RESTORE

REthinking Sustainability
TOwards a Regenerative Economy

INDUSTRY WORKSHOP

“Rethinking technologies”

Bolzano-Bozen, 23/01/2020

COST is supported by
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TOwards a Regenerative Economy

INDUSTRY WORKSHOP

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Questions:

1. Which are or should be the marketing strategies of your company to promote a product for regenerative building indoor environments?
2. How do products face to the developed Indoor Environmental Quality indicators and which are the metrics to measure contribution of your technologies to regenerative indoor environment?
3. What are the current market trends in building industry field that you think can contribute to regenerative indoor environment?
4. What are the approaches to enhance the building design considering the interaction between products for a regenerative indoor environment?

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INDUSTRY WORKSHOP

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Highlights:

- Technologies need comprehensive evaluation e.g. fire safety
- Lack of knowledge/awareness among construction industry players on what can actually contribute to a regenerative building
- Lack of a specific legislative framework to push the market
- Cost is the main drivers for customer choices
- Lack of life cycle perspective
- Need of an integrated business model: design-building-managing
- Human value is not taking into account
- Need of effective and affordable tools to support designers in promoting novel technologies
- Need of an information sharing system: digitalization/BIM
- Need of build up skills for BIM and BEM

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AGENDA of the WORKSHOP

13:45 – 14:00	**Registration**
14:00 – 15:30	**Introduction** • Presentation of RESTORE project rationale and results • Re-thinking technologies for regenerative environment and IEQ indicators • Pitch deck for presenting industry participants
15:30 – 16:00	*Coffee break*
16:00 – 17:00	**Workshop** Common exercise to be performed in 4 small groups: • Which are or should be the marketing strategies of your company to promote a product for regenerative building indoor environments? • How do products face to the developed Indoor Environmental Quality indicators and which are the metrics to measure contribution of your technologies to regenerative indoor environment? • What are the current market trends in building industry field that you think can contribute to regenerative indoor environment? • What are the approaches to enhance the building design considering the interaction between products for a regenerative indoor environment?
17:00 – 17:45	**Plenary discussion** • Solution-sets repository for regenerative indoor environment • Synthesis of parallel discussions • Which technologies and which actions are still needed? Suggestion for a strategic research agenda
17:45 – 18:00	**Closing**
18:00 – 18:30	**Possibility to have a tour of the EURAC Research laboratories at the NOI Techpark**

**Please note that the event is free of charge and the main language will be in English, with the possibility of asking questions in German and Italian.*

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REthinking Sustainability TOwards a Regenerative Economy

Industry Workshop

Bolzano – 23.01.2020 – Klimahouse

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Outline

- Presentation of RESTORE project rationale and results
- Re-thinking technologies for regenerative environment and IEQ indicators
- Pitch deck for presenting industry participants
- Workshop
- Plenary discussion

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The RESTORE Action. REthinking Sustainability TOwards a Regenerative Economy

Carlo Battisti

EURAC research
Chair COST Action RESTORE

eurac research

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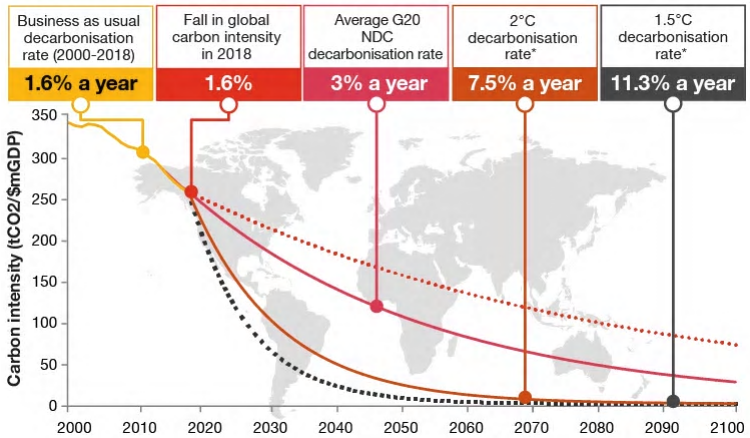
PwC's Low Carbon Economy Index analysis (2019)



