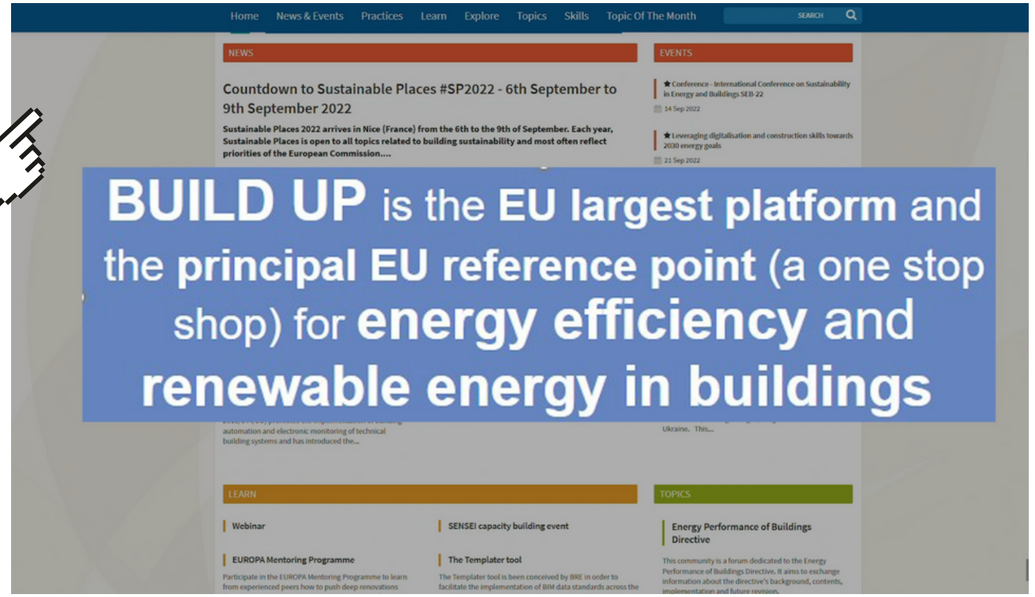
Welcome to

BUILD UP

The European Portal For
Energy Efficiency In Buildings

W E B I N A R

BUILD UP
presentation



WEBINAR

Hosted by
BUILD UP

Skills enhancement needed for Energy Efficient Historic Buildings

28th February 2023 / 10:00H - 11:30H

AGENDA

10:00H - 10:05H	Brief introduction to BUILD UP and to the webinar topic **Aranzazu Galán, Senior Researcher at Université Libre de Bruxelles and BUILD UP's Editorial Board Member**
10:05H - 10:10H	Welcome **Reinhold Sahl**
10:10H - 10:25H	Energy transition and the role of construction skills in VET **Gerald Wagenhofer**
10:25H - 10:40H	INCREAS: Traditional Skills at Risk **Federica Epifani**
10:40H - 10:45H	Poll #1
10:45H - 11:00H	PRO-Heritage: Improving Energy Efficiency of Traditional Buildings **Gerald Wagenhofer**
11:00H - 11:05H	Poll #2
11:05H - 11:20H	INCREAS: Industrialised Solutions understood as Standardised Implementation – Care & Repair executed by experience craftsperson and conservators **Astrid Huber**
11:20H - 11:30H	Q&A session **Karin Novotny**

INCREAS

INCREAS - Innovation and Creative Solutions for Cultural Heritage

Energy transition and the role of construction skills in VET

28. February 2023

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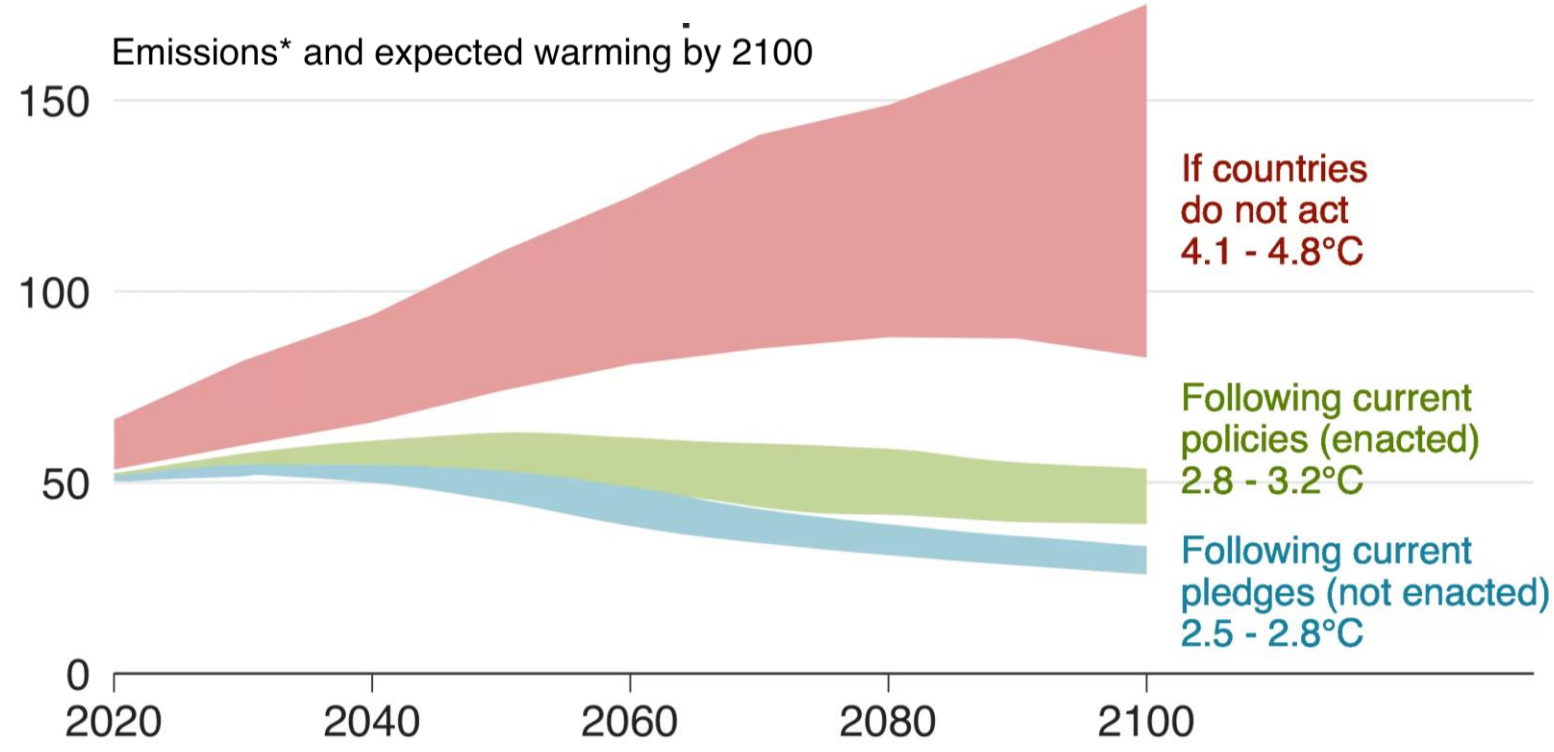
Climate Crisis
How much worse will the problem get?



