

IEA EBC ANNEX 101

Kick-Off Workshop Report

Incheon, South Korea · 28–29 September 2026



Facilitators: Paul, Christin, and Whitney

Subtask co-leads

Six research subtasks, a dissemination subtask, and the people who lead them

1 Decarbonization & IAQ

James McGrath

Maynooth University, Ireland

Grainne McGill

Queen's University Belfast

2 Decarbonization & Ventilation Systems

Gaëlle Guyot

CEREMA, France

Jakub Kolarik

DTU, Denmark

3 Decarbonization & Airtightness

Irene Poza Casado

Universidad de Valladolid, Spain

Magdalena Hajdukiewicz

University of Galway, Ireland

4 Non-Energy Benefits (Health)

Benjamin Jones

University of Nottingham, UK

Iain Walker

University of Nottingham, UK

5 Standards, Codes & Regulations

Valérie Leprince

CEREMA, France

Jelle Laverge

Ghent University, Belgium

6 Case Studies (Equity & Energy Poverty)

Constanza Molina

PUC Chile

Gilles Flamant

PUC Chile

7 Dissemination of Project Outputs

Paul Francisco and Nuria Casquero-Modrego

Summary

We met to get the six subtasks on the same page about shared themes and where each subtask starts and stops.



How we worked

1

Live video, both days

Online participants joined every session, not just the presentations.

2

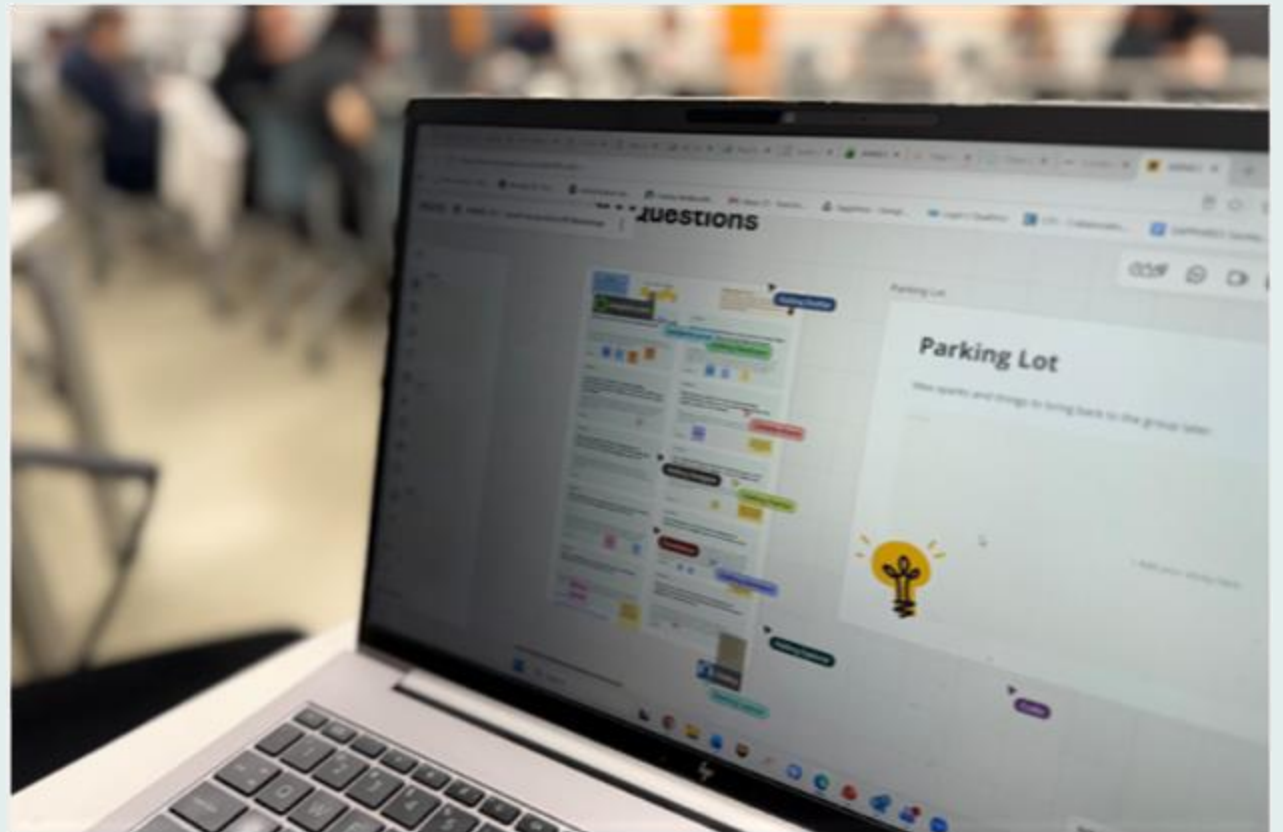
One shared Miro board

Everyone in the room and online worked on the same canvases. The board is our record of the workshop.

