



IES INTERNATIONAL STAKEHOLDER CONFERENCE 2026 · DELHI · 7–9 OCTOBER

When Do Emerging Materials Need New PCR Rules?

A practical case on marine-biobased construction materials



CASE

NIDO marine hydrogel construction material



CORE QUESTION

Apply, clarify, update — or develop a c-PCR?

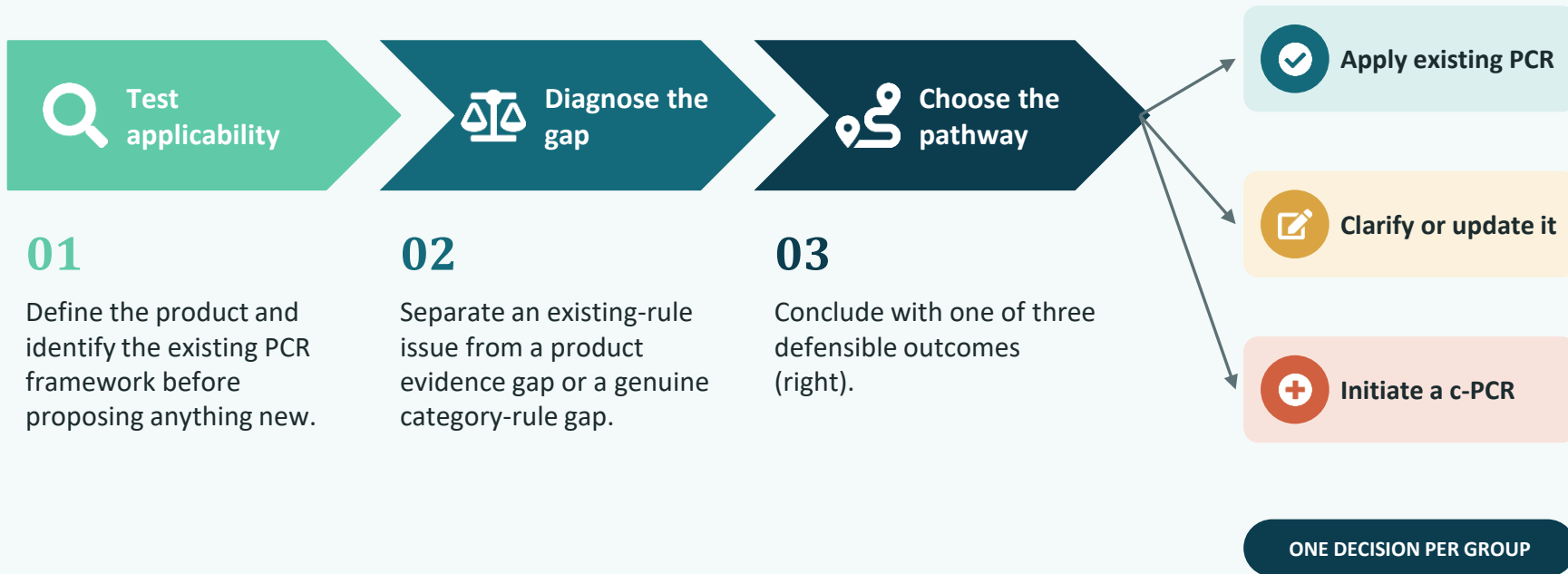


FORMAT

Interactive PCR decision exercise

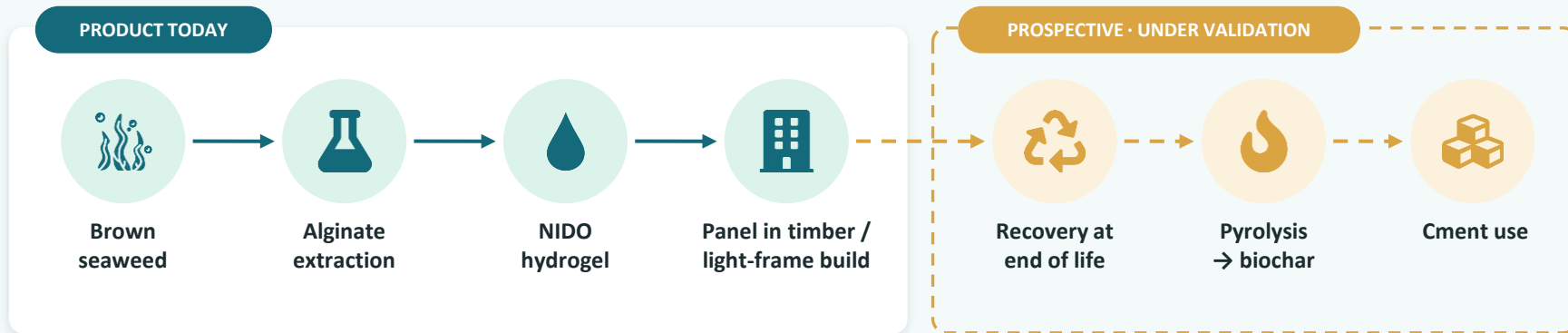
Today we will make one defensible decision

