovenia), 13-14 June 2018

WP2 Training school – Malaga (Spain), 15-19 October 2018

WP3 Training school – Bolzano (Italy), 11-14 March 2019

WP3 Training school – Bolzano (Italy), 11-14 March 2019

Mid-term conference – Bolzano (Italy), 14 March 2019

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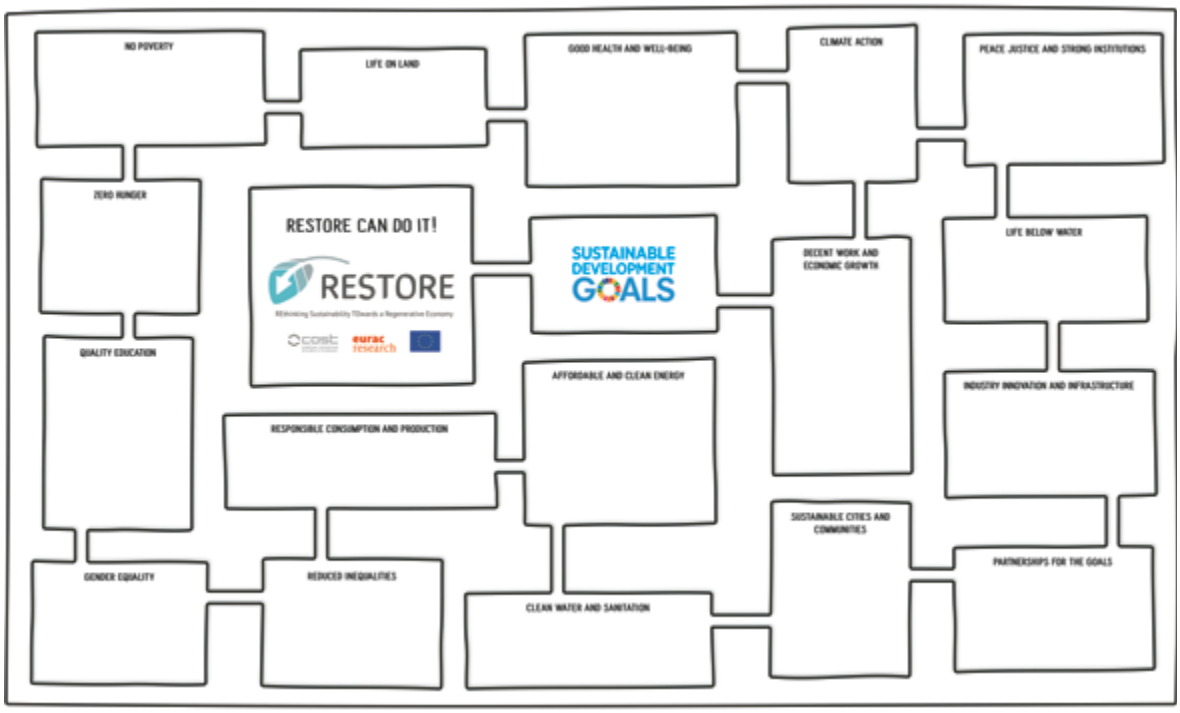