*Emissions are in Gigatonnes of CO2 equivalent

Source: Climate Action Tracker

BBC

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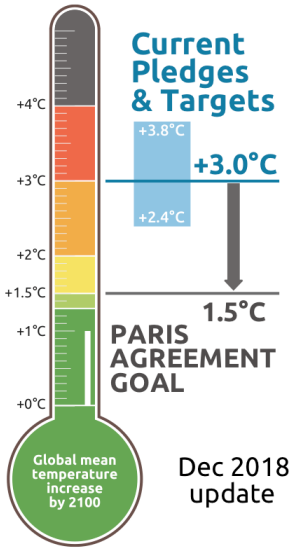
Climate Crisis
Achieving Paris targets

Governments must strengthen their Paris targets

June 2019 **Update** Climate Action Tracker

Governments are scheduled to update their Paris Agreement targets (NDCs) by 2020 and must be ambitious. To keep the 1.5°C goal alive, they need to take radical steps and halve global emissions by 2030.



Dec 2018 update

4°C+ World	< 4°C World	< 3°C World	< 2°C World	< 1.5°C World	<< 1.5°C World
CRITICALLY INSUFFICIENT	HIGHLY INSUFFICIENT	INSUFFICIENT	2°C COMPATIBLE	1.5°C PARIS AGREEMENT COMPATIBLE	ROLE MODEL
RUSSIA	ARGENTINA	AUSTRALIA	BHUTAN	MOROCCO	0 Countries
SAUDI ARABIA	CHILE	BRAZIL	COSTA RICA	THE GAMBIA	
TURKEY	CHINA	CANADA	ETHIOPIA	2 Countries	
UKRAINE	INDONESIA	EU	INDIA		
USA	JAPAN	KAZAKHSTAN	PHILIPPINES		
5 Countries	SINGAPORE	MEXICO	5 Countries		
	SOUTH AFRICA	NEW ZEALAND			
	SOUTH KOREA	NORWAY			
	UAE	PERU			
	9 Countries	SWITZERLAND			
		10 Countries			

Climate Action Tracker

June 2019 update

The vast majority of countries have insufficient targets that must be improved

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Energy Transition
EU general objectives

- Shift from fossil-based systems of energy production and consumption to renewable energy sources
- Increasing penetration of renewable energy into the energy supply mix
- Regulation and commitment to decarbonisation
- Energy transition will be supported by implementing rules for environmental, social and governance (ESG) factors

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Energy Transition
EU targets in numbers

- No net emissions of greenhouse gases by 2050
- Economic growth decoupled from resource use
- No person and no place left behind

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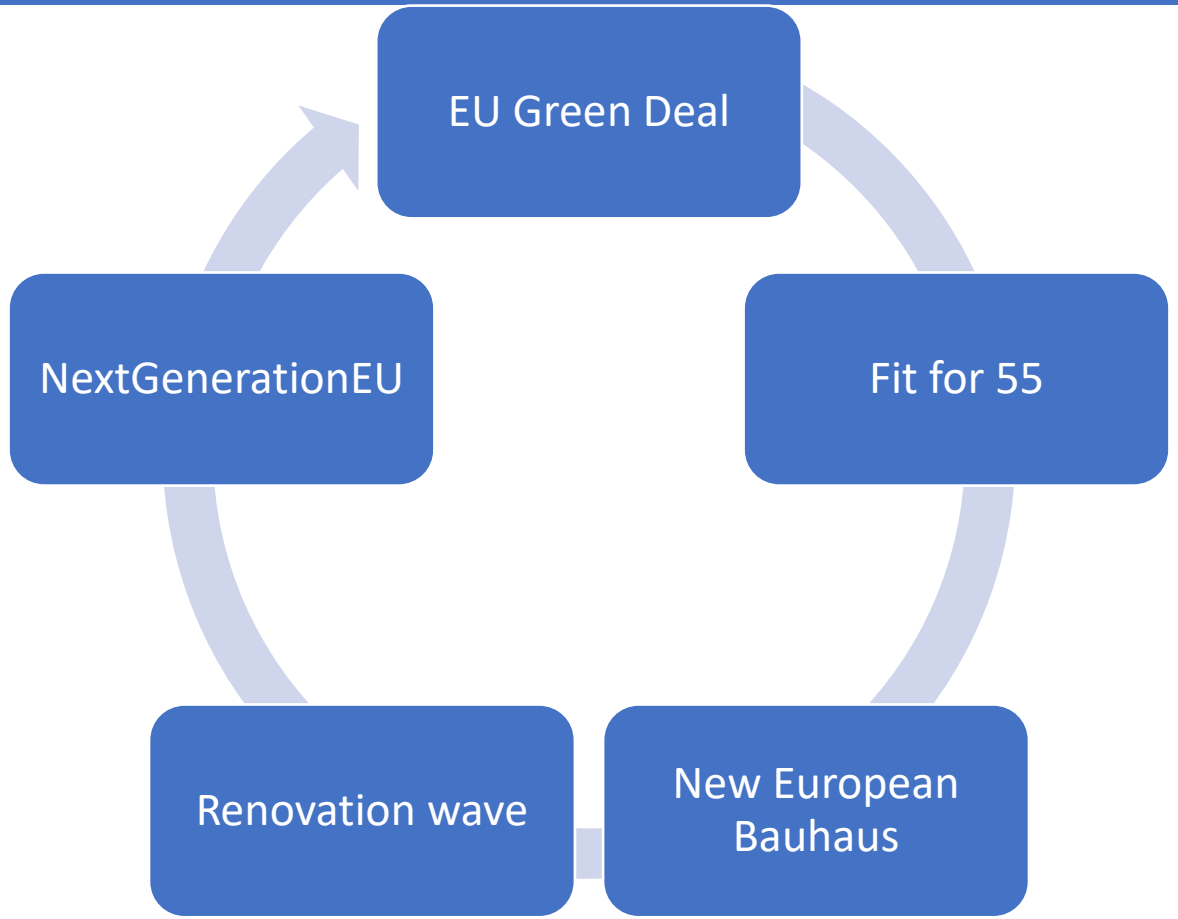
Energy Transition