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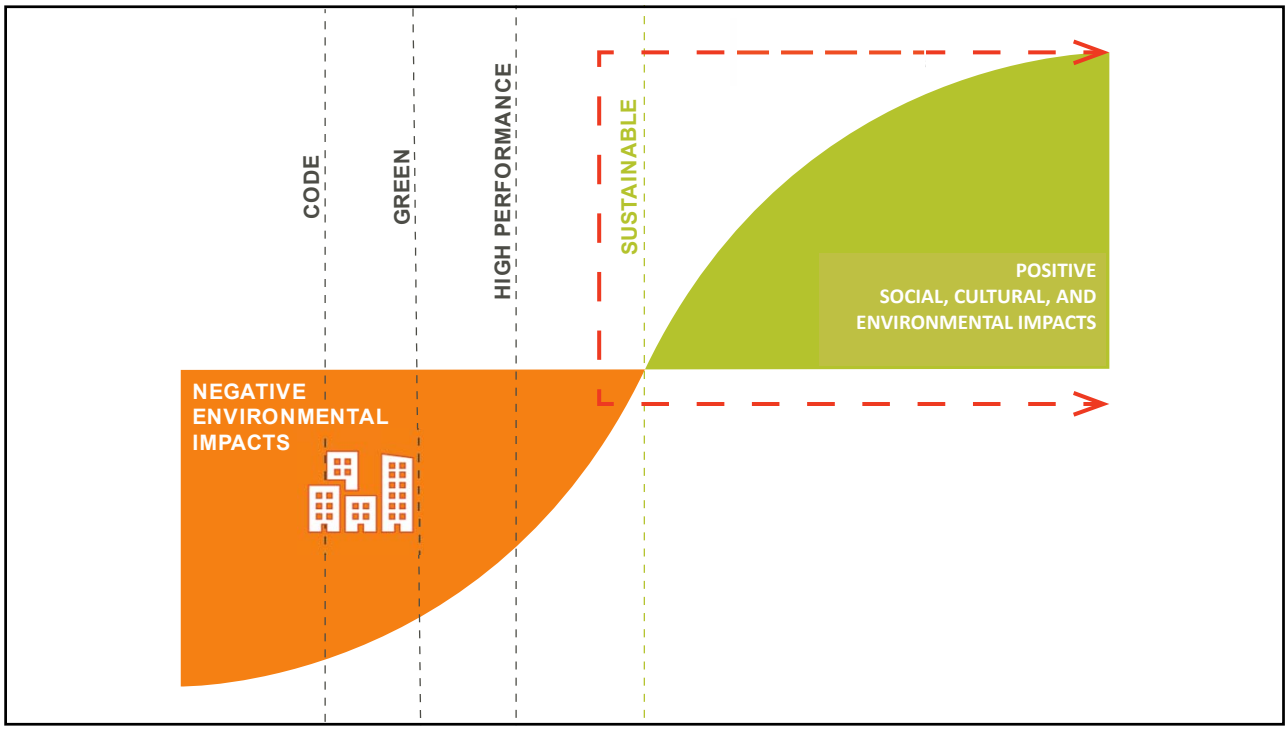

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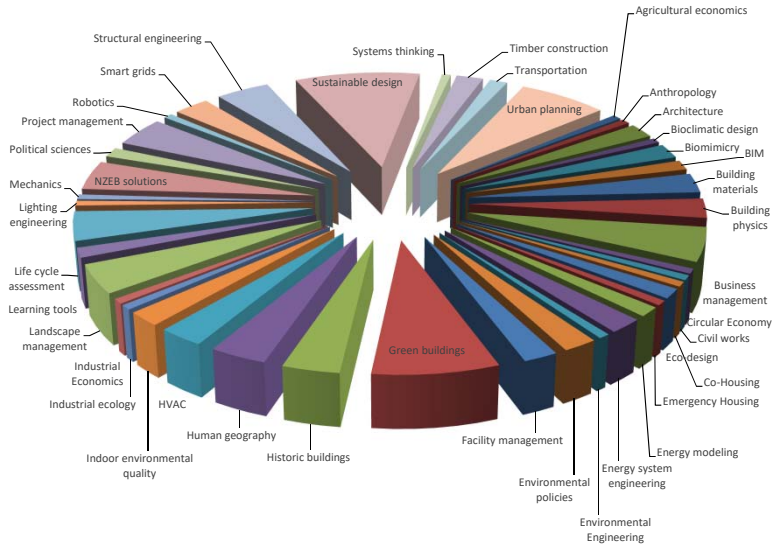
Problem ➢ Challenge ➢ Action ➢ Project

6

40 countries

7

160+ participants



a multi-disciplinary approach

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WP1
RESTORATIVE SUSTAINABILITY
WP2
RESTORATIVE DESIGN PROCESS
WP3
RESTORATIVE BUILDING AND OPERATIONS
WP4
RETHINKING TECHNOLOGY
WP5
SCALE JUMPING
RESTORE
REthinking Sustainability TOwards a Regenerative Economy
2017 - 2021

