ARCH4CHANGE

ARCH4CHANGE - DIGITAL CLIMATE CHANGE CURRICULUM FOR ARCHITECTURAL EDUCATION:

►►► METHODS TOWARDS CARBON NEUTRALITY ►►►

ARCH4CHANGE

ARCH4CHANGE seeks to co-create an architectural curriculum that is fit for the new decade, in which society faces unprecedented challenges, related to mitigating and buffering the effects of the climate crisis.

We will map and test a radical 'climate future' curriculum across the 5 years of architectural education with and for educators and students in five partner organisations: Aarhus School of Architecture, Denmark; Bologna University, Italy; Taltech, Estonia; Tampere University, Finland and TU Dublin, Ireland).

ARCH4CHANGE aims to not only raise awareness of the significant impact of architects' design decisions on the environment, but it will develop, teach, test and advance competences of architecture students, and educators, in relation to environmental and climate goals in architecture and by going beyond the generic and narrow sustainability knowledge usually taught in most architecture schools. Increasing knowledge, understanding, skills and competences is necessary to help mitigate and adapt our built environment to climate change.

This leads to the priority of tackling skills gaps and mismatches, in that ARCH4CHANGE aims to prepare students and educators to enable change towards a carbon neutral transition in the next decade. Together, we will test and develop different pedagogical methods to best integrate the ARCH4CHANGE curriculum in design studio, to replace, or complement existing courses, and support life-long learning, while also ensuring that EU and national professional prescriptions and recognition for architectural education are met. ARCH4CHANGE will also advance the competences of architectural educators through sharing different knowledge and expertise on content and pedagogical approaches, developing a teacher training toolkit.

All resources will be freely made available on the ARCH4CHANGE digital platform as a toolkit FOR ARCHITECTURAL EDUCATION: METHODS TOWARDS CARBON NEUTRALITY

ARCH4CHANGE

ERASMUS + STRATEGIC KNOWLEDGE PARTNERSHIP APPLICATION

ABOUT

The design and construction of buildings is responsible for around 40% of the EU's energy use and 36% of CO_2 emissions [3], significantly contributing to climate change. In response, new buildings in the EU have to be designed to be nearly zero energy from 2020, and existing buildings by 2050 as part of the EU's commitment to climate neutrality [4, 6]. Finland has committed to carbon neutrality by 2035 [5]. Yet, despite the urgency of the global climate crisis, a significant skills and competency gap exists for both architecture educators and students between the current 'climate change' knowledge and skills base, and that required to achieve these ambitious climate goals in practice.

The competency gap has been evidenced by research [9-15], as well as by the architecture profession declaring 'a biodiversity and climate emergency' across 18 countries with 4000 signatures calling for climate action in the profession through more sustainable design [1]. Moreover, the Architects Council of Europe (ACE) manifesto calls for 'ACHIEVING SUSTAINABILITY IN THE BUILT ENVIRONMENT' through 'upskilling' and by 'high quality education' [8].
Moreover, 2300 educators and student supporters globally have joined 'Architecture Education Declares' in its 'CALL FOR A CURRICULUM CHANGE' to be able to respond to climatic and ecological challenges that at present architecture students, and by extension future architecture professionals, are not being equipped with [2].

This skills gap and lack of integration of climate related architectural education in the majority of architecture schools is also witnessed by each consortium partner's similar experiences, observations and research. For example, students struggle to obtain the right kind of knowledge at the right time to support their own learning, and they lack support in how to critically evaluate and apply this knowledge to their own design propositions. Often aspects are taught from a narrow regional viewpoint, rarely together or holistically covering aspects. Despite the fact that climate change is a global problem, often transnational perspectives are absent, while sustainability teaching often only happens as an 'opt-in' course and not at earlier years when it is fundamental to integrate sustainability in design-thinking. There is a typical separation of 'sustainability courses' from students' design projects, leaving a wide gap between theory and application in design. Moreover, in most cases architectural educators are ill-equipped to embed sustainability in design-courses or to create a holistic approach due to their own lack of expertise and resources, and siloed thinking that regards 'design' as separate from 'sustainability' issues. This highlights that there is a need to develop appropriate pedagogical approaches to effectively promote and embed the implementation of climate change knowledge in architecture education [9,15]. This is what our consortium seeks to address, with the following objectives:

1. WORKING TOWARDS A CARBON NEUTRAL SOCIETY: to increase student and educator knowledge about responding to climate change, going beyond basic and fragmented sustainability knowledge in architecture.

