



This Photo by Unknown Author is licensed under [CC BY-SA](#)

Hybrid Coastal Enterprises: Scaling Community-Led

Seaweed Innovation for Inclusive Blue-Economy Growth
Sarah Carpenter
Seagriculture Europe 2026



L'ORÉAL



Rethinking Livelihoods Through Hybrid Blue Economy Model

Sarah Carpenter | Goldsmiths, University of London | Biomimicry Gaia

How do we design inclusive blue economy models that align community expertise, ecosystem health, and accelerating market demand without repeating old economic inequalities?





The Macro Opportunity vs The European Paradox

Global Expansion, Local Disconnect

The Accelerating Demand:

- Seaweed markets are surging across food, cosmetics, agriculture, methane-reducing feed, and biomaterials
- Over **€1.5 billion** mobilised through EU algae programs
- **257 projects** funded with **€653 million** directly invested since 2014

The Paradox:

- Europe contributes **only 0.8%** of global production
- Europe handles **less than 0.25%** of human-led seaweed farming
- Imports sit at **141,660 tones** annually

If billions are being mobilised, why isn't this value reaching coastal communities?

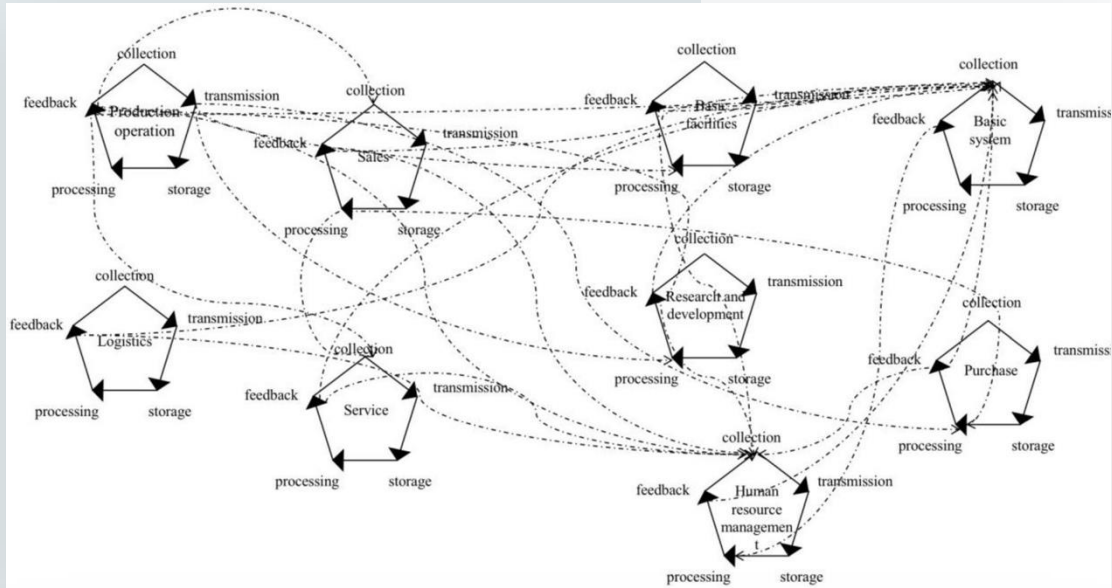


The "Missing Middle"

- **The Livelihood Trap:** Coastal communities face declining traditional fisheries, seasonal revenue drops up to **65%**, and highly fragmented market access
- **The Gaps:** Gaps in localised processing infrastructure, regional aggregation, logistics, and quality assurance keep communities trapped as raw biomass suppliers
- **The Paradox of cost :** Disportion of costs across the industry differs the same weight , huge manipulation of the markets

This is where investment can have the greatest impact.

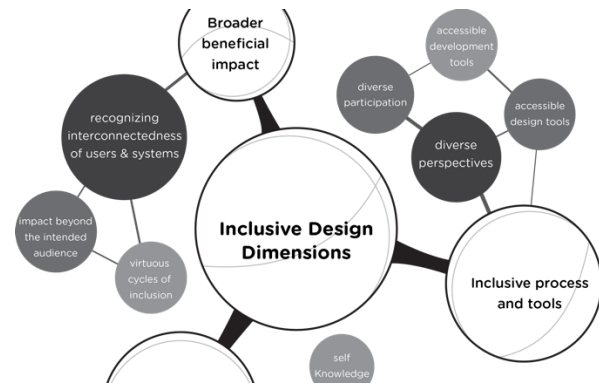




Building the Value Chain

- Coastal Producers
 - ↓
 - Collection Hubs
 - ↓
 - Processing Units
 - ↓
 - Global Buyers
-
- **The key question:**
 - Who builds the infrastructure that allows communities to move up the value chain?
 - How , where and what is needed