Striving to be the first climate-neutral continent



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Role of construction skills in VET 1

- Changing the EU job market by transiting to a green – and more digital – economy and society
- Creating new skill needs across sectors and occupations
- Europe will invest in upskilling and reskilling of its workforce.
- Vocational education and training (VET) will play an eminent role

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Role of construction skills in VET 2

- BUILD UP Skills
- Sector Skills Alliance
- Pact for Skills
- Year of Skills 2023

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THANK YOU FOR YOUR ATTENTION!

www.increas.eu

https://www.projektwelt-burghauptmannschaft.eu/en/event/flip-1-increas

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coordination@increas.eu

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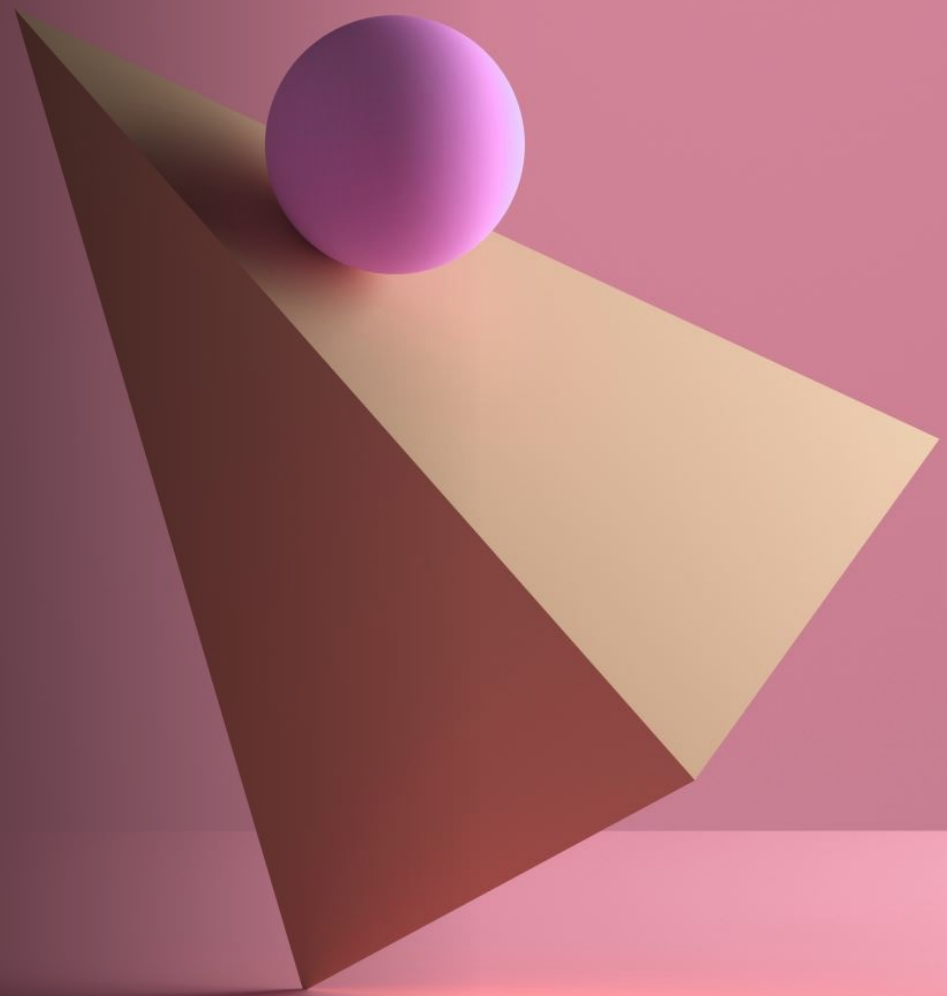
Endangered skills, endangered heritage. Insights from academic research

Federica Epifani, Ph.D

CUEBC & University of Salento



Sub-Projects

INCREAS

Innovative and Creative Solutions for Cultural Heritage

INCREAS

Co-funded by the European Union

Project Charter

Sub-projec	Identification of skills-at-risk (basis for description of examples for Cultural Heritage related occupations and for the reporting structure)
Objective	• Identifying skills at risk • Developing ideas and measures to protect or recover skills at risk • Developing an implementation plan
Output	• Analysis of survey results for skills at risk • Conduct further interview with several experts • List of skills at risks • Action plan to protect or recover skills at risk
Expected Outcome	<u>Assumptions:</u> • Supporting the protection of skills at risk

Bibliometric research - methodology

SCOPUS (DATA RETRIEVAL)

Excel , VosViewer (Analysis)