2. TACKLING SKILLS GAPS for (and with) both architecture students and teachers through a radically changed architecture curriculum, and co-developing a teacher training toolkit.

3. TESTING NEW AND INNOVATIVE DIGITAL PEDAGOGIES and collaborative ways of digital learning to strengthen and change teaching and learning approaches.

4. BROADENING ACCESS TO THE KNOWLEDGE AND TOOLS developed to create a step-change in architectural education beyond the consortium, via a digital platform.

The TARGET GROUPS are ARCHITECTURE STUDENTS AND EDUCATORS, with interest to other stakeholders (e.g. architecture associations and organisations etc.), and other fields (e.g. interior/urban design, engineering, construction, development, etc). The ARCH4CHANGE project is reliant on a European transnational approach to achieve its objectives through the following:

Co-creating new climate change curriculum content for architectural education through sharing of content, knowledge and expertise with a transnational perspective, while reflecting national knowledge and a European level of understanding.

Transferring different architecture pedagogical knowledge, experience and approaches across the partner countries, leading to new, innovative, co-developed pedagogical methods, culminating in a teacher training toolkit.

Transnational dissemination and uptake of the outputs through shared resources, national and international events, and the culmination of a co-created open access digital learning platform, also accessible beyond the consortium.

With EU educators, students, and key stakeholders, exchange and transfer of best practice, cross-cultural and cross-climate learning and testing of outputs among the transnational partners, strengthening the quality and relevance of the project.

The three closely related and integrated priorities at the heart of the ARCH4CHANGE objectives are:

1. HORIZONTAL: Environmental and Climate Goals
2. HIGHER EDUCATION: Tackling skills gaps and mismatches
3. HORIZONTAL: Innovative practices in a digital era

ARCH4CHANGE seeks to co-create an architectural curriculum that is fit for the new decade, in which society faces unprecedented challenges, related to mitigating and buffering the effects of the climate crisis. As such we will map and test a radical 'climate change' curriculum across the 5 years of architectural education with and for educators and students in the five partner organisations. Thus, the HORIZONTAL PRIORITY of Environmental and Climate Goals are at the basis of the ARCH4CHANGE project, in that it aims to not only raise awareness of the significant impact of architects' design decisions on the environment, but it will develop, teach, test and advance competences of architecture students, and educators, in relation to the implementation of environmental and climate goals in architecture; increasing knowledge, understanding, skills and competences is necessary to help mitigate and adapt our built environment to climate change and transition to climate neutrality.

This leads to the HIGHER EDUCATION priority of tackling skills gaps and mismatches, in that the ARCH4CHANGE project aims to prepare students and educators to enable change towards a carbon neutral transition in the next decade. The traditional architecture curriculum currently being widely pursued has a knowledge and skills gap in this area, at both the level of educators and graduates [8-16]. This causes a divergence in the required knowledge and skills of graduate architects to tackle the climate emergency, against those they actually possess. It is therefore imperative this gap is bridged to en-

able individual students to gain the necessary knowledge and competences to contribute fully to the architecture labour market in order to meet wider societal needs related to climate change and society's transition towards carbon neutrality in the next few decades. As such, a radical new DIGITAL CLIMATE CHANGE CURRICULUM FOR ARCHITECTURAL EDUCATION: METHODS TOWARDS CARBON NEUTRALITY will be developed.