Use the NIDO case to decide whether existing rules are sufficient or whether additional category rules are justified.



The case in 90 seconds

An emerging construction material: a marine-biogenic input, a mineral product system and a prospective recovery route.



01 Product today

Construction application

Non-structural panel with marine-derived alginate hydrogel as a functional constituent. Designed for passive thermal buffering and to support acoustic and fire performance, an alternative to mineral fillers and mortar layers.

02 Prospective circular pathway

End-of-life concept

Hydrogel recovered at end of service life and pyrolyzed to biochar for possible use in cement. Biochar yield, carbon retention and technical compatibility are still being tested in a Aalto University And VTT Innovation.

Starting with the rules that already exist

An innovative material does not automatically need a new PCR. Work through the existing framework first.



1 • DEFINE Product + function

State what is sold, its primary construction function, and whether it is an intermediate material or finished product.



2 • CLASSIFY Search existing rules

Confirm UN CPC classification; check the IES PCR Library, applicable c-PCRs and possible MRA adoption.



3 • APPLY Use the hierarchy

Apply the GPI, PCR 2019:14, EN 15804 and any applicable complementary rules before identifying gaps.



4 • DIAGNOSE Document the gap

Show why existing rules cannot ensure consistent modelling or comparability across the affected category.

RULE HIERARCHY

c-PCR

only if a category gap is shown

PCR 2019:14

construction products

EN 15804+A2

core rules for construction EPDs

GPI

General Programme Instructions

read bottom-up: general → most specific



Exercise 1 — Define the product category

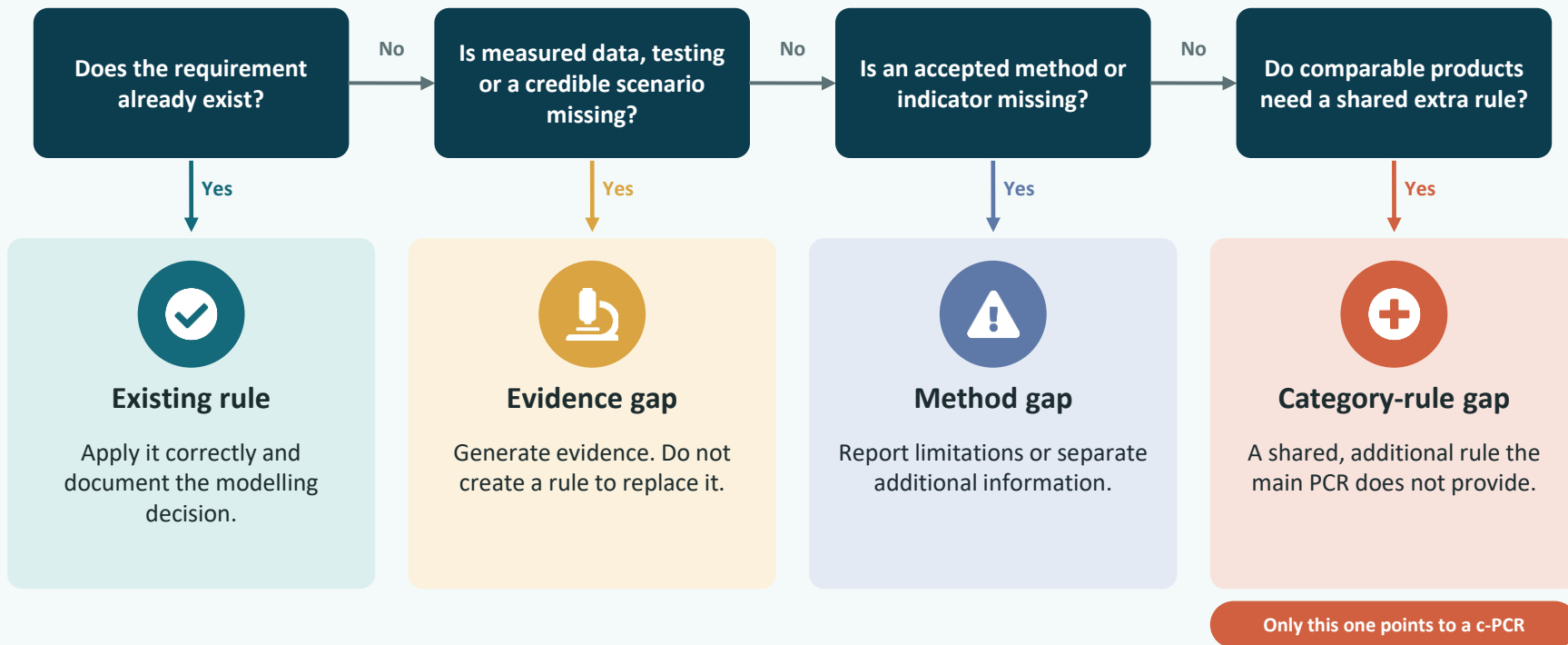
PAIRS · 5 MIN

Can this proposed scope support consistent EPD development beyond one company or formulation?



Not every unresolved issue is a PCR gap

Classify the issue before choosing the response — work left to right.