Corpus: publications from 1998 up to November 2022

Language: English

QUERY

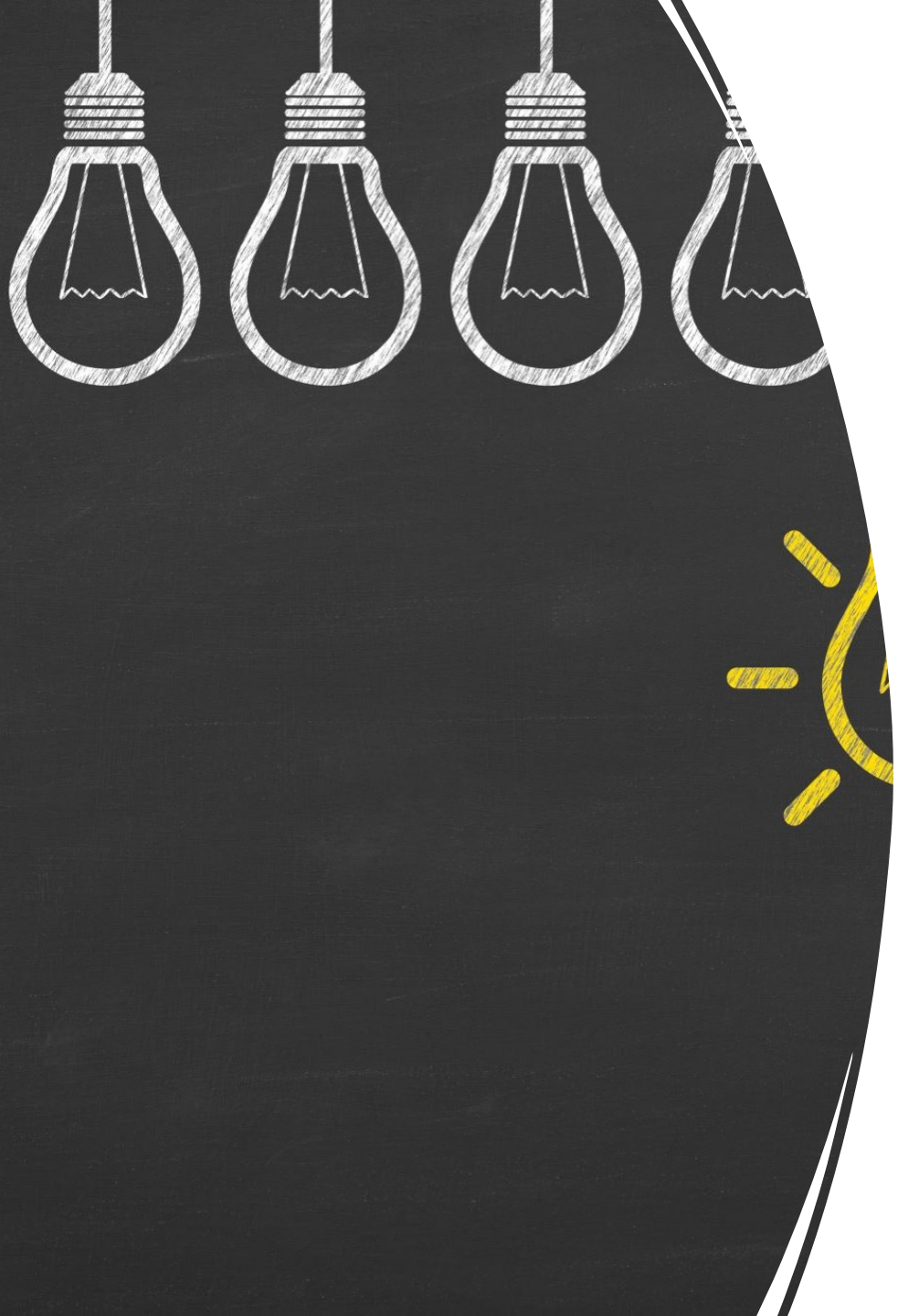
TITLE-ABS-KEY (endangered AND heritage AND skills) OR TITLE-ABS-KEY (endangered AND heritage AND crafts) OR (red AND list AND heritage AND craft) AND (LIMIT-TO (SUBJAREA , "ARTS") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ENGI"))

RESULTS

431 PAPERS

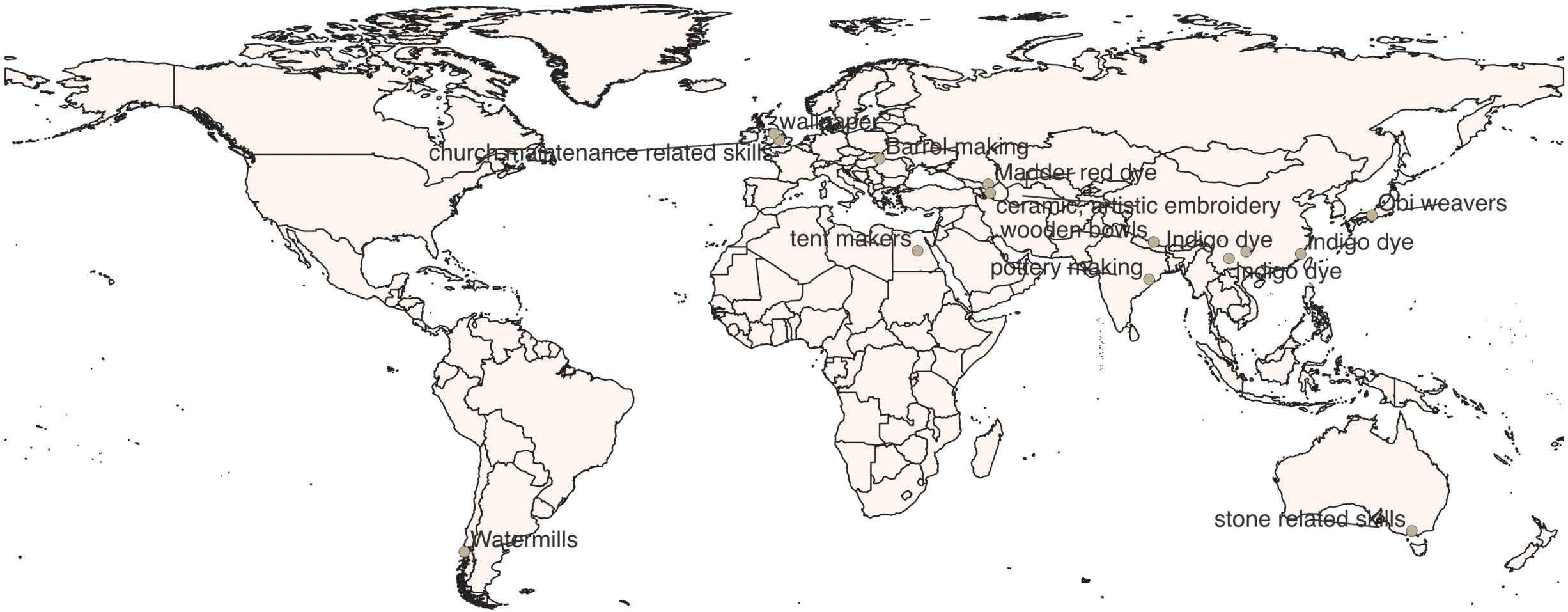
CLEANING (abstracts analysis)

49 PAPERS



Some insights

- Most popular materials: wood, brass and pottery
- Focus on endangered heritage (both tangible and intangible) rather than skills
- endangered heritage =endangered skills. Traditional skills are considered worth of preservation because of their intrinsic value, while their usefulness to the recovery of tangible heritage is not stressed
- New innovative skills in order to recover endangered tangible heritage are the real aim of the largest part of the research, rather traditional skills. → DIGITAL SKILLS
- Placeness of many endangered skills (climate, culture but also policies)


wallpaper
church maintenance related skills
Barrel making
Madder red dye
ceramic, artistic embroidery
Obi weavers
wooden bowls
Indigo dye
Indigo dye
tent makers
pottery making
Indigo dye
stone related skills
Watermills

Evidences

- There is still a gap between the recognition of endangered skills and the implementation of models, strategies and tools to properly define the risk condition and monitor it.
- The most innovative attempts have been run outside of academia (Heritage Craft Association - Red List). A robust scientific debate on this topic is still lacking.
- Need for a place-based analysis

Re-thinking skills at risk according to a place-based approach

Place-based dimension is intrinsic to skills at risk because:

FUNCTIONALITY

building choices (structures, and materials) depend on physical characteristics of the area

CULTURAL-SYMBOLIC VALUES

expressions of the territory and part of the social and territorial heritage.