To successfully achieve this, together, we will test and develop different pedagogical methods to best integrate the ARCH4CHANGE curriculum in the design studio, to replace, or complement existing courses, and support life-long learning, while also ensuring that EU and national professional prescriptions and recognition for architectural education are met. We will develop, teach and learn with other educators and students through shared activities and continuous feedback, while students will also learn from each other. The ARCH4CHANGE project will also advance the competences of architectural educators through sharing different knowledge and expertise on subject content and pedagogical approaches, both within and beyond the project team. This will culminate in the co-creation of a teacher training toolkit, enabling upskilling of educators in new and innovative teaching methods and ensuring successful implementation of the ARCH4CHANGE curriculum. As such, ARCH4CHANGE is in support of the Architects Council of Europe manifesto 'ACHIEVING SUSTAINABILITY IN THE BUILT ENVIRONMENT' through 'upskilling' and by 'high quality education' [8].

The final HORIZONTAL PRIORITY is that of innovative practices in a digital era and is central to the project because we will specifically develop and test the value of digital learning methods and tools as part of a blended learning approach and active learning methods to create a digital learning environment, instead of architectural design pedagogies that are still mostly centred around individual face-face teaching and learning. This includes, but is not limited to, for example, a hybrid of online lectures, use of mobile devices, digital tools, guidance, texts and self-tests; flipped classrooms; problem-based learning and inquiry-based learning (where students construct knowledge collaboratively), reflective practice; peer-peer learning, etc.).

We will do this by co-creating an open-access digital platform as a dynamic resource that holds all aspects of the ARCH4CHANGE curriculum, as well the teacher training toolkit as guidance for architecture educators. This will underpin the transition towards a carbon neutral society by mapping environmental and climatic knowledge, skills, methods and approaches that are necessary for architecture students and their educators. This innovative approach to architectural education will also enable access to, and sharing of, the teaching and learning intellectual outputs to a much wider audience, enabling free accessibility of educators and students outside the project partner organisations to the wealth of knowledge the project will generate as well as a best practice approach for the implementation of this knowledge.

ARCH4CHANGE

PROJECT DESCRIPTION

The design and construction of buildings is responsible for around 40% of the EU's energy use and 36% of CO2 emissions [3], significantly contributing to climate change. In response, new buildings in the EU have to be designed to be nearly zero energy from 2020, and existing buildings by 2050 as part of the EU's commitment to climate neutrality [4, 6]. Finland has committed to carbon neutrality by 2035 [5]. Yet, despite the urgency of the global climate crisis, a significant skills and competency gap exists for both architecture educators and students between the current 'climate change' knowledge and skills base, and that required to achieve these ambitious climate goals in practice.

The competency gap has been evidenced by research [9-15], as well as by the architecture profession declaring 'a biodiversity and climate emergency' across 18 countries with 4000 signatures calling for climate action in the profession through more sustainable design [1]. Moreover, the Architects Council of Europe (ACE) manifesto calls for 'ACHIEVING SUSTAINABILITY IN THE BUILT ENVIRONMENT' through 'upskilling' and by 'high quality education' [8].
Moreover, 2300 educators and student supporters globally have joined 'Architecture Education Declares' in its 'CALL FOR A CURRICULUM CHANGE' to be able to respond to climatic and ecological challenges that at present architecture students, and by extension future architecture professionals, are not being equipped with [2].

This skills gap and lack of integration of climate related architectural education in the majority of architecture schools is also witnessed by each consortium partner's similar experiences, observations and research. For example, students struggle to obtain the right kind of knowledge at the right time to support their own learning, and they lack support in how to critically evaluate and apply this knowledge to their own design propositions. Often aspects are taught from a narrow regional viewpoint, rarely together or holistically covering aspects. Despite the fact that climate change is a global problem, often transnational perspectives are absent, while sustainability teaching often only happens as an 'opt-in' course and not at earlier years when it is fundamental to integrate sustainability in design-thinking. There is a typical separation of 'sustainability courses' from students' design projects, leaving a wide gap between theory and application in design. Moreover, in most cases architectural educators are ill-equipped to embed sustainability in design-courses or to create a holistic approach due to their own lack of expertise and resources, and siloed thinking that regards 'design' as separate from 'sustainability' issues. This highlights that there is a need to develop appropriate pedagogical approaches to effectively promote and embed the implementation of climate change knowledge in architecture education [9,15]. This is what our consortium seeks to address, with the following objectives:

1. WORKING TOWARDS A CARBON NEUTRAL SOCIETY: to increase student and educator knowledge about responding to climate change, going beyond basic and fragmented sustainability knowledge in architecture.