3

Subtask presentations first

Each subtask shared its scope, objectives, and deliverables so we all started on the same page.



Agenda

Day 1 · Monday 28 September

- 9:30 Welcome, roles & logistics
- 10:00 Subtask presentations**
- 11:10 Topic review & clustering**
- 12:00 Lunch
- 1:00 Reset
- 1:20 Deep dive, part 1**
- 3:00 Deep dive, part 2**
- 5:00 Close Day 1
- 7:00 Group dinner, Hwaryong Songdo

Day 2 · Tuesday 29 September

- 9:00 Opening
- 9:10 10 Questions Paper**
- 10:15 Industry requirements**
- 11:30 Recruitment**
- 11:40 Closing reflection
- 11:50 Where we're going next**
- 11:55 Closing & thank you
- 12:00 Lunch
- 1:00 Campus tour (90 min)

Six activities

Topic review & clustering

Built on the topics from Madrid and grouped them into shared themes.

PROMPT *"Add, merge, split, or cut topics as a group."*

[Open in Miro](#)

Deep dives

Mapped dependencies and boundaries between subtasks, one theme at a time.

PROMPT *"Each subtask lists what it needs (in) and produces (out)."*

[Open in Miro](#)

10 Questions Paper

Used the draft 10 Questions Paper to get the subtasks more aligned.

PROMPT *"Are there places where you could see yourself, but aren't currently?"*

[Open in Miro](#)

Industry needs

Asked industry what they need from Annex 101.

PROMPT *"How can this Annex's research make what you do better?"*

[Open in Miro](#)

What Annex 101 can deliver

Sorted possible deliverables into first vs. later, as a direct response to industry needs.

PROMPT *"What can Annex 101 deliver first?"*

[Open in Miro](#)

Recruitment

Named the groups, roles, and individuals each subtask wants to bring in.

PROMPT *"For each subtask: who should we bring in?"*

[Open in Miro](#)

Five themes, plus three foundational elements

Data & Prediction

What real data do we have from studies? What do we need to do good simulations and optimization?

Economics

Retrofit costs, incentives, and the value of health benefits

Retrofit Field Performance

How retrofits perform in practice: airtightness, ductwork, ventilation, compliance

Contextual Considerations

How results change across countries, climates, and populations

Health & Scoring

Rating IEQ and measuring health harm

FOUNDATIONAL ELEMENTS · APPLY ACROSS ALL FIVE THEMES

Interdisciplinary approaches

IEQ vs. IAQ scope boundary

Integrating decarbonization

What subtasks need to discuss further

Suggested topics to work through together, grouped from the board. Quotes are what people wrote on the stickies.

1 2 3 4 5 6	Field data and post-retrofit IAQ	"Data about real performance" · "Post-retrofit IAQ performance" · "Retrofit characteristics / intervention" · "Which pollutants improve, and which worsen"
2 4 5 1 6	Health metrics and the rating scheme	"Multicriteria IEQ Rating Scheme" · "Rating using the scheme" · "IEQ Harm Framework" · "Health outcomes from indoor vs outdoor pollution scenarios"
1 3 5 4	Airtightness	"Data on airtightness levels when retrofitting" · "guidelines on airtight retrofits. Best practices" · "durable, cost-effective airtight solutions" · "Compromise: energy-IEQ"
1 2 3 4 5 6	Costs and cost-benefit	"Retrofit costs" · "Large-scale cost extrapolation" · "Health impact monetization" · "Overall cost-benefit analysis"
1 2 3 4 5 6	Standards and verification	"measurement protocols" · "Rating scheme results for real cases (in ideal case)" · "input data for verification" · "Standardized requirements"
1 2 3 4 5 6	Local context	"Local practices and limitations" · "Pollutant transfer outdoor to indoor" · "Highly polluted urban areas" · "occupant behaviour and habits"
1 3 4	Equity	"Disaggregation by non-regional considerations, e.g. SES, public programs, etc."