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Management Committee meetings
Working Group meetings
Core Group meetings
Dissemination meetings
Training Schools
Conferences
Workshops
Short Term Scientific Missions
ITC Conference Grants
Website and social media
Booklets
Open access scientific publications
Articles
Books

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RESTORE Training Schools

RETHINKING TECHNOLOGIES December 02-05, 2019 Venice (Italy)

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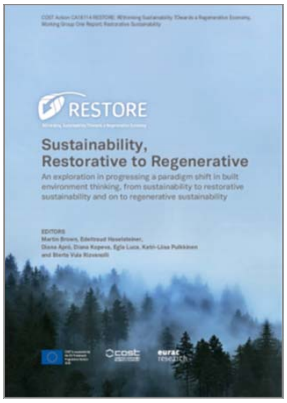
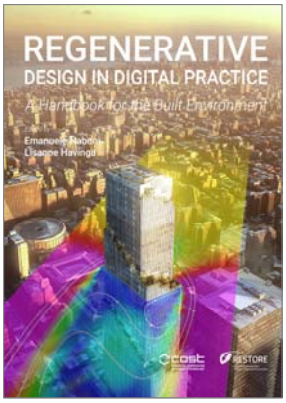


May 2018

July 2019



Sep 2019

Mar 2020

www.eurestore.eu

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TRAINING SCHOOL

"Rethinking technologies"

Wilmer Pasut

Associate Professor of Building Physics
University of Venice, Ca' Foscari

Ca' Foscari University of Venice
Department of Environmental Sciences, Informatics and Statistics

wilmer.pasut@unive.it

Bolzano-Bozen, 23/01/2020

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Ca' Foscari University of Venice

Users and Built Environment (UBE) Group

Toward a user-centred design and control of the built environment

Wilmer Pasut

Associate professor of building Physics

Lorenza Pistore

Research Associate

..... and counting

Topics:

- IEQ assessment
- Technology for the built environment
- User-technology interaction
- IEQ control
- Energy modelling
- Resilient buildings

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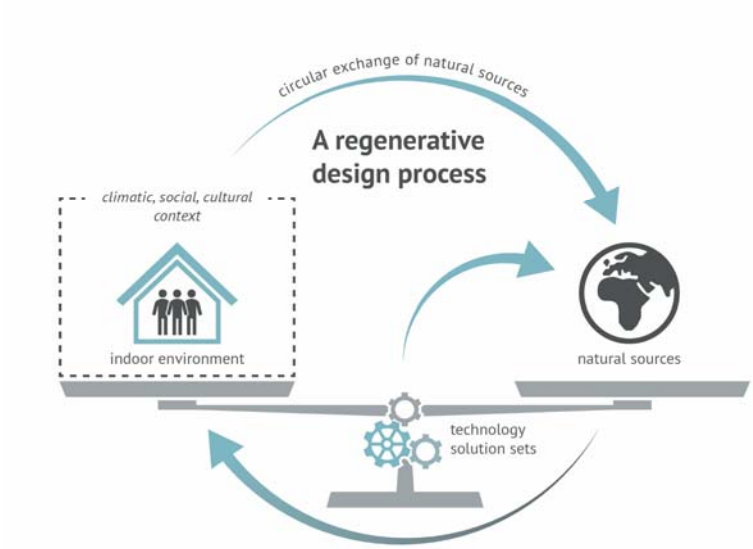
Rethinking technologies: from a concept to a technology



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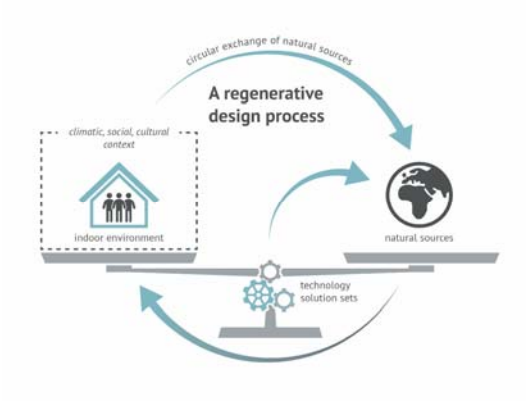
The key questions



1. What is a regenerative environment?

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What is a regenerative environment?