2. TACKLING SKILLS GAPS for (and with) both architecture students and teachers through a radically changed architecture curriculum, and co-developing a teacher training toolkit.

3. TESTING NEW AND INNOVATIVE DIGITAL PEDAGOGIES and collaborative ways of digital learning to strengthen and change teaching and learning approaches.

4. BROADENING ACCESS TO THE KNOWLEDGE AND TOOLS developed to create a step-change in architectural education beyond the consortium, via a digital platform.

ARCH4CHANGE

The TARGET GROUPS are ARCHITECTURE STUDENTS AND EDUCATORS, with interest to other stakeholders (e.g. architecture associations and organisations etc.), and other fields (e.g. interior/urban design, engineering, construction, development, etc). The ARCH4CHANGE project is reliant on a European transnational approach to achieve its objectives through the following:

Co-creating new climate change curriculum content for architectural education through sharing of content, knowledge and expertise with a transnational perspective, while reflecting national knowledge and a European level of understanding.

Transferring different architecture pedagogical knowledge, experience and approaches across the partner countries, leading to new, innovative, co-developed pedagogical methods, culminating in a teacher training toolkit.
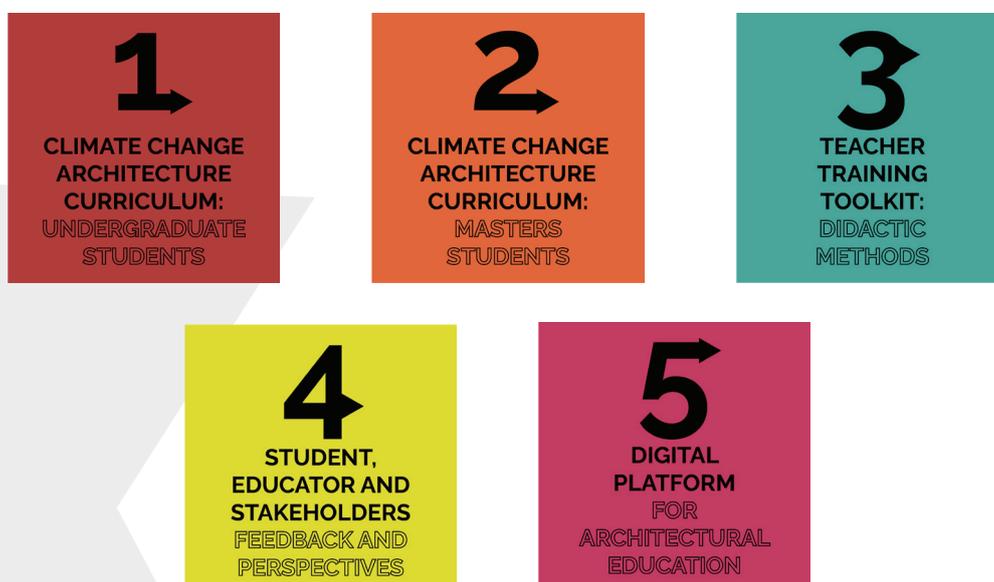
Transnational dissemination and uptake of the outputs through shared resources, national and international events, and the culmination of a co-created open access digital learning platform, also accessible beyond the consortium.

With EU educators, students, and key stakeholders, exchange and transfer of best practice, cross-cultural and cross-climate learning and testing of outputs among the transnational partners, strengthening the quality and relevance of the project.

EXPECTED RESULTS

ARCH4CHANGE aims to increase the promotion of climate and ecological issues in design-based ARCHITECTURAL EDUCATION by upskilling STUDENTS and EDUCATORS with a teacher training toolkit with different pedagogical approaches tested in the project. The project results will culminate in the establishment of a new open-access digital environment. The importance and urgency of this topic is reinforced by the direct societal impact on CO2 emissions and the urgent need for a transition towards carbon neutral societies. It is in support of architecture's 'biodiversity and climate emergency' declaration, calling for a CURRICULUM CHANGE and ACE's manifesto for ACHIEVING SUSTAINABILITY IN THE BUILT ENVIRONMENT. Outputs will also be transferable to other fields (e.g. interior/urban design, engineering, construction, development, etc). Through teacher and student mobility, knowledge exchange and co-development, we will map, exchange, co-create and pilot a new digital climate change curriculum and good teaching practices that the transnational teams will collectively develop in 5 outputs:

