

Justice, innovation and emerging technologies: marine energy, green hydrogen and Orkney energy futures

Lara Santos Ayllon
All Energy 2022
Start: September 2021

Context: Just Transition today

De-industrialization requires: A Just Transition for fossil fuel workers & affordability considerations.



Source: greentechmedia

... What about re-industrialization, no matter how 'low carbon'?



Fragments of wind turbine blades await burial at the Casper Regional Landfill in Wyoming.
Photographer: Benjamin Rasmussen for Bloomberg Gree



Orbital O2 Orkney arrival (Credit Orbital Marine Power)



EMEC Caldale substation and hydrogen plant
(Credit Orkney Sky Cam, courtesy of EMEC)

Energy justice *for* a Just energy Transition?

Energy, across its entire lifecycle, is what we are today.

Distributional Justice

What are the benefits of energy decisions? And the harms?

Temporal, geographical and identity dimensions.



The dark side to transport decarbonisation: EV batteries powered by child labour and worker exploitation cobalt mining in the DRC.

Recognition Justice

Who carries the burdens, or receives the gain?

Consider what sections of society are **misrepresented or ignored** in energy decisions.



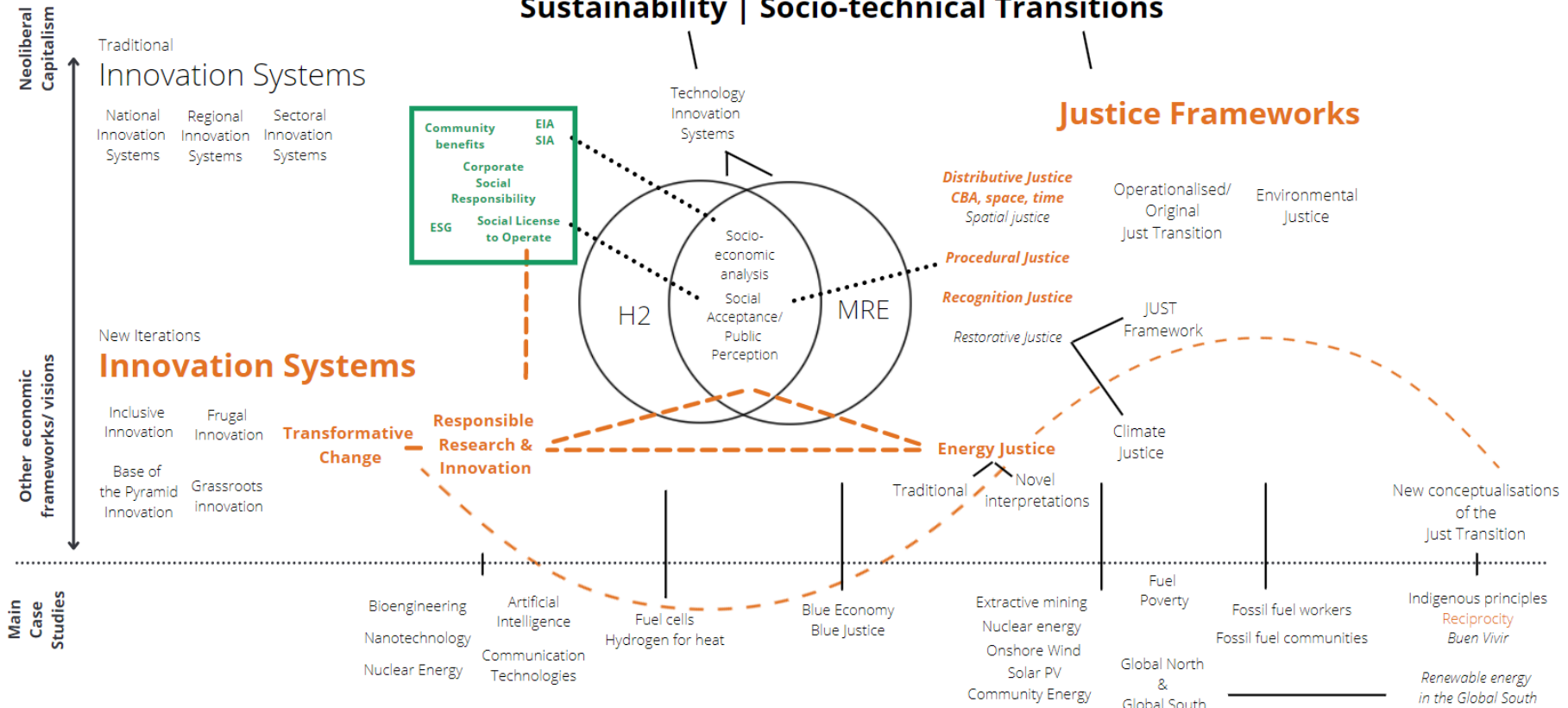
The term "NIMBY" misrecognizes UK onshore windfarm opponents by delegitimizing their concerns as "self-interested" and "ignorant". Instead, these are often based on altruistic goals for the local community and based on demands for fair and respectful treatment.