Exercise 2 — Rule gap or evidence gap?

GROUPS · VOTE

Sort each issue into one of the four categories from the previous slide.

ISSUES

01 Accounting for biogenic carbon uptake, content, transfer and release



02 Demonstrating a 40% dry biochar yield after pyrolysis



03 Quantifying biodiversity or regenerative-cultivation benefits



04 Selecting one comparable unit for wet hydrogel and finished panels



05 Demonstrating selective recovery and a credible market for the secondary output



SORT INTO



Existing rule



Evidence gap



Method gap



Possible category-rule gap



Biogenic carbon requires a complete balance

Four separate concepts — none alone demonstrates carbon neutrality or permanent removal.



kg C × 44/12 = kg CO₂

is a unit conversion — not proof of neutrality, permanence or removal.

Biological origin

Demonstrate the marine-biogenic source; quantify carbon with measured composition and a transparent mass balance.



1

Module balance

Track uptake, product content, transfers, waste and releases across the relevant life-cycle modules.



2

Carbon retention

Measure dry biochar yield and retained carbon separately. Yield ≠ carbon retention.



3

Environmental claim

Temporary storage, retained carbon and removal are different conclusions with different evidence needs.



4

evidence required increases



Recovery claims depend on evidence, not intention

Current figures are screening assumptions — each must be validated before it becomes an EPD scenario or category rule.

SCREENING ASSUMPTION

80% recovered moisture

500 °C pyrolysis

40% dry biochar yield

10–20% binder replacement

Module D benefit



EVIDENCE NEEDED



Representative measurement and drying-energy balance



Measured operating conditions, energy and output inventory



Replicated dry-mass balance and carbon analysis



Performance, durability, leaching and substitution basis



Net exported material, quality, market relevance — no double counting

Life Cycle Assessment: Characterization Factor

From seaweed cultivation to a net-negative regenerative material.