1
CLIMATE CHANGE
ARCHITECTURE
CURRICULUM:
UNDERGRADUATE
STUDENTS

2
CLIMATE CHANGE
ARCHITECTURE
CURRICULUM:
MASTERS
STUDENTS

3
TEACHER
TRAINING
TOOLKIT:
DIDACTIC
METHODS

4
STUDENT,
EDUCATOR AND
STAKEHOLDERS
FEEDBACK AND
PERSPECTIVES

5
DIGITAL
PLATFORM
FOR
ARCHITECTURAL
EDUCATION

Each of these are summarised below, and described in detail in the Intellectual Outputs sections:

#O1 CLIMATE CHANGE ARCHITECTURE CURRICULUM: UNDERGRADUATE STUDENTS will focus on undergraduate architecture education, creating curriculum content which addresses designing for a changing climate, including transnational approaches and national perspectives to enable the integration of climate change knowledge and responses into architectural design. The consortium will draw on state of the art knowledge, going beyond shallow or fragmented sustainability knowledge in architecture, rather it will provide the fundamental basis for innovative and holistic information, focusing on:

- going beyond the status quo of sustainability and how solutions can positively contribute now and in the future.
- design solutions for a changing climate, without further exacerbating climate change.
- an integrated and holistic curriculum, across each of the years of education, focusing on the application and integration of knowledge in architectural design processes.

#O2 CLIMATE CHANGE ARCHITECTURE CURRICULUM: MASTERS STUDENTS follows on from O1 and covers the final 2 years of the 5 year architecture degree at a more advanced (in-depth) level, and the approach is as described in O1 above. A difference between O1 and O2 is not only the level and complexity of knowledge and students' skillset but also the acknowledgement that masters students will enter the workforce and that they need to acquire the skills to turn their knowledge from theory into practice. As such practice-based processes will be included to equip students with the knowledge, and confidence and a critical, curious, and flexible attitude to re-think, question, research and innovate solutions, ready to make a difference in real-world practice.

#O3 TEACHER TRAINING TOOLKIT: DIDACTIC METHODS will focus on delivering a training toolkit for educators on different innovative pedagogical approaches, knowledge and tools to upskill educators and to enable the successful delivery and integration of the climate change curriculum in design teaching. Together with educators and students we will share, co-develop, create and test a new digital learning environment to best activate learning and integration of climate change knowledge and responses into the design curriculum in 5 years of architectural education, while also ensuring that EU and national professional prescriptions and recognition for architectural education are adhered to.

#O4 STUDENT, EDUCATOR AND STAKEHOLDERS FEEDBACK AND PERSPECTIVES will focus on collecting and mapping feedback from project participants throughout the project duration to enable steering and refinement of all the project outputs and culminates in short video perspectives and stories by participants on their experience and use of ARCH4CHANGE outputs, benefits, challenges etc. This 'storified' approach will create a series of successful case studies, encouraging and illustrating to others the use of the project results. Different stakeholders are described in 'Associated partners' section.

#O5 DIGITAL PLATFORM FOR ARCHITECTURAL EDUCATION AND DISSEMINATION: TOWARDS CARBON NEUTRALITY focuses on the co-creation of a digital student learning and teacher training platform to promote and make freely accessible and easily usable climate change knowledge to equip students and educators to contribute towards a carbon neutral society. It will be tested with students, educators and key stakeholders, and is the culmination of results and deliverables O1 to O4.

There is a skills and competency gap for both students and educators between the current 'climate change' knowledge and skills base that are required to achieve the ambitious climate goals; causes of this gap are due to [9-16]:

SUSTAINABILITY BEING CONSIDERED AN ADDITION: the sustainability response in design is an 'other' in terms of design excellence, creating a tension between sustainable design performance and aesthetic design quality.