Mid-term conference – Bolzano (Italy), 14 March 2019

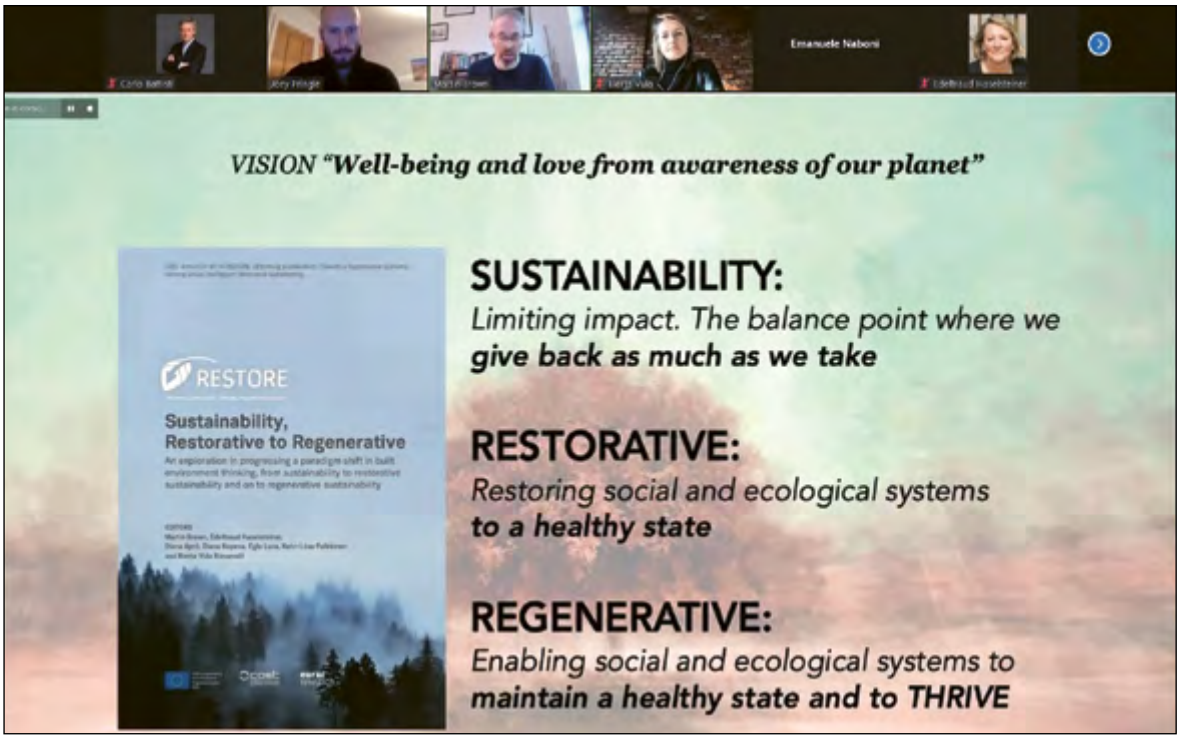
WP4 Training school – Venice (Italy), 2-5 December 2019

Management Committee meeting – Limassol (Cyprus), 14 February 2020

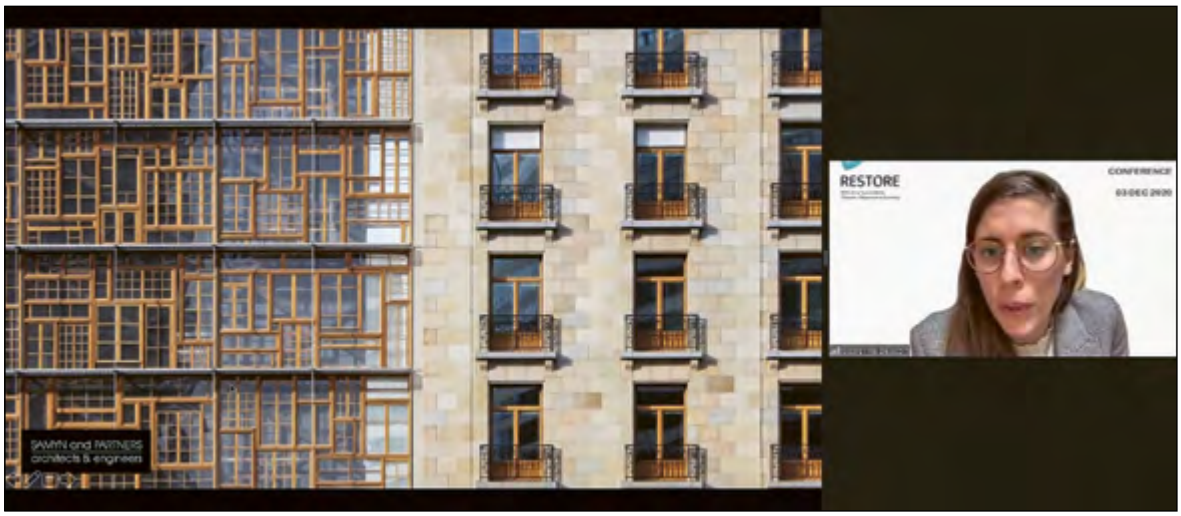
WP5 Training school – Vienna (Austria), 21-25 September 2020