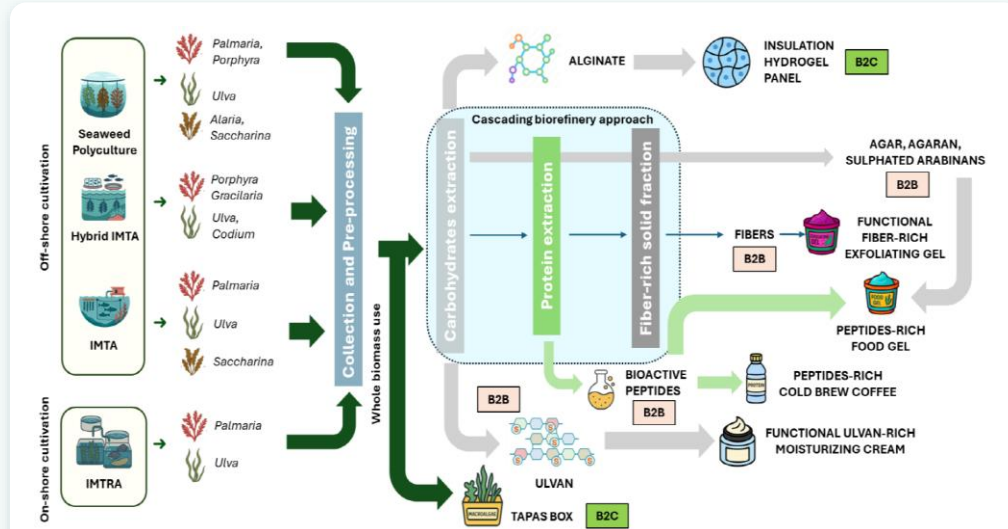
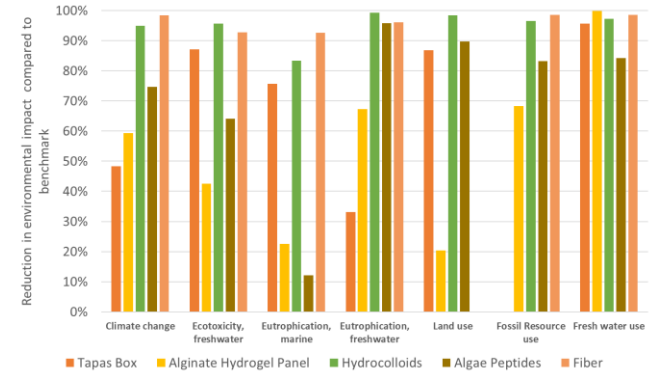


Figure 1. SALINA's approach and value chains.

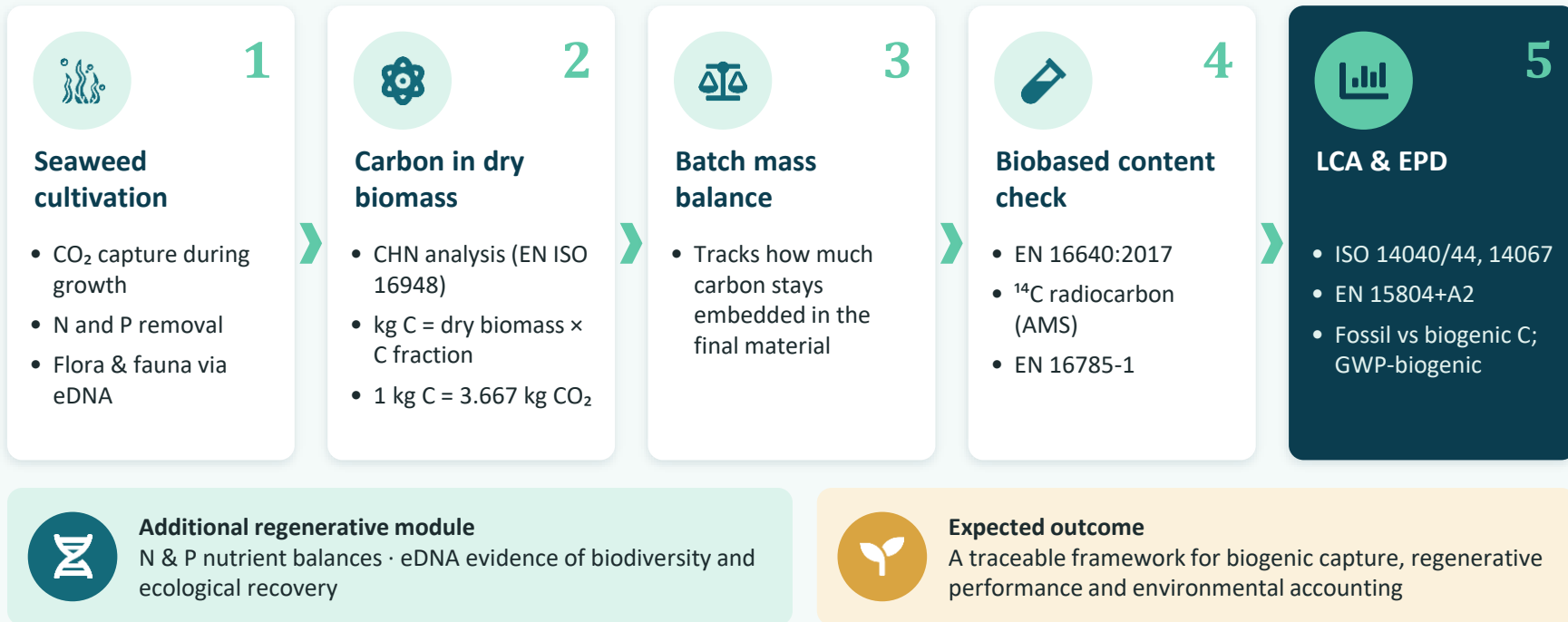
Cascading biorefinery: seaweed polyculture to multiple bio-based products (Salinas, 2025)