ARCH4CHANGE

LACK OF INTEGRATION OF SUSTAINABILITY KNOWLEDGE IN THE DESIGN PROCESS: the separation of 'sustainability courses' from design courses and students' design projects means students do not obtain the right kind of knowledge at the right time and therefore do not apply knowledge in their own design propositions.

NARROW APPROACHES TO THE TOPIC: sustainability courses are often created by teachers who do not teach design, but by teachers with a research speciality in specific areas, biasing the teaching curriculum to similar narrow viewpoints rather than holistic approaches.

UNDERGRADUATE STUDENTS LACK THE FUNDAMENTALS: sustainability is often only taught at more advanced levels, not at earlier years when students are learning to 'think like a designer', reinforcing that sustainability is separate from (rather than part of) design-thinking and design decision-making, making later connections harder to make.

DESIGN TUTORS LACK THE KNOWLEDGE AND PEDAGOGIES to integrate the holistic knowledge and approaches needed to support students. There is often no climate change curriculum available.
The responsibility of these issues lies partly with the structure and the traditional architecture teaching culture of a design studio, which is a physical space but also a pedagogical and cultural space where learning and teaching happens as a simulation of 'real-life' design practice with regular tutor-student individual tutorials [10]. Within this structure, consortium members have undertaken innovative teaching practices in a variety of courses to tackle the issues described above. ARCH4CHANGE proposes to consider these past teaching experiments as a starting point to foster the implementation and integration of the climate change agenda in design-thinking in architectural education, both within the partner organisations and more widely. ARCH4CHANGE proposes to radically INNOVATE further to improve and advance courses across the entire consortium (and beyond) by reflecting, sharing and co-developing new curricula and methods, for example:

BRINGING CLIMATE CHANGE KNOWLEDGE INTO THE DESIGN STUDIO: some of the partners uniquely bring climate change knowledge to the design studio (i.e. no separate teaching activities exist, but are part of the design teaching), though this is often non-holistic as it is limited by the teacher's knowledge and skills. ARCH4CHANGE will co-develop and test ways to apply this approach across the consortium, while co-creating and sharing access to A NEW COMPREHENSIVE CLIMATE CHANGE CURRICULUM of topical knowledge available to students (and teachers) to draw on 'as and when needed' on a DIGITAL PLATFORM while mapped against a student's DESIGN PROCESS and EACH YEAR OF STUDY.

A '7 STEP DESIGN PROCESS TO SUSTAINABLE ARCHITECTURE': it is a systematic iterative design process developed uniquely by some partners with design practice [11], using peer-peer learning with the aim to integrate sustainability in design-thinking and decision-making at the early design stage to CHANGE a mostly linear design process. ARCH4CHANGE will co-develop and test the '7 steps' as a sustainable design tool and with DIFFERENT INNOVATIVE PEDAGOGICAL METHODS to support a diversity of students through the DESIGN PROCESS AND PRACTICE-BASED PROCESSES.

CHANGE OF CULTURE: recent restructuring and pilot initiatives at some of the partner institutions has highlighted how designing for climate change requires a culture change in both teaching environment and attitude as well as learning environment and student expectations. All ARCH4CHANGE consortium members will reflect and build on this experience, especially in ways to support educators in their role with increased need for pedagogical skills and content knowledge by co-developing a NEW INNOVATIVE TEACHER TRAINING TOOLKIT, accessible via a NEW DIGITAL PLATFORM.

Each of the members have received feedback from students requesting more information, readings and knowledge on designing with climate change. The ARCH4CHANGE project will tackle this by joining forces within the consortium to deliver a holistic, state of the art DIGITAL CURRICULUM and TEACHER TRAINING TOOLKIT that responds to the climate crisis and how to work towards a carbon neutral

society by embedding different levels of knowledge in the design process across 5 years of architecture education. These snapshots of activities represent a starting point for the ARCH4CHANGE project, in the creation of new innovations, while being complementary to current activities.