(supply chain)

List of skills at risks :

what is the geographical optimum? → ”scaling” the research

Action plan to protect/recover skills at risk:

- Heritagization can be the starting point
- recovering skills at risks as part of a broader process of integrated and multisectoral territorial development, according to Agenda 2030.
- Quintuple helix approach: research, public administrative bodies, industry, communities and the territory

Thank you for your attention

Contacts:

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INCREAS

INCREAS - Innovation and Creative Solutions for Cultural Heritage

PRO-Heritage: Improving Energy Efficiency of Traditional Buildings

28. February 2023

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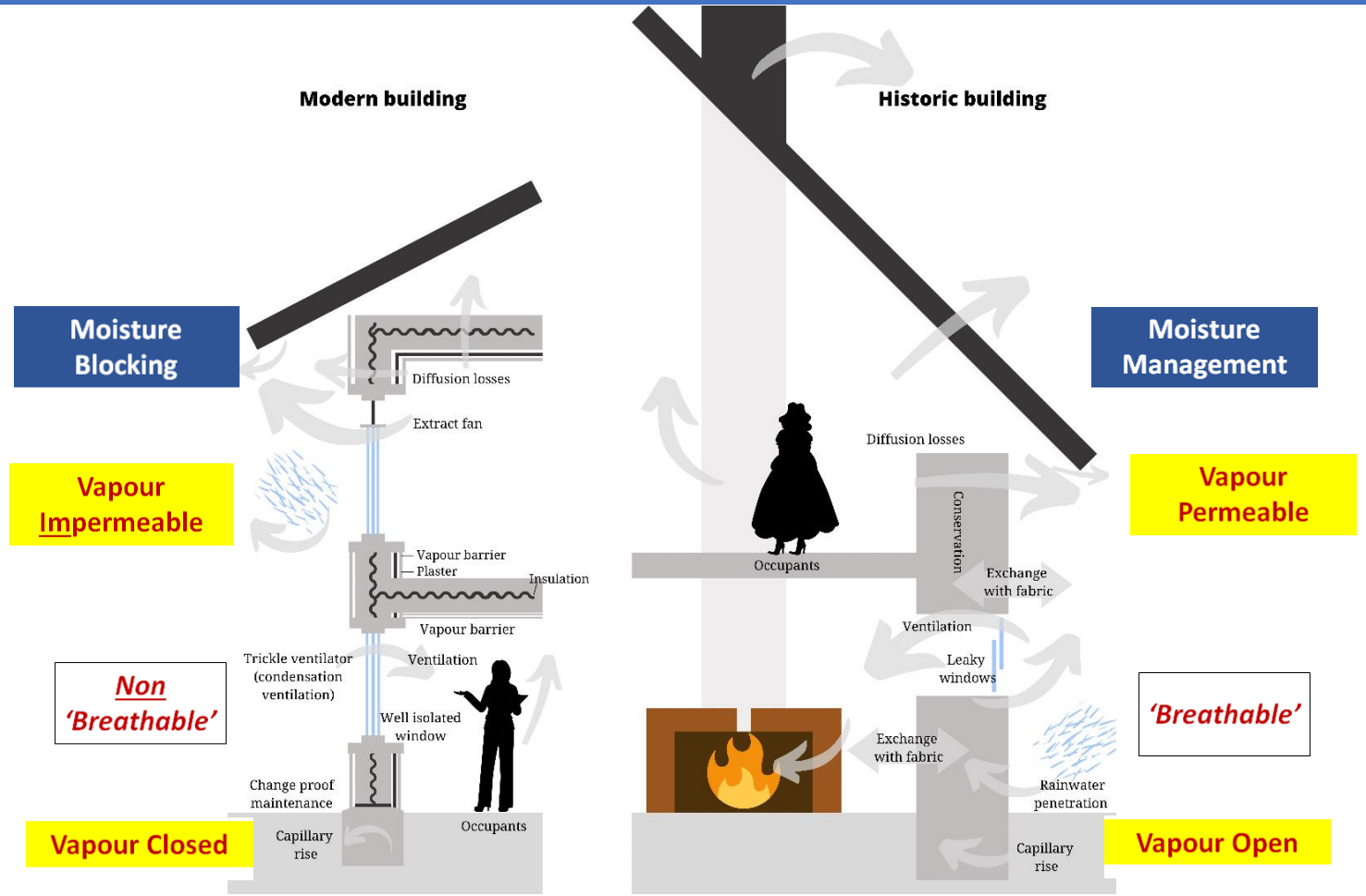
Different Characteristics of Traditional Buildings



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Motivation 1

- The need to keep Cultural Heritage in shape and available for future generations
- The need to keep historic sites “accessible and adequate for current and future generations requirements”
- Traditional buildings …
  - … do have an enormous added-value
  - … need traditional crafts
  - … do have a positive impact on climate protection
  - … are part of circular economy
  - … are different

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Motivation 2

- Research questions
  - What are appropriate energy efficient measures?
  - Which craft do need an upskilling?
  - What learning outcomes have to be covered?

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Definition of Traditional Buildings

- These are understood to be buildings constructed before 1919. Modern materials and techniques were used widely in the construction industry from around this time onwards.
- Traditional buildings are often referred to as being of ‘breathable construction’. This means that the construction materials used can absorb and release moisture.

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Basic rules regarding interventions

- Stay in the system as long as possible
- Do not worsen the initial situation for the next intervention
- Life cycle of a traditional building should also take into account the future need to dispose of old, traditional and new (brought in with a planned intervention) materials
- Life cycle also mean keep everything in use for as long as it lasts (including regular care and maintenance)
- Identify and solve the cause of a poor performance and not a symptom
- A holistic approach to energy efficiency