Reduction in environmental impact vs. benchmark (%) per product (Salinas, 2025)

Regenerative traceability: carbon, nutrients, biodiversity

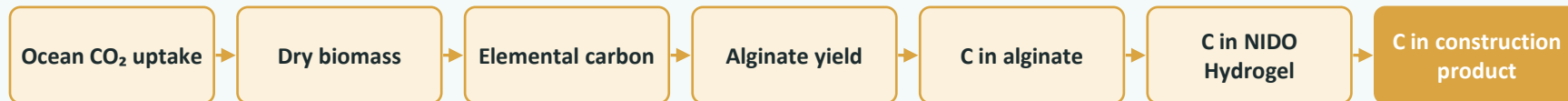
How we will quantify C, N, P and ecological regeneration — from brown seaweed cultivation to NIDO Hydrogel.



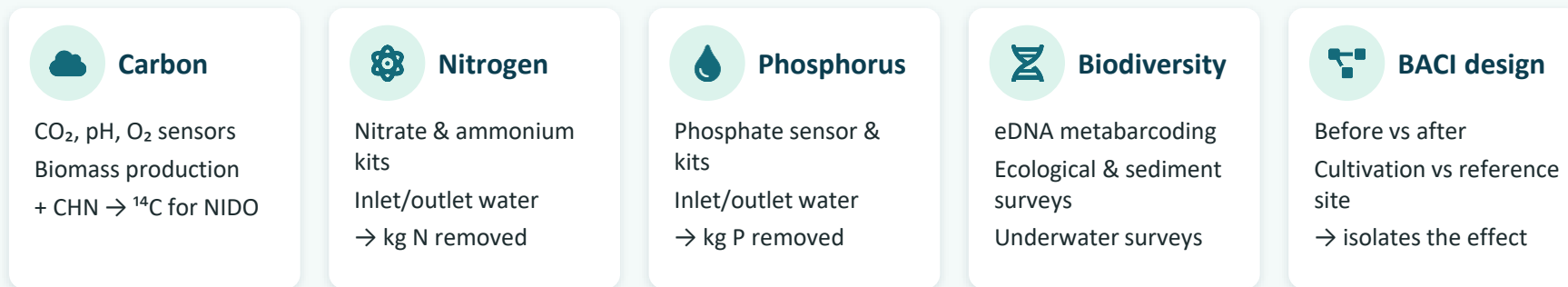
Integrated measurement framework: SALINA + NIDO

How we quantify biogenic carbon, nutrients, biodiversity and product traceability.

NIDO Close the quantitative bridge: follow one carbon atom from ocean to building



SALINA Measure the ecosystem side



All data streams feed the ZHAW Life Cycle Sustainability Assessment

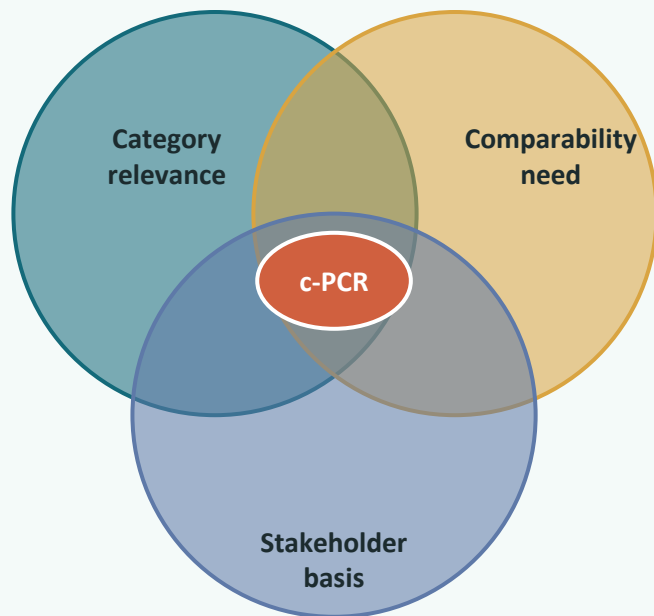
Cradle-to-grave · ISO 14040/44 · primary project data · Ecoinvent · SimaPro · Brightway · OpenLCA

**Outcome: a robust basis for a
regenerative marine material**



A c-PCR needs a shared category gap

Not “is NIDO innovative?” but “does a product category need extra common rules for comparable EPDs?”