WP5 Training school – Vienna (Austria), 21-25 September 2020

WP5 Training school – Vienna (Austria), 21-25 September 2020



Final Conference – 3 December 2020



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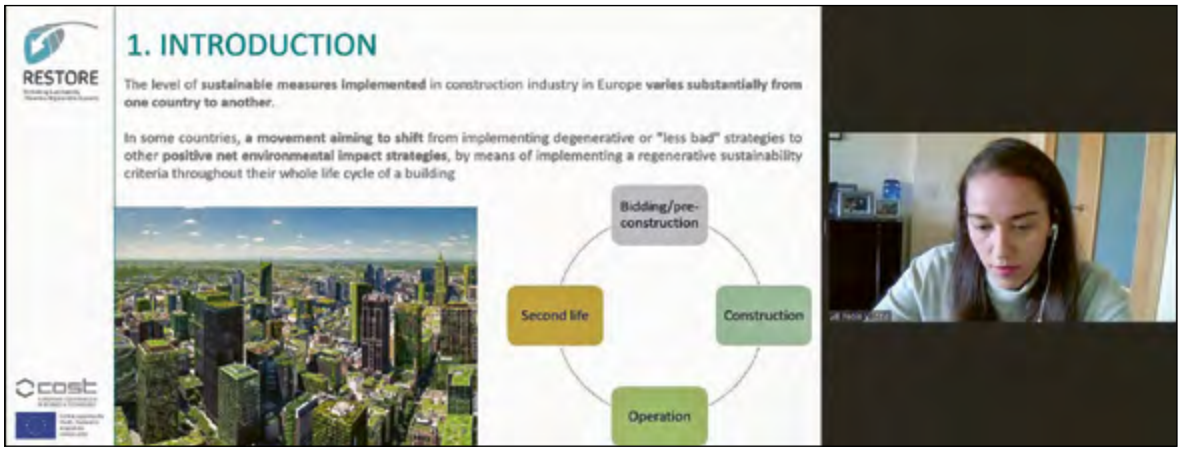