Procedural Justice

How are decisions being made, **who** is included in them?



Sustainability | Socio-technical Transitions



Working draft, source: author

Key

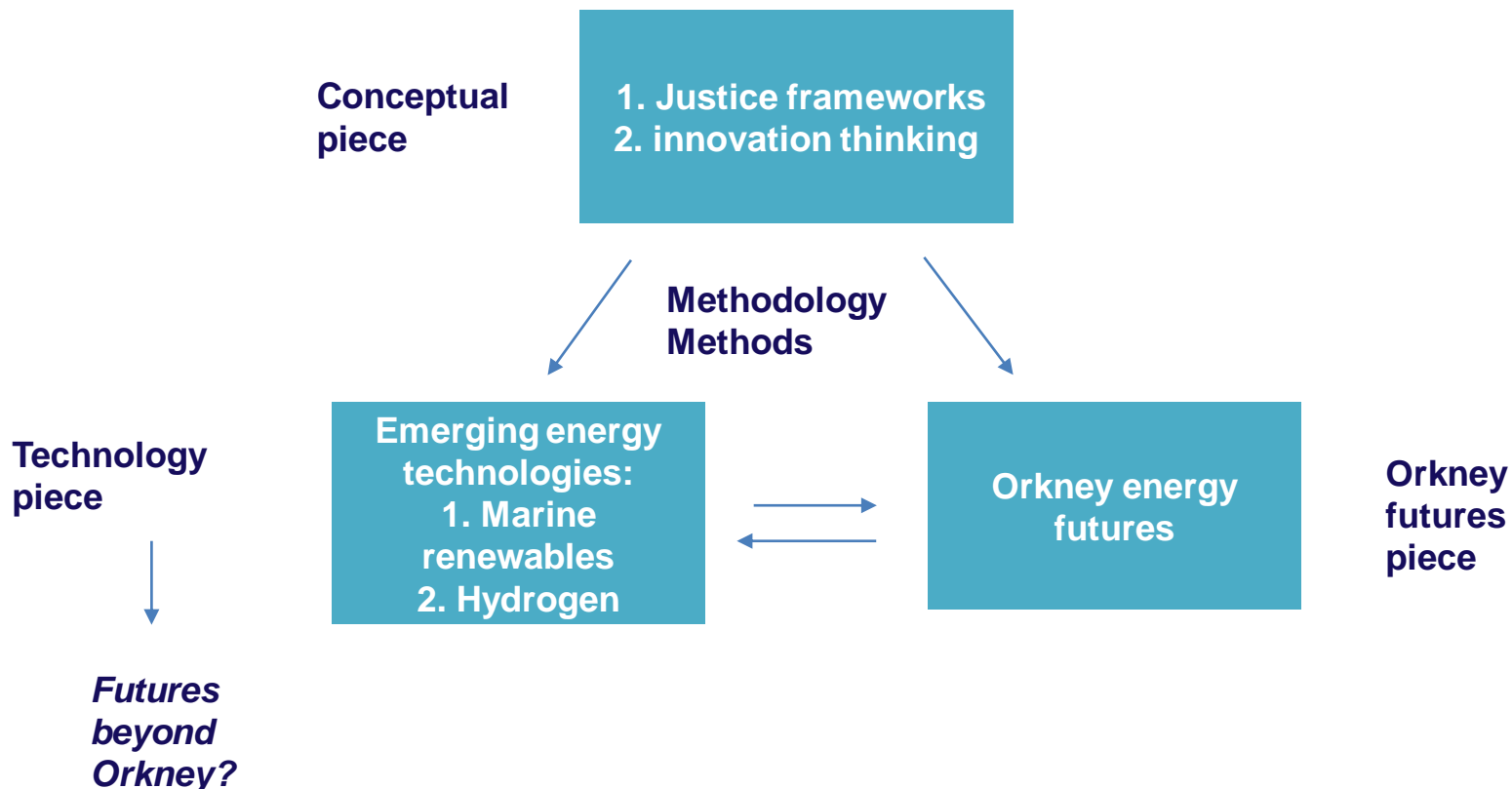
- Linked in literature
- Theoretical / Normative connections
- Identified gaps and potential
- Key frameworks
- Private sector initiatives
- MRE** Marine Renewable Energy
- H2** Hydrogen