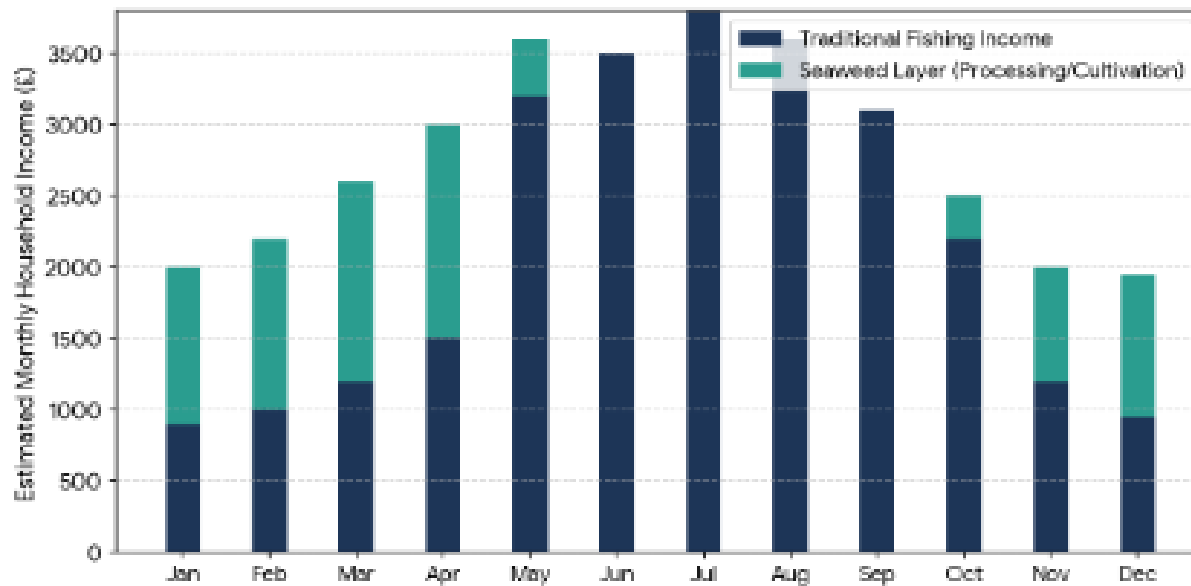


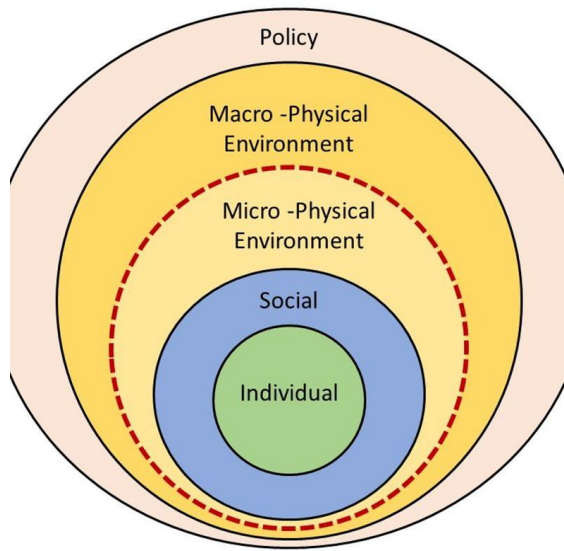


Building on Local Capacity, Not Outside Intervention

- Inspired by Rory Stewart's reflections on **Ignorance**: "Understanding ignorance is as important as acquiring knowledge."
- We often assume expertise sits outside communities.
- But coastal communities already understand:
 - tides,
 - seasons,
 - harvesting,
 - stewardship,
 - cooperation.
- **Therefore:**
 - The question isn't "How do we teach communities?"
 - It is: "How do we build on the expertise they already possess?"

