

# Learning at the institutional liminality of transitions. Urban Living Labs as inter-boundary spaces of the FEW Nexus

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**Henley**  
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Where business comes to life



**THE WATER HUB**  
Bringing innovation and development together

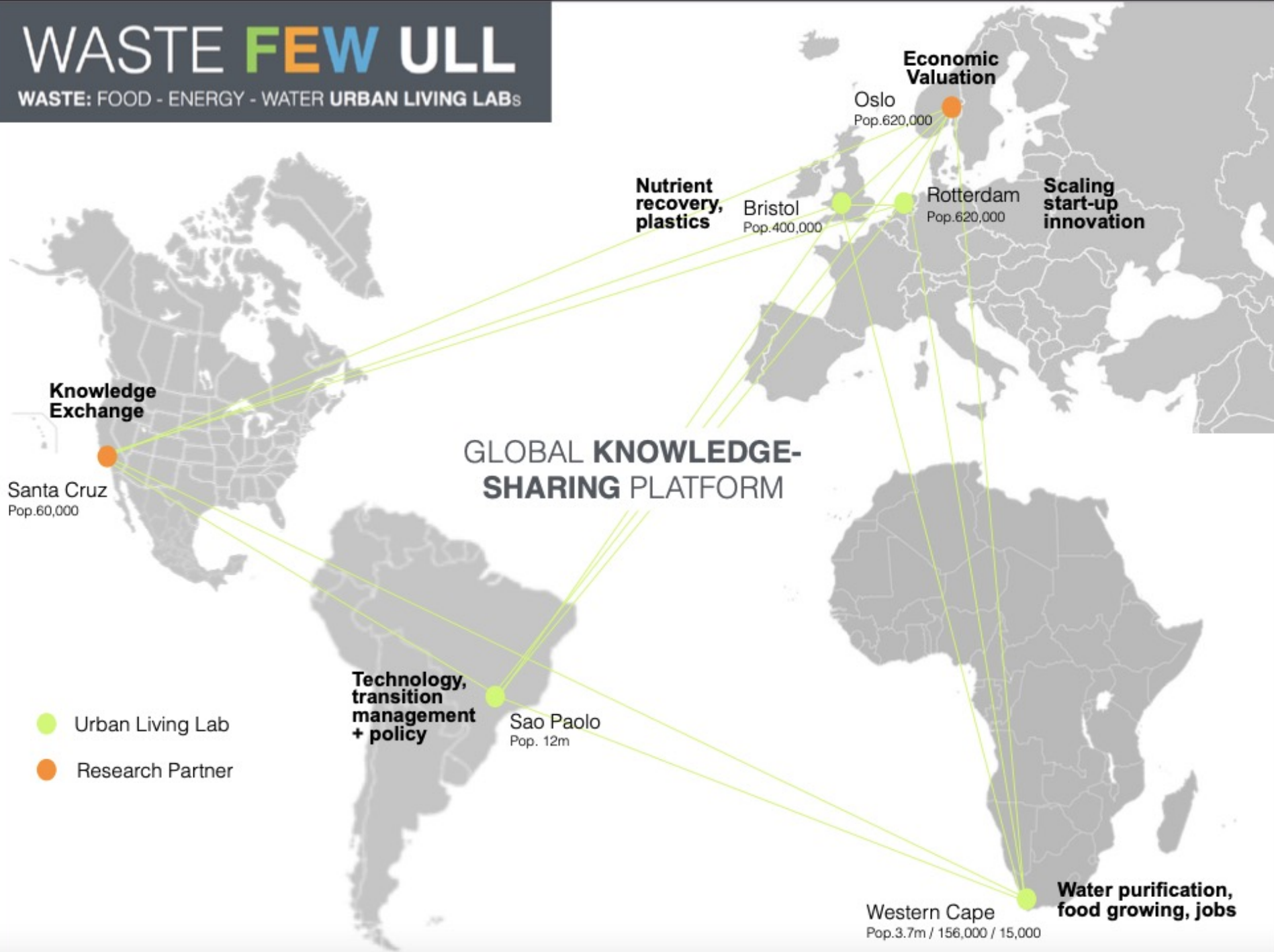


**drift** for transition



# WASTE FEW ULL

WASTE: FOOD - ENERGY - WATER URBAN LIVING LABs



# Circular Economy policy frameworks across project case studies

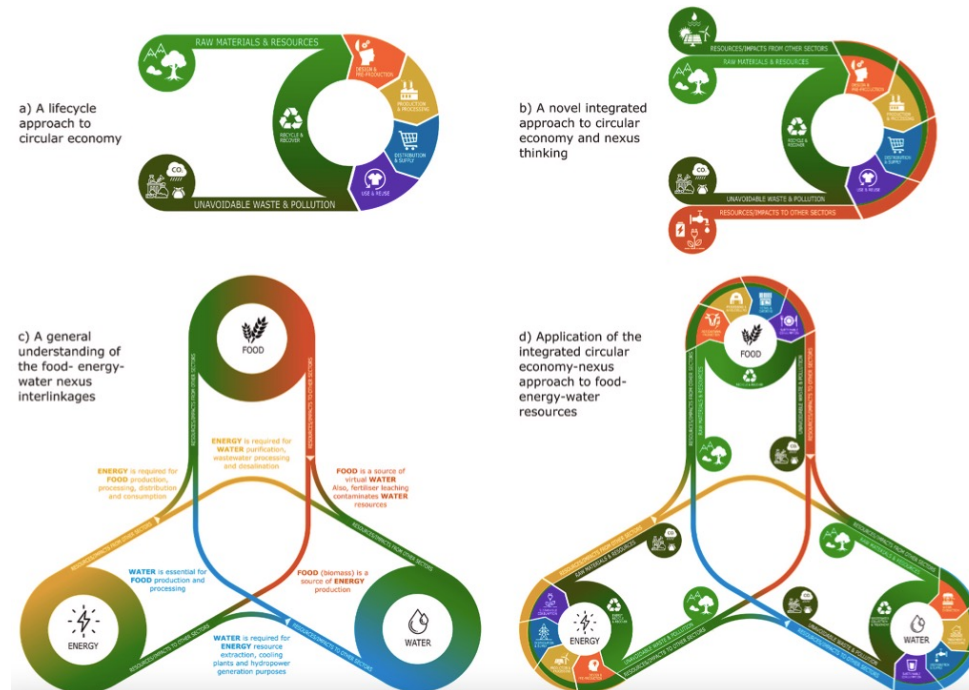
- **European Green Deal** (reduce emissions by 55% by 2050 - pledge adopted July 14, 2021)
  - EU Circular Economy Action Plan (2020)/ ‘A circular economy in the Netherlands by 2050’ (2016)
- **UK 25 Environment Plan** (2018)
  - UK Circular Economy Package (2020)
- **Switch Africa Green Programme** (2014-; 6 pilot countries including South Africa (RSA); EU-funded)
  - RSA package includes national development plan’ national strategy for SD; national waste management strategy,
- **Política Nacional de Economía Circular** (pending, 2022 - CNI, National Industry Confederation)
  - Law No 12.305 National Policy on Solid Waste Management (2010)

# Circular economies and Nexus approaches?

(Liu, et al 2018)

**Table 1 | Nexus examples and direct relationships to SDGs**

Nexus example	SDGs
Food-energy-water nexus <sup>12</sup>	2, 3, 6, 7, 11, 12, 13
Water-food-energy-climate nexus <sup>108</sup>	2, 3, 6, 7, 11, 12, 13, 14
Food-energy nexus <sup>129</sup>	2, 3, 7, 11, 12, 13
Food-water nexus <sup>130</sup>	2, 3, 6, 11, 12, 13
Energy-water nexus <sup>131</sup>	2, 3, 6, 7, 11, 12, 13