Key takeaways

- **Justice: primarily mitigation & retrospective cases**
- **Purpose-driven innovation**
- **H2 and ocean energy gap**

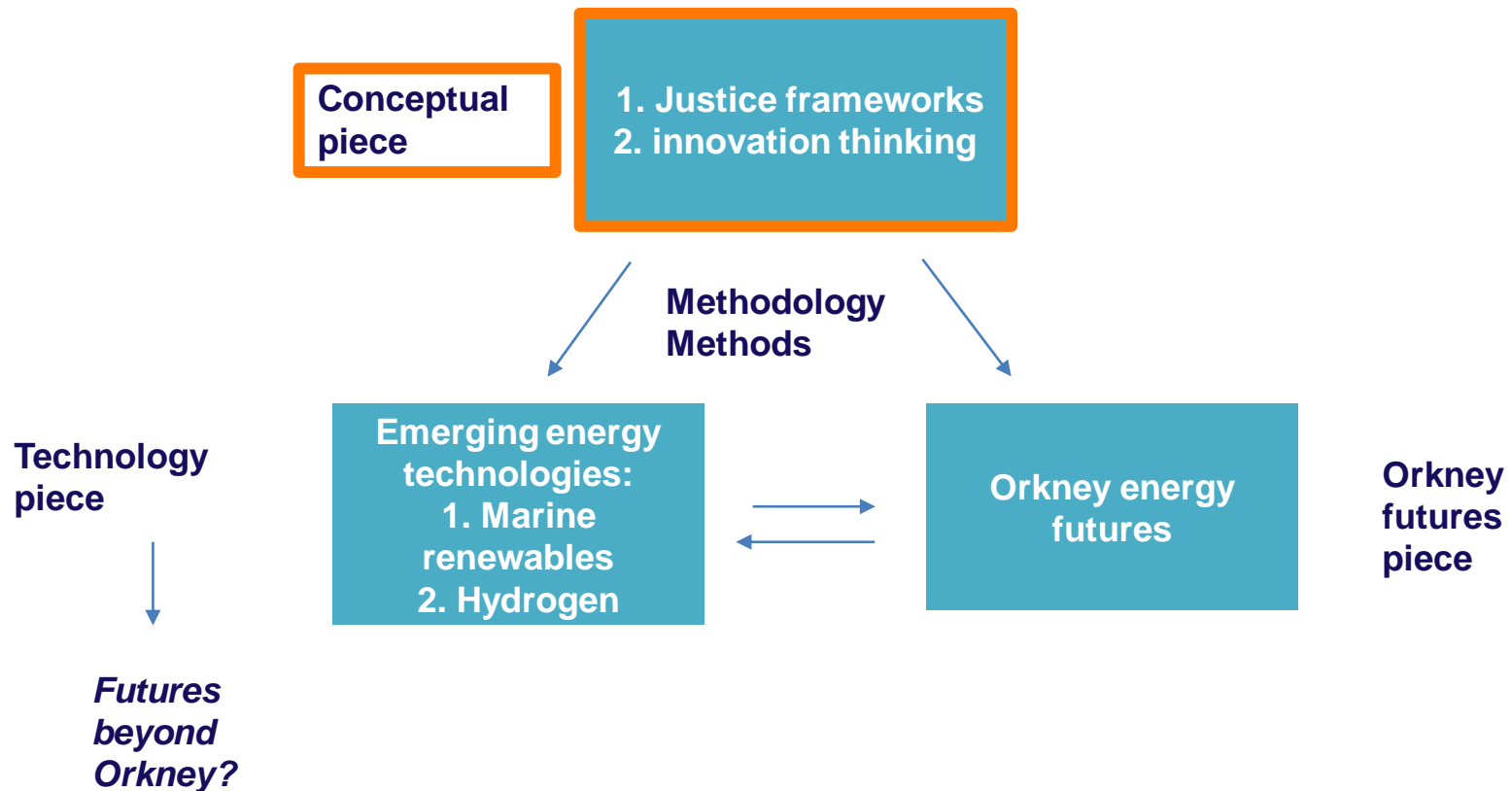
Research focus

Exploring the justice dimensions of emerging renewable energy technologies. Including their ability to create just energy futures in Orkney given the energy transition.



Research focus

Exploring the justice dimensions of emerging renewable energy technologies. Including their ability to create just energy futures in Orkney given the energy transition.