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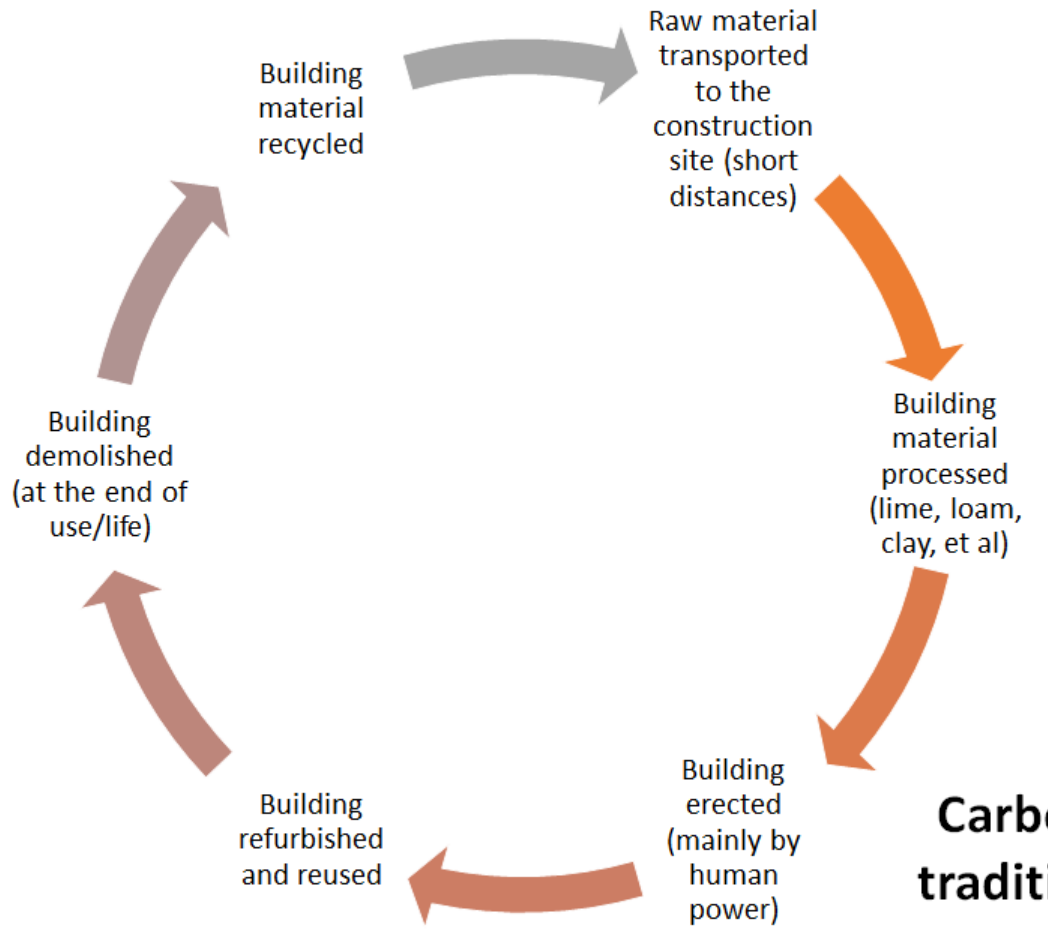
Striving to be the first climate-neutral continent



Carbon lifecycle of traditional buildings

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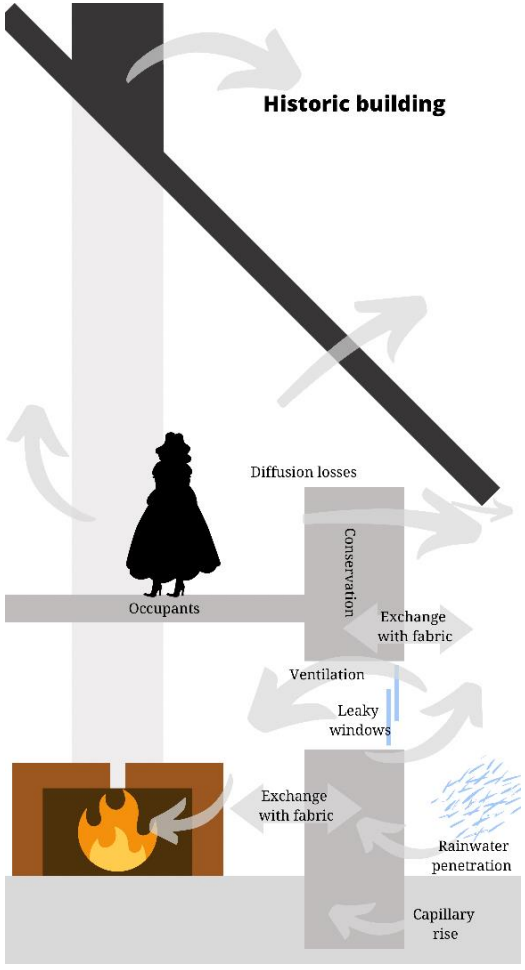
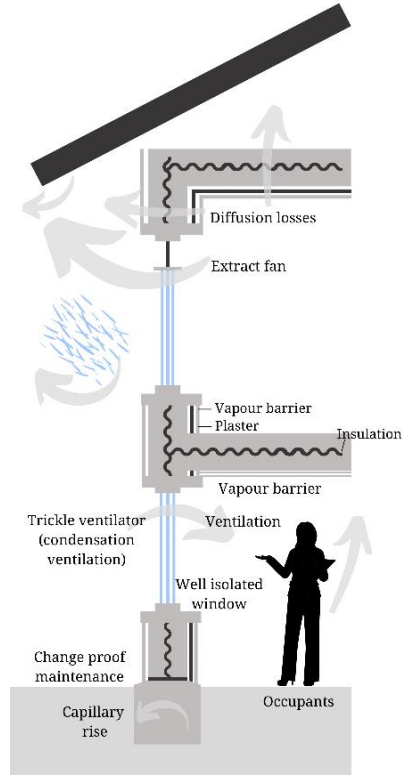
Striving to be the first climate-neutral continent



Energy which is embodied in the building

Energy needed for destroying



Energy which is embodied in the building

Striving to be the first climate-neutral continent

Repairs to Stone Wall		
Repair Type	**Durability – well executed**	**Durability – sub standard**
Stone indent / piecing in	100+ yrs	10-20 yrs
Mortar repairs in sheltered locations	30-60 yrs	5-15 yrs
Mortar repairs in exposed locations	Avoid	< 10 yrs
Mortar joint re-pointing	60-120 yrs	5-15 yrs
Stone replacement	100+ yrs	< 30 yrs
Brick replacement	100+ yrs	< 30 yrs

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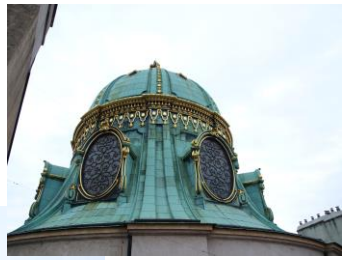
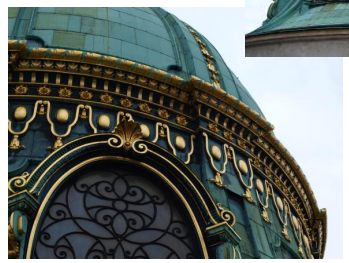
Different Trades