Environmental aspect	Sub-aspect	KPI	Regenerative values
Air quality	*Contaminants*	Formaldehyde	< 27 ppb
	Outdoor/Indoor	Particulate matter: PM10 PM2.5	< 15 µg m^{-3} < 50 µg m^{-3}
	Occupants satisfaction	% satisfied people	80 % *
Hygro - thermal Environment	*Temperature/ humidity/ air speed*	Implementation of ASHRAE 55	ASHRAE 55 + evaluation of air movement
	Occupants satisfaction	% satisfied people	80 % *
Visual Environment	*Daylight*	Useful Daylight Illuminance	100 – 2 000 lux
	Circadian Rhythms	Equivalent Melanopic Lux	≥ 200 (9am-1pm) **
	Occupants satisfaction	% satisfied people	80 % *
Acoustic Environment	*Background noise level*	Noise criteria	≤ 35 / ≤ 40 ***
	Occupants satisfaction	% satisfied people	80 % *
Human Values	*External view and Right to light*	% with windows access / daylight	75 % of occupants
	Biophilia	Visual connection to nature	View factor

* response rate representing at least one quarter of the total number of building/indoor environment users
** for 75 % or more workstations
*** enclosed / open offices

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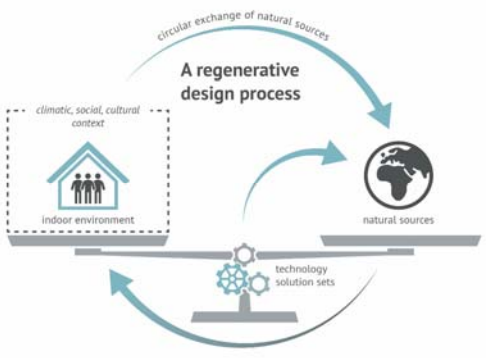
The key questions



1 What is a regenerative environment?

2 Is it univocal or can have different nuances?

"The built environment can be characterised as the embodiment of human values and ingenuity, as represented by the knowledge and priorities of its creators. Further, the acquisition and assimilation of the knowledge to create the built environment are clearly shaped by a broad range of contextual issues" (Cole and Lorch, 2003: 2)

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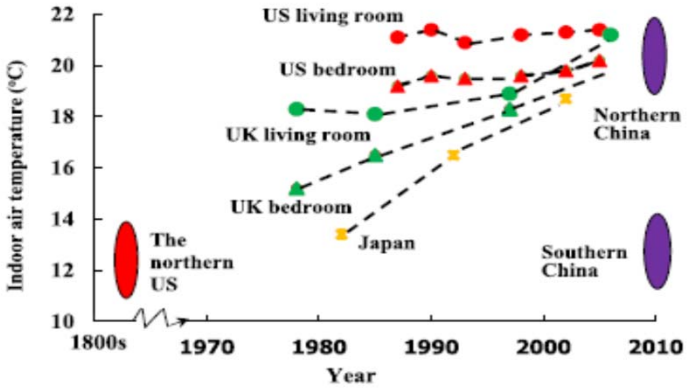
Is it univocal or can have different nuances?



Long-term trends in winter-time residential temperatures in the UK, the US, Japan and northern China. Source: (Luo u. a. 2016)

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Is it univocal or can have different nuances?

cultural E+

Climate and cultural based design and market valuable technology solutions for Plus Energy Houses
https://www.cultural-e.eu/

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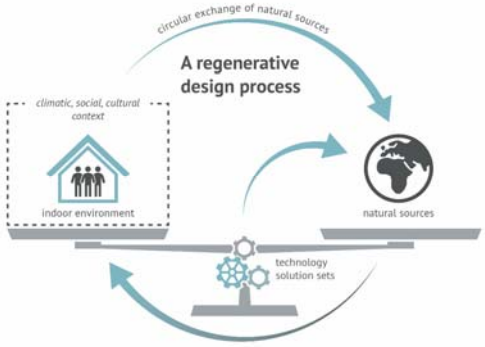
The key questions



1 What is a regenerative environment?

2 Is it univocal or can have different nuances?

3 How technologies can contribute to achieve a regenerative indoor environment and how to asses it?

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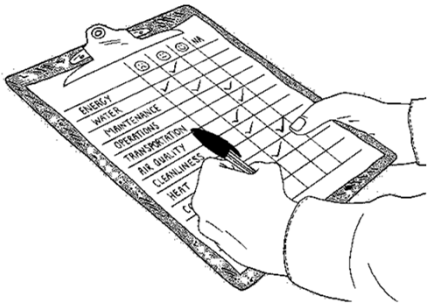
How to asses it?