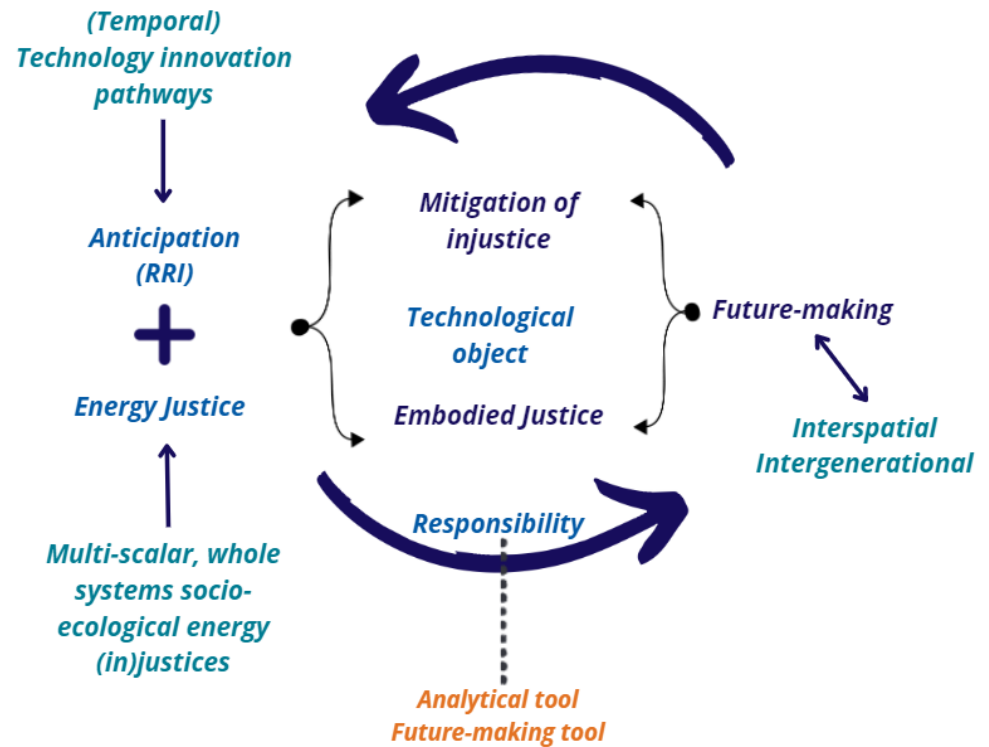
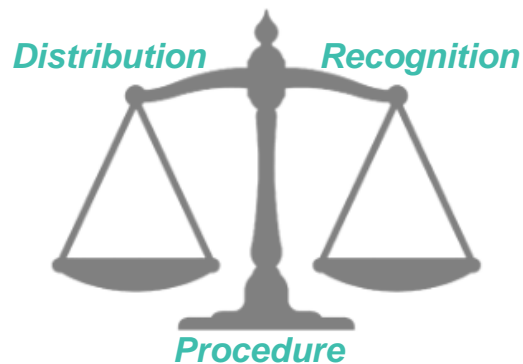


Conceptual approach

Responsible Research & Innovation



Energy Justice – 3 tenets



Working draft, source: author

Next steps?

Ethics review & Technological scoping

Formal Ethics Review

EMEC Co-creation workshop

Post ethics review → informal co-creation workshop to understand these technologies & sticking points in more depth.

Then...

Sectoral and local engagement → businesses, regulators, policymakers, industry groups, researchers, local communities

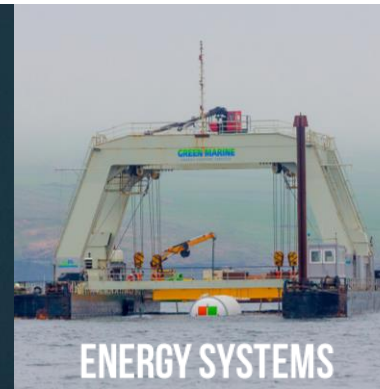
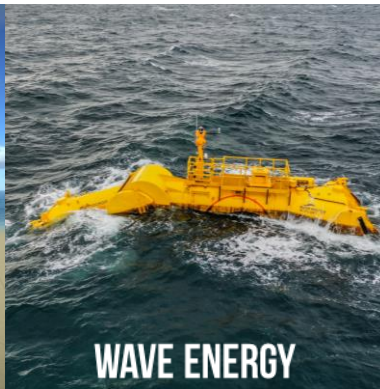
Get in touch!



Mocean crane lift on Hatston Pier by Heddle, Orkney. Photo: Colin Keldie



Magallanes Renovables ATIR installation at EMEC (Copyright Colin Keldie)



Thanks for listening!
Lara.santos@emec.org.uk