Walls:
- Bricklayer
- Stone mason
- Mason

Windows/doors:
- Glass worker
- Window maker
- Blacksmith

Roofs:
- Slater/roofer
- Tinsmith/roof plumber
- Window maker
- Lead worker
- Painter





General:
- Facility manager
- Maintenance manager
- Estate/Site manager

Roof constructions:
- Carpenter
- Stone mason
- Window maker

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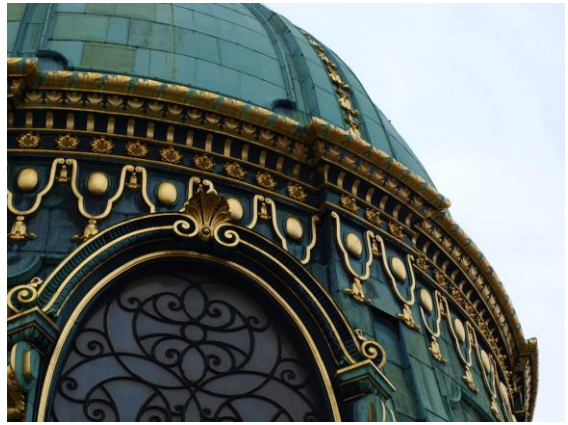
Different working procedures in different traditional skills

Maintain walls:
- Loam / clay builder
- Bricklayer
- Stone mason
- Mason
- Plasterer

Repair box-type windows:
- Carpenter
- Glass worker
- Painter/ decorator
- Blacksmith

Repair roofs:
- Slater/roofer
- Tinsmith/roof plumber
- Lead worker
- Painter



Roof constructions:
- Carpenter
- Stone mason
- Window maker

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Different working procedures in different traditional skills

Curricula	Unit	Learning element	Online/f2f	EQF Level
Energy Expert for (Built) Cultural Heritage				EQF
	U1	**Introducing to Cultural Heritage Management**		
ECH	U1.E1	Heritage Asset Management - Overview	online	4
ECH	U1.E2	National and International Organisations "Conservation" and "Cultural Heritage"	face-to-face	4
ECH	U1.E3	Process of Conservation		
ECH	U1.E4	Principles of Conservation		
	U2	**Respecting significance of traditional buildings**		
ECH	U2.E1	Intervention		
ECH	U2.E2	Traditional materials		
ECH	U2.E3	Sustainability Principles - part 1		
ECH	U2.E4	Sustainability Principles - part 2 (Retrofit interactive tool)		
ECH	U2.E5	Significance & Heritage Values		
	U3	**Understanding traditional buildings**		
ECH	U3.E1	Impact of poor work		
ECH	U3.E2	Draught proofing (generic)		
ECH	U3.E3	Insulation		
ECH	U3.E4	Building Services		
ECH	U3.E5	Building Physics	face-to-face	5
ECH	U3.E6	Secondary / Triple glazing	face-to-face	4

Curricula	Unit	Learning element	Online/f2f	EQF Level
Energy Expert for (Built) Cultural Heritage				EQF
	U4	**Repairing / Refurbishing building parts**		
ECH	U4.E1	Window Repair / Refurbishment	face-to-face	4
ECH	U4.E2	Floor Repair / Refurbishment	face-to-face	4
ECH	U4.E3	Wall Repairs / Performance	face-to-face	4
ECH	U4.E4	Shutters / Blinds	face-to-face	4
ECH	U4.E5	Roof and Roof Structure Repair / Refurbishment	face-to-face	4
	U5	**Evaluating use of renewables for traditional buildings**		
ECH	U5.E1	*Appropriate Renewables for traditional buildings*	face-to-face	4
	U6	**Application of approriate energy-efficient measures and of renewables**		
ECH	U6.E1	Application of approriate energy-efficient measures and of renewables	face-to-face	4

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Results of PRO-Heritage

The main achievements at the end of the project will be:

- Developed and tested training courses including curriculum and training materials
- Developed certification and validation process
- Identified potential training providers
- Developed videos with best procedures for craftsperson´s work
- Developed sustainability concept
- Base for reducing energy consumption in Europe over 5 years = 16.95GWh

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www.increas.eu

https://www.projektwelt-burghauptmannschaft.eu/en/event/flip-1-increas

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care and repair

Traditional crafts and monument preservation
KARTAUSE MAUERBACH

Astrid M. Huber,

Information and Training Center for Architectural Conservation,

Federal Monuments Authority Austria (Bundesdenkmalamt)

… experiences from centuries

- The tradition of care, maintenance and repair has been practiced for centuries. A radical turning point was the industrialization of building constructions, which replaced almost the entire craft tradition since the 1950s and replaced it with completely new materials and technologies of a globalized world and an efficient chemical industry.
- Petroleum-based plastics, industrially produced high-fired cements are conquering the construction market, displacing local, traditional building materials. The house becomes an architectural machine, but often only with a short lifespan!

  → 1984 founding of the Center for Historic Crafts at the Kartause Mauerbach

… *care and repair* – Kartause Mauerbach

Traditional handicraft techniques are the basis for the preservation of historic buildings. The **Information and Training Center for Architectural Conservation** of the Federal Monuments Authority Austria in the Kartause Mauerbach researches the knowledge of historical building materials and techniques and imparts this knowledge in courses to specialists from crafts, restoration, architecture, planning and monument preservation.

- research and training
- information and advice
- collections of architectural details, traditional tools and materials as a store of knowledge for historical building techniques

CREAS

… the ecology of the simple or what can we learn from traditional buildings to increase the energy efficiency

Historical buildings, even entire cultural landscapes, are characterized by regional occurrences of traditional building materials such as stone, sand, pigments, limestone, wood and clay - building materials that are used in construction, repair and maintenance.

- simple building materials, of natural or little modified origin
- regional origin, short transport distances
- maintainable and repairable
- reusable and recyclable

care and repair, Astrid Huber

lime, pigments, clay and sand …

RESEARCH

Traditional building materials and techniques, traditional crafts and modern conservation technologies

Lapidarium, collection of stone, Vienna´s world exhibition 1873

traditional lime technology

Traditional lime technology: direct slaking


Sandkataster Österreich


6
5
4
3

Natural pigments, earth pigments


©Culinovic


Friseur
Angelika
Damen & Herren
PFANDHAUS

Clay wall techniques, thatched roofing (straw roofs)

care and repair,

conservation and restoration

TRAINING and INFORMATION

Advanced training for craftmen, conservators, restorers, architects,.. (courses for smithies, engravers, stonemasons, painters, masons, carpenters,..)