Stabilizing the Seasonal Income Trap via Hybrid Layering

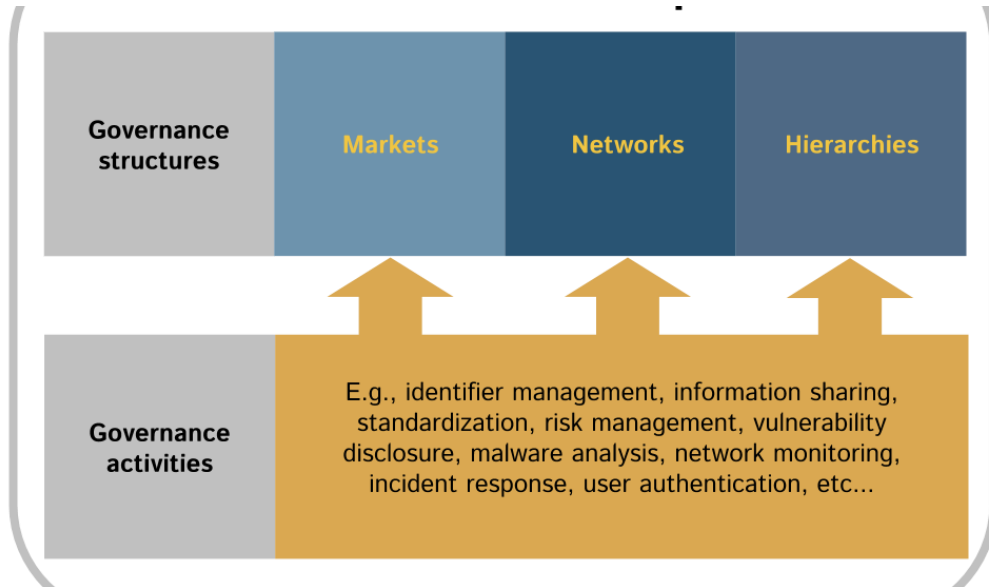




The Scalable Power of Micro-Infrastructure

- **Six Core Design Pillars:**

- **Diverse Participation:** Multi-stakeholder cooperative governance
- **Shared Rules:** Locally clear, community-enforced resource boundaries
- **Active Monitoring:** Harvesters lead biological tracking and environmental data gathering
- **Conflict Resolution:** Low-cost, localized review mechanisms
- **Collective Choice:** Democratized operational and financial decisions
- **Nested Enterprises:** Processing units linked directly to global buyers





Example of Proposed Practice: The Kenya

Location Focus: Wasini Island & Kisite-Mpunguti Marine National Park.

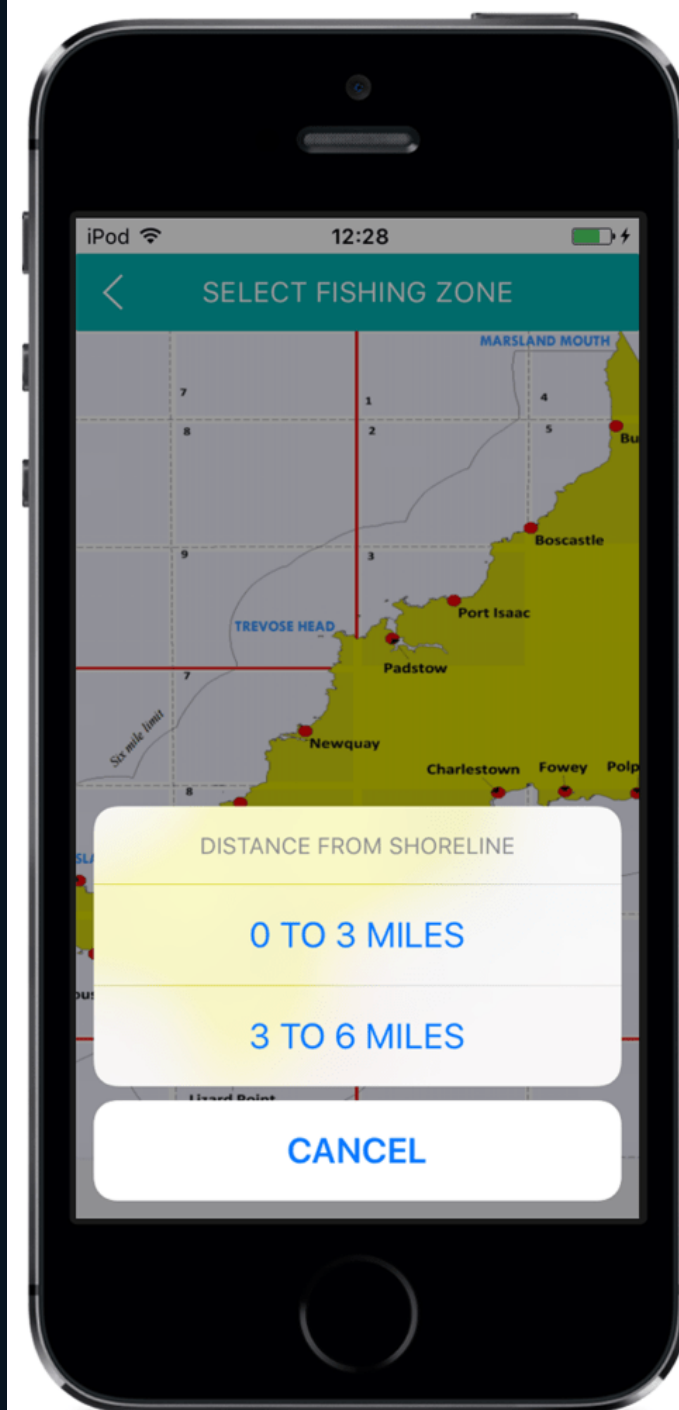
- **Target Groups:** Inshore fishers and coastal litter pickers.
- **Precarity Drivers:** Marine pollution, heavy plastics, and conservation rules.
- **The Hybrid Action:** Integrating seaweed processing into waste-collection networks.
- **Key Deliverable:** Turning local beach cleaning into primary biomass pipelines.
- **Global Insight:** Proves waste groups can manage profitable blue infrastructure.