1 Linked by a line on the board

1 Wrote about it, no line drawn. Not everyone drew every link, so add what's missing.

10 Questions Paper Outline & Contributors

Paper due date: 02/28/2027. Everyone who put their name on the board is listed.

#	Question	Subtasks	Contributors
Q1	What are the impacts of residential decarbonization on IAQ and IEQ, and how do they vary across contexts?	1	James / Grainne; Yu (support)
Q2	When does decarbonization inadvertently increase indoor contaminant exposure, and can these consequences be predicted in advance?	1 3	James / Grainne; Irene
Q3	Can ventilation be designed around outcomes rather than airflow rates, which metrics matter, and what does that require operationally?	2	Jelle (support)
Q4	What role does airtightness play in decarbonization, and how can it be optimized to balance IEQ, health, durability, and resilience?	3	Irene; Iain Walker
Q5	How can health-related non-energy impacts be quantified comparably across countries and rigorously enough for policy use?	4	Ben, Iain, Gio, Coni
Q6	Can a single performance framework evaluate energy, carbon, IEQ, health, and resilience together, and what happens when they conflict?	1 4	None yet
Q7	What would it take for building codes to regulate IEQ outcomes the way they already regulate energy performance?	5	Valérie / Jelle; Iain Walker; Janet (support)
Q8	How transferable are IEQ assessment methods and decarbonization strategies across countries and contexts?	6	Gilles; Constanza
Q9	What do manufacturers and contractors need to implement IEQ-conscious retrofits at scale?	2 3 5	Simon Jones
Q10	What evidence, tools, and institutional mechanisms are missing to move IEQ-conscious decarbonization into standard practice?	5 6	Jelle

10 Questions Paper: proposed edits

In participants' words

1 Add an introduction
What is decarbonization, and what drives it? Protocols, health, fuel, energy poverty (electrification, a country's energy supply).

2 Look at other Annexes
Annexes 53, 55, 66, 79, and 95. A note on Q2 says "This is Annex 55."

3 Combine Q3 and Q4
Ventilation and airtightness may work better as one question.

4 Add thermal comfort
A question on overheating and comfort under a changing climate.

5 Soften the framing of Q6
"Should these objectives conflict" rather than assuming they will.

6 Reorder Q5 and Q8
Health quantification might make more sense after transferability.

7 Link Q9 to Q7
If IEQ is mandated or part of beyond-code requirements, manufacturers and contractors will follow.

8 Make Q10 practical
Low-cost monitors with visible displays can "make the invisible visible."

Also asked about Q7: "How is this question going to be framed?"

Industry needs

Responses to "How can this Annex's research make what you do better?" These shaped what Annex 101 may deliver first.

WHAT INDUSTRY NEEDS

- A version 1.0 spec for when to turn ventilation on, and how much
- Target PM2.5 and CO2 levels, and how to respond as conditions change
- A definition of overventilation, and help to stop it
- A definition of smart ventilation, with a responsive sensor feedback loop
- A base rate for what can't be measured; response rates for what can
- Better economic viability through responsive ventilation

HOW IT'S DONE TODAY

- Guessing
- Copying from current research
- No feedback loop
- ASHRAE 62.2 as the reference point

CURRENT WORKAROUNDS

- Feedback on only some stressors
- Minimum flow rates instead of optimized ones
- Guessing between chronic and acute exposure (cooking vs. wildfire)

INNOVATION GAP

Demand-controlled systems can cause an initial exposure peak. Can we anticipate occupancy and pre-ventilate, for example using location data?

What Annex 101 may deliver first

A direct response to what industry needs. Deliverables sorted into first and later.

SUGGESTED MVP

Literature review summary

Regional, cultural, and socioeconomic, published as issue briefs

ALSO PRIORITIZED EARLY

- Raise awareness of the link between IEQ, envelope airtightness, and energy recovery
- Control-system settings that keep indoor air harm acceptable
- Solutions reports for different countries
- Retrofit installation guidance and efficiency considerations
- Metrics and a paradigm for addressing IEQ
- Key sensors to focus on, and handling periods of occupancy
- End-user education to raise adoption; input to product roadmaps

LATER

- Translate harm into a selling point for builders and customers
- Convince others of the IEQ paradigm
- Balance decarbonization between new build and retrofit
- Balance across climates, which no longer map neatly to geography
- A systems-engineering approach to retrofit and IEQ

ACTION Finish the MVP canvas. We started it but didn't finish it live, so owners and timing are still TBD.