Postoccupancy Evaluation Surveys



Peter Arkle, architectmagazine.com

Field measurements

EURAC Research

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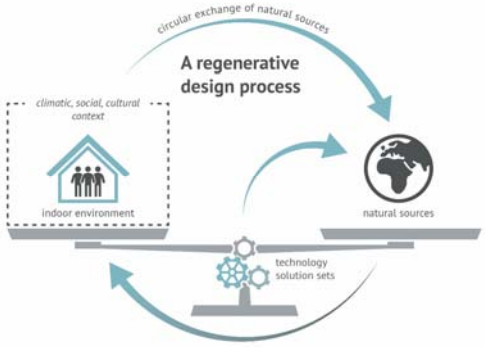
The key questions



1 What is a regenerative environment?

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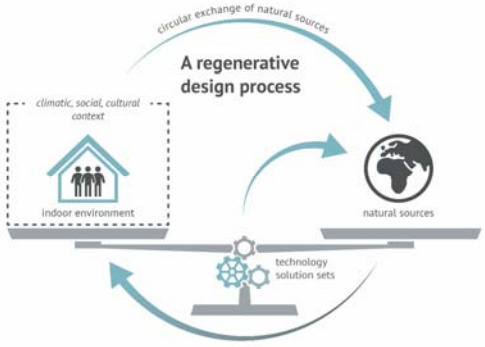
The key questions



1 What is a regenerative environment?

2 Is it univocal or can have different nuances?

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4 What is a good set of solutions for a regenerative indoor environment?

5 What should be the environmental impact of a “regenerative technology”

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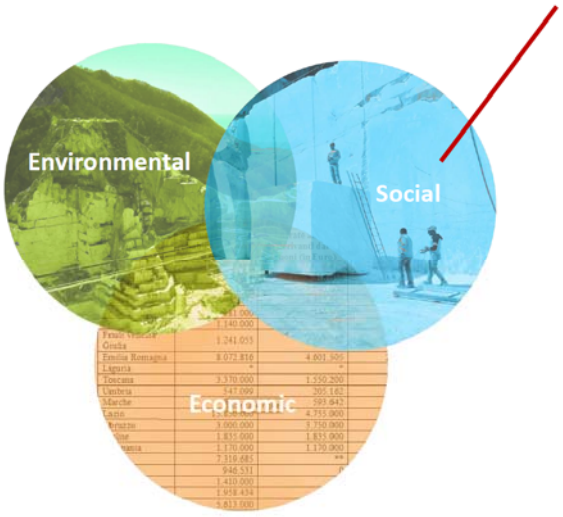
What should be the environmental impact of a "regenerative technology"?



Courtesy of prof. Marzia Traverso, AACHEN University

Sustainability for assessing the impact of a product life cycle:

LCSA = LCA + LCC + S-LCA

LCA = Life Cycle Assessment

LCC= Life Cycle Costing

S-LCA= Social Life Cycle Assessment

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The structure of WG4

Thank you for your attention and….

Questions?

Ca' Foscari University of Venice

Wilmer Pasut

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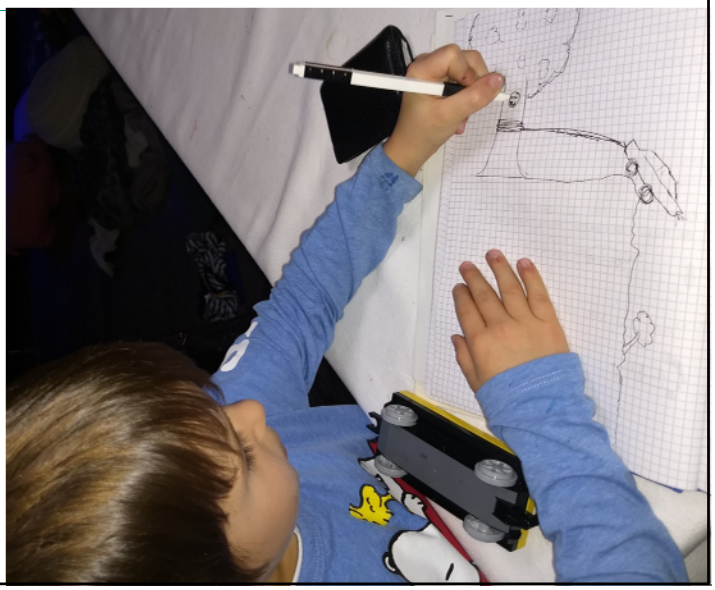

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Pitch deck
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Workshop

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Questions:

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Plenary discussion

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Thanks a lot!

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