Future Blue Economy Partnerships

What if seaweed integrated with existing marine infrastructure?

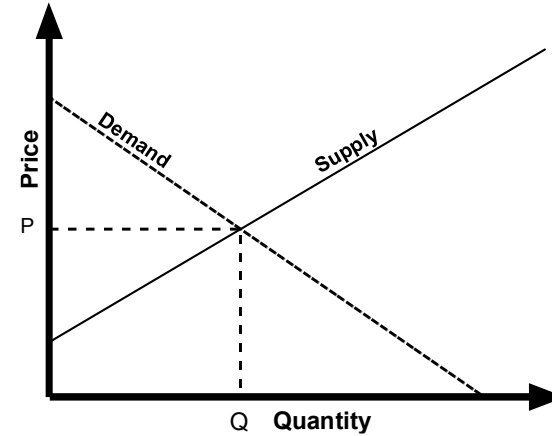


- Data Capture – Blockchain
- Coastal Transparency
- Shellfish Management
- Coastal Clearing
- Offshore wind developments
- Port infrastructure
- Conservation initiatives
- Circular economy projects - Seafood
- Climate adaptation programs
- Creating new pathways for community participation.



What Does The Seaweed Transition Need?

- Communities:
Local expertise and stewardship.
- Scientists:
Species selection and monitoring.
- Innovators:
Products and technologies.
- Processing Centres:
Value addition.
- Brands and Buyers:
Demand signals.
- Investors:
Patient capital.
- Policy Makers:
Enabling regulation.
- Educators:
Skills and training.
- NGOs and Cooperatives:
Governance and mobilisation.
- Consumers:
Demand for regenerative products.





The Final Reflection

Seaweed alone cannot save coastal economies.

But hybrid coastal enterprises can help coastal communities participate in and shape the emerging seaweed economy.

Recognising local expertise

- Building processing capacity
- Aligning supply with demand
- Creating pathways to value
- Designing systems that communities can own



Thank You

Sarah Carpenter

s.carpenter@gold.ac.uk

sarah@biomimicrygaia.co.uk

00447969359570

Hybrid Coastal Enterprises:
Scaling Community-Led Seaweed Innovation for Inclusive Blue-Economy
Growth

"The future of seaweed may depend less on creating entirely new industries, and more on recognising the expertise coastal communities already possess and enabling them to participate in emerging markets."

References

- Carpenter, S. (2026). *Hybrid Coastal Enterprises: Integrating Seaweed Innovation into Existing Coastal Economies*.
- European Commission, EU4Algae.
- European Commission. *Towards a Strong and Sustainable EU Algae Sector*.
- European Parliament (2023). *The Future of the EU Algae Sector*.
- Ostrom, E. (1990). *Governing the Commons*.
- Stewart, R. (2025). *The Long History of... Ignorance*.
- Practice-based initiatives: Brightstar Environmental Conservation Centre, Kenya.
- Expert consultations: Stefan Kraan and Robin.
- [European Parliament reporting](#)
- European Commission's Algae Industry database metrics
- This is an exact data match from the European Commission's [Joint Research Centre \(JRC\) Industry Overview report](#). It specifically counts full-time personnel working within core algae-focused enterprises across the EU-27 member states.
- .