Service- and informationcenter for owners, architects, craftmen,..

Work in progress – Training in und at the Kartause Mauerbach

… stay in the system - consolidation in lime technologie

care and repair, Astrid Huber

traditional plaster techniques

Schloss Niederleis, Kalkputz 17.Jh.

geroldulrich.com, Lustenau, Baumschlager Eberle

care and repair, Astrid Huber

Traditional masonry constructions, bricklayer's apprentices

Facing brickwork – Workshops in Schwechat Hammerbrotwerke, Kremsertor Grafenegg

Reconstruction of dry masonry

Conservation and restoration of ruins

… stay in the system, material continuity – consolidation in lime technique

Conservation and reconstruction of stucco decorations in lime technique

care and repair, Astrid Huber


FILA

Training for blacksmiths and engravers

CREAS

Inserts with lead

Glazing with linseed oil putty

care and repair, Astrid Huber

Traditional linseed oil paint

Typical damages of modern lacquer systems

Corrosion protection with red lead in inseed oil

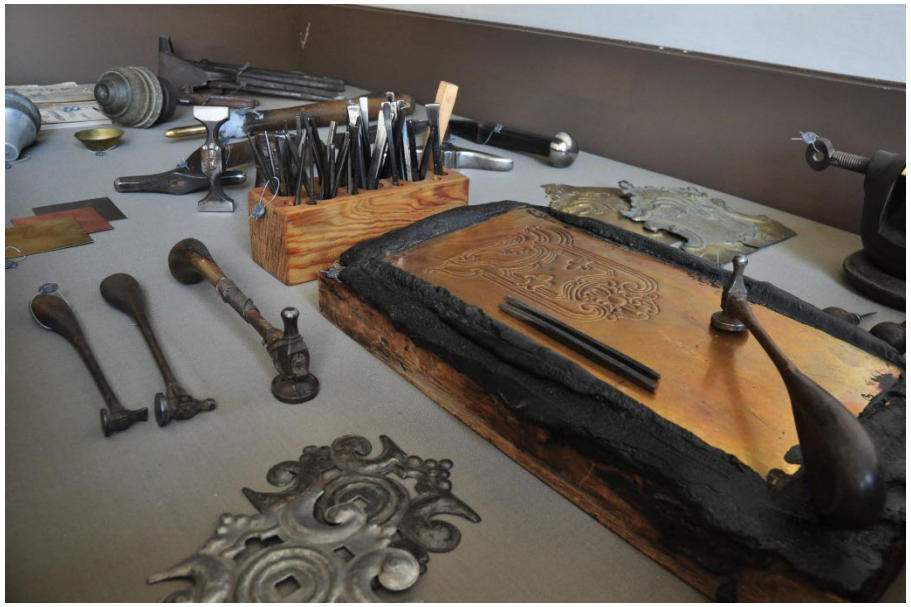
Traditional plumberworks, copper roofs

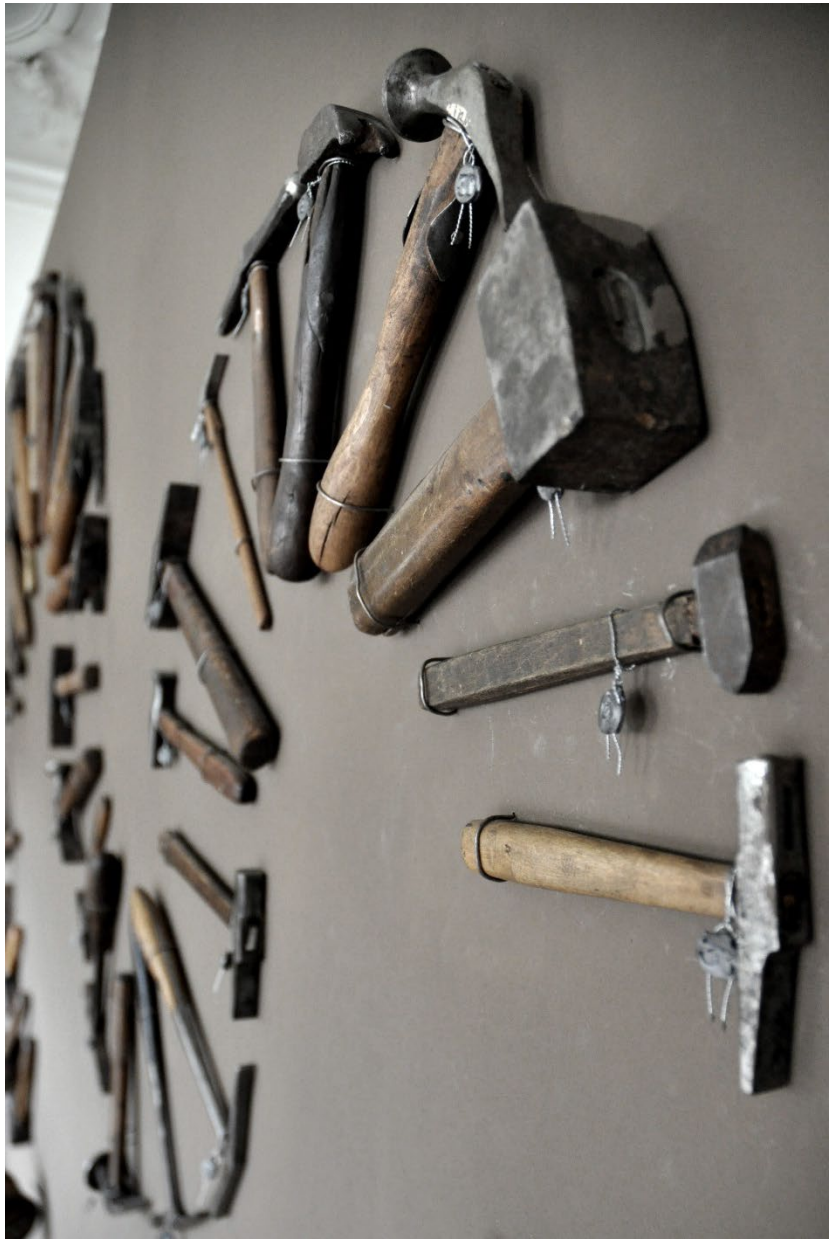
knowledge of centuries…

DOKUMENTATION

Collections and research of historic crafts, tools and architectural details **Exhibitions,** workshops, open days, european heritage day

REAS





INCREAS


EPAL

European Heritage Day, Open days with lime burning and traditional crafts, 3. - 4. 6. 2023


… thank you for your attention,
visit us in Mauerbach or at bda.gv.at