Who to recruit

20+ people named, plus the groups and roles each subtask wants to bring in

Subtask	Individuals named	Groups and roles to bring in
1 Decarbonization & IAQ	James, Jelle, Gilles, Raissa, Yu (BRANZ), Janet, Irene (UVa)	GHG reporting impacts; social and cultural impacts; projects about to start; teams with existing datasets
2 Decarbonization & Ventilation Systems	James, Jelle, Yu (BRANZ), Yanqiu Huang, Gilles, AiCarr (Federico)	Manufacturers and contractors; sensor developers and manufacturers
3 Decarbonization & Airtightness	Iain	Airtightness, building-characteristics, and IAQ datasets; durability testing labs; energy programs and policy; airtightness industry partners
4 Non-Energy Benefits (Health)	Merel, Asit	LCA/LCIA experts; environmental risk modeling; health economics; public health and medical; health, disability, and long-term care insurers
5 Standards, Codes & Regulations	Yanqiu Huang, Janet, AiCarr (Federico)	Standardization working groups (CIBSE, ASHRAE); ventilation and building-product manufacturers; policymakers and program managers; WHO
6 Case Studies (Equity & Energy Poverty)	Gilles	NGO's, ministries and government agencies; partners in Latin America, Africa, and other developing countries

OPEN QUESTION How do we reach non-EBC countries? Dedicated workshops?

Suggested plan through Thessaloniki

20–21 Apr 2027

AIVC Workshop, Thessaloniki

22–23 Apr 2027

Annex 101 Workshop, Thessaloniki

6–7 Sep 2027

Annex 101 Workshop, Milan

OCT–NOV 2026

Wrap up Incheon

- Review this report and send it to the group
- Plan follow-up meetings for subtask leads
- Make a writing plan for the 10 Questions Paper, with the proposed edits
- Confirm leads for Q3 and Q6
- Ask how AIVC can help us (MOU)

DEC 2026–APR 2027

Build Engagement & Recruit

- Start seminars, maybe monthly with 3 to 5 speakers
- Submit the 10 Questions Paper (due date Feb 28, 2027)
- Reach out to recruits: health economics, policy, manufacturers, non-EBC partners

ALSO ON THE CALENDAR

DUE END OF AUGUST 2027

Paperwork to make participation official for participating member countries and organizations

BEFORE THESSALONIKI

Impact Master Class training for all subtask leaders

Workshop retrospective

From the workshop debrief after Incheon

WHAT WORKED

- Working through the gaps was a needed step. Some subtask leads left with a clearer idea of what to do than they came in with.
- People want to get started and do things. The 10 Questions Paper is a good way to keep that energy going.

WHAT TO PAY ATTENTION TO

- Balance in-person and online between workshops. In Annex 86, engagement was higher when everyone was online and dropped at the end, when meetings were all in person.
- Be optimistic but realistic and keep plans flexible. Don't over-map work that may not get funded.
- Give industry a clear role that's useful for both sides.

WHAT TO MOVE FORWARD

- Give subtask leads more space and time to share their objectives and lead the discussion.
- Hold targeted follow-up conversations between subtasks between now and Thessaloniki. Not everyone was in the room for them.
- Next time, each subtask reports out on what happened between subtasks, with the focus on the science, not the mechanics.

STILL TO FIGURE OUT What targeted conversations need to happen? What smaller scientific objectives do we need to uncover?

GET INVOLVED

It's not too late to join

Missed Madrid or Incheon? Annex 101 is still taking shape, and there's a place for you.

KNOW SOMEONE?

Pass this report along. We especially need health economics, NOGs, policy, manufacturers, and non-EBC partners.

1

Join a subtask

All seven subtasks welcome new contributors, from field data and health to codes and getting results into practice.

Contact the subtask co-leads on page 2

2

Help write the 10 Questions Paper

Due 28 February 2027. Q3 and Q6 still need leads.

James McGrath James.McGrath@mu.ie

Constanza Molina cdmolina@uc.cl

3

Come to Thessaloniki

Annex 101 Workshop, 22–23 April 2027, right after the AIVC Workshop.

IEA EBC ANNEX 101

Thank you

Kick-Off Workshop, Incheon
28-29 September 2026

NEXT

Annex 101 Workshop, Thessaloniki
22-23 April 2027

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