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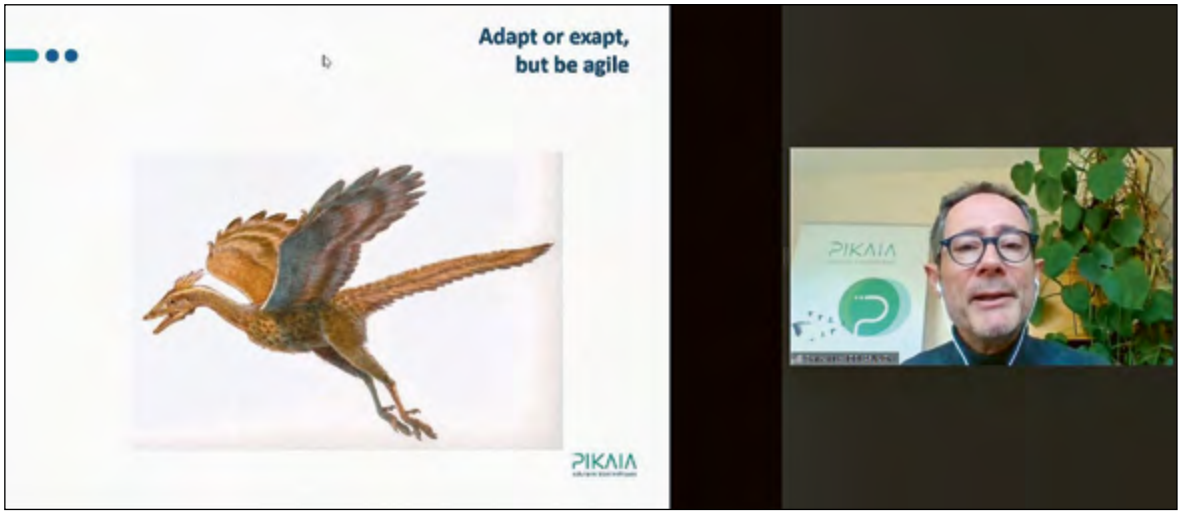
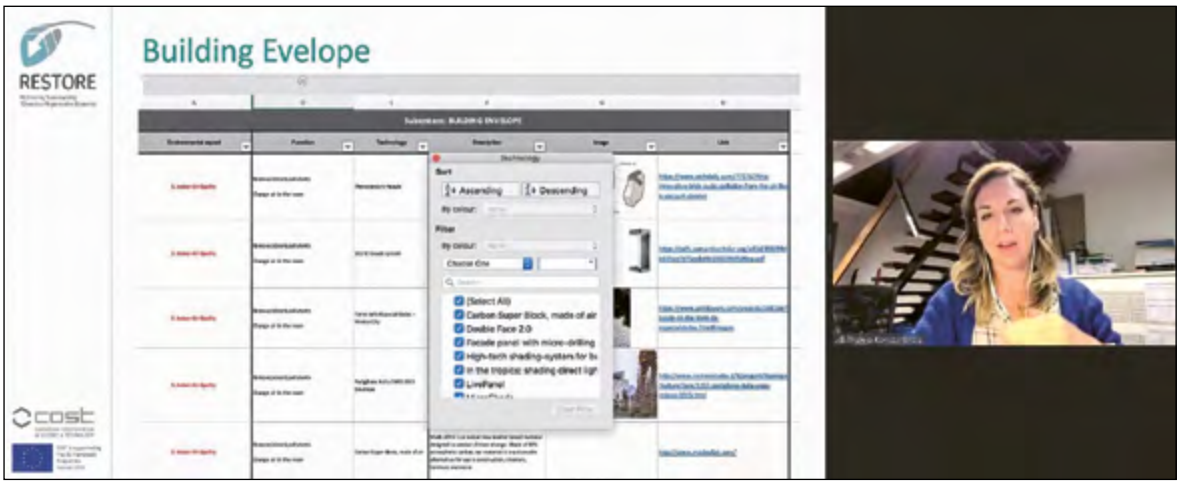