Category relevance

A neutral scope covers a meaningful group of products — not one brand, formulation or preferred recovery route.



Comparability need

Without additional rules, practitioners would make materially inconsistent choices on function, units or scenarios.



Stakeholder basis

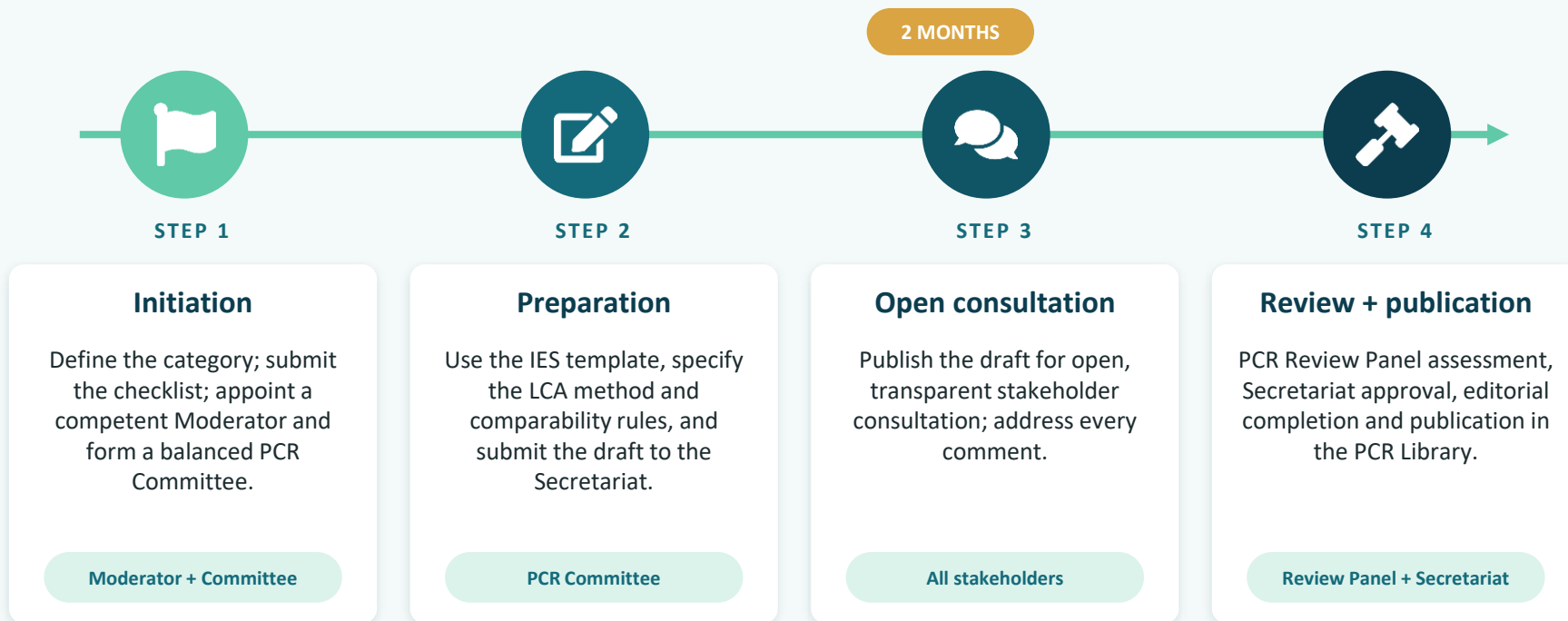
A balanced committee can represent marine biomass, alginate, construction, LCA, use and end-of-life interests.

QUICK VOTE: existing PCR · clarify / update · initiate c-PCR



IES develops PCRs through four formal steps

If a c-PCR is justified, this is the official route.



“

The objective is not to create a PCR for every innovation. It is to identify the minimum additional rules needed for consistent, transparent and comparable EPDs.

DECIDE



Apply the existing
PCR



Clarify or update it



Initiate a c-PCR