Each of the partners are assigned to lead intellectual outputs and activities within their primary areas of expertise, experience and competences. While a leader is responsible for the coordination of the output, activity and drafting the result, each output and activity is supported by the other consortium members to include different perspectives and draw on complementary expertise. All partners are involved in all output tasks in order to balance input and perspectives and benefit from a true transnational co-development. Below are core tasks for each ARCH4CHANGE partner; more detail is unfolded in the Intellectual Outputs section and budget about these tasks and responsibilities.

#AAA will lead O1 (CLIMATE CHANGE ARCHITECTURE CURRICULUM: UNDERGRADUATE STUDENTS) due to expertise in embedding sustainability in the design studio especially in undergraduate level as well as their experience with holistic design processes. The new didactic lab located at AAA will also support all other outputs and they will also work closely together with partners on O2, given the alignment with O1. They will host a transnational meeting (TM4), alongside hosting a 5 day intensive student learning event about climate and environmental goals: tackling skills gaps (C2) and a multiplier dissemination event (E2). AAA will also co-lead subsections O2A ('Mapping and evaluation of partner's existing curriculum and context'), O2D and O2F with TAU (i.e. 'Piloting with students, educators, industry', and 'Long term sustainability', respectively).

#TAU coordinates the ARCH4CHANGE project because of the educational and technological expertise and support offered by the university structure, and will contribute to all outputs. They will also lead O2 (CLIMATE CHANGE ARCHITECTURE CURRICULUM: MASTERS STUDENTS) due their expertise at embedding sustainability at masters level (and that this is an entirely English language curriculum), and there are new course structure opportunities to test new content and methods. TAU will also co-ordinate and host transnational meeting TM1 (kick-off meeting), and will host a multiplier dissemination event (E4, final project launch). TAU will also co-lead subsections O1A ('Mapping and evaluation of partner's existing curriculum and context'), and O1D and O1 F (i.e. 'Piloting with students, educators, industry' and 'Long term sustainability', respectively) with AAA and will co-lead O5B and O5D with TALTECH ('Iteratively co-creating and refining the platform' and 'Delivering and disseminating the platform', respectively). TAU will also lead O1B ('Industry stakeholder input').

#TU Dublin will lead O3 (TEACHER TRAINING TOOLKIT: DIDACTIC METHODS) due to their research and didactic expertise in establishing digital learning environments, in embedding sustainability in architecture education, and their recent experience in shifting the school's culture towards more ecological design. They will contribute to all other outputs and activities, specifically also the digital platform (O5), due to their expertise and experience in digital learning environments. TU Dublin will host one transnational meeting (TM3) alongside hosting a 5 day intensive teacher training event: testing didactic methods (C1), and a multiplier dissemination event (E1).

#UNIBO will lead O4 (STUDENT, EDUCATOR AND STAKEHOLDERS FEEDBACK AND PERSPECTIVES) due to their expertise in project management and quality assurance to capture a broad perspective from participants and stakeholders on the curriculum, training toolkit and digital platform throughout the project duration. This output cuts across all other outputs, and supports the quality and relevance of all outputs via feedback, but is also an output in and of itself through creating storified 'video perspectives', to be hosted on the digital platform as inspiring case studies. UNIBO will contribute to all other outputs, and will host one transnational meeting (TM2), and they will also lead subsection O1E and O2E: 'Reporting and publications (dissemination)'. UNIBO will also chair the Quality Assurance group.

#TALTECH will lead O5 (DIGITAL PLATFORM FOR ARCHITECTURAL EDUCATION AND DISSEMINATION: TOWARDS CARBON NEUTRALITY) due to pedagogies of value for the digital project activities and

bringing a 'live' testbed for broader cultural and structural changes. All content on the platform and the platform itself will be equally accessible by each of the partners. They will host one transnational meeting (TM5) and multiplier event E3 that will launch the digital platform.

The ARCH4CHANGE project will bring the European consortium together to deliver a holistic, state of the art digital curriculum and teacher training toolkit that responds to the climate crisis and how to work towards a carbon neutral society by embedding different levels of knowledge in the design process across 5 years of architecture education. This ambition can only be achieved through collaboration between the partners.

ARCH4CHANGE

▶▶▶ CHANGING -
HOW WE THINK ABOUT
AND TEACH
- SUSTAINABLE ARCHITECTURE ▶▶▶