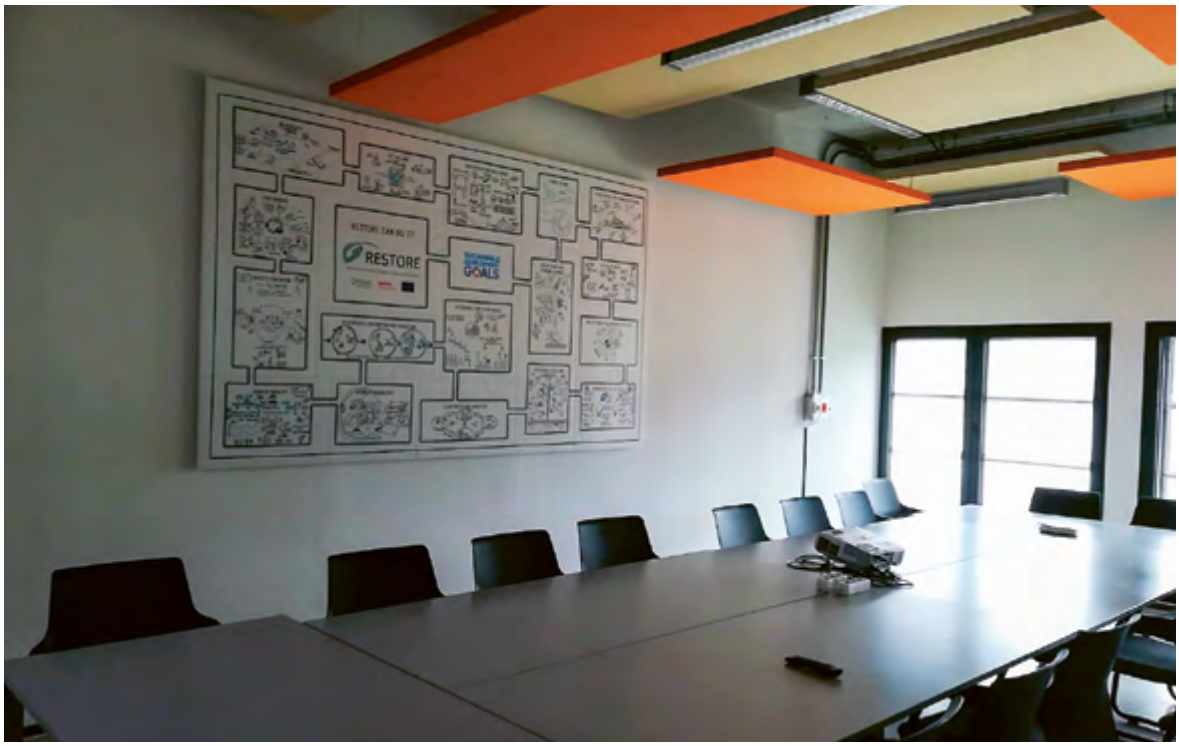
Final Conference – 3 December 2020



Final Conference – 3 December 2020

Final Conference – 3 December 2020

Management Committee meeting – 4 December 2020



RESTORE UNSDGs poster at NOI Techpark, Bolzano (Italy)

NOTES

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RESTORE Final Action Dissemination Publication:
RESTORY. Managing a COST Action as a Project.

This publication has a two-fold aim: to summarize the main results from the *COST Action CA16114 REthinking Sustainability TOwards a Regenerative Economy* (RESTORE, 2017-2021); and, to provide some insight into the project management strategies that are in place for our team, thereby ensuring that the Action will be properly and successfully developed.

COST is the longest-running European framework supporting trans-national cooperation between researchers, engineers, and scholars throughout Europe. The RESTORE Action is working for a paradigm shift towards restorative sustainability for new and existing buildings and space design across Europe, through active lobbying and mentoring, as well as through working groups, training schools and Short-Term Scientific Missions (STSMs), advancing the sustainability of restorative built-environment sustainability.

In this publication we will firstly provide an overview of what the RESTORE Action is, its challenge, main goals, structure, and main tasks. We will explore in greater detail how we addressed RESTORE, using an internationally recognized Project Management methodology. The voices of RESTORE active members will reflect their impressions and insights on the experience they lived within a COST Action.

RESTORE has seen some great experiences, milestones of achievement, opportunities to explore, although it has also gone astray, as might happen when addressing a new project. However, we have done our best to manage all the aspects, sometimes finding what we thought were brilliant outcomes or at least achievements that deserve to be shared, if only to see whether others thought likewise.

We hope these insights will be helpful for other colleagues involved in either current or future COST network Actions, and in general for professionals dealing with international research projects and initiatives that typically involve a large number of scholars and practitioners from different fields and expertise.

Carlo Battisti is a sustainable innovation manager and consultant, based in Bolzano, South Tyrol, Italy and Chair of the Restore project, on behalf of Eurac Research, Institute for Renewable Energy. He is also President of Living Future Europe.

Martin Brown is an innovative sustainability 'provocateur', advocate, and business improvement consultant with his Fairsnape practice, based in the Forest of Bowland, Lancashire, United Kingdom. He is Vice Chair of Restore and Vice President of Living Future Europe.

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