Energy-economic growth-CO <sub>2</sub> nexus <sup>132</sup>	2, 3, 6, 7, 8, 11, 12, 13, 14
Water-energy-land nexus <sup>67</sup>	2, 3, 6, 7, 11, 12, 13, 15
Energy-water-food-education nexus <sup>133</sup>	2, 3, 4, 6, 7, 11, 12, 13, 14
Water-energy-people nexus <sup>134</sup>	2, 3, 6, 7, 11, 12, 13, 15
Women-water nexus <sup>135</sup>	2, 3, 5, 6, 7, 11, 12, 13
Energy-poverty-climate nexus <sup>136</sup>	2, 3, 6, 7, 8, 11, 12, 13, 14
Food, energy, water, and health nexus <sup>137</sup>	2, 3, 6, 7, 11, 12, 13, 14, 15
Tourism growth-water security nexus <sup>138</sup>	2, 3, 6, 7, 11, 12, 13, 14
Food-biodiversity nexus <sup>139</sup>	2, 3, 6, 7, 11, 12, 13, 15
Mining-water nexus <sup>140</sup>	2, 3, 6, 7, 11, 12, 13
Nexus between financial autonomy, service provision, stakeholder participation and the resultant allocation of water <sup>41</sup>	2, 3, 6, 7, 11, 12, 13
Nexus of climate change, water and food security, energy and social justice <sup>42</sup>	2, 3, 6, 7, 11, 12, 13, 14
Nexus between water service provision and property development <sup>43</sup>	2, 3, 6, 7, 11, 12, 13
Renewable energy consumption-economic growth <sup>44</sup>	2, 3, 6, 7, 11, 12, 13
Urban-water-energy-climate nexus <sup>145</sup>	2, 3, 6, 7, 11, 12, 13, 14



- Integrative nexus governance gaps? (Weitz et al 2017)
  - Rethinking boundaries of 'nexus' vis-à-vis other sectors and scales;
  - Elaborating shared, contextual principles to guide negotiation of 'trade-offs';
  - Viewing policy coherence as a learning process of changing values and mindsets.'

# Learning at the institutional liminality of transitions

- Liminality and the theory of boundary objects (*Star & Griesemer 1989*)
- ‘Liminal transition spaces’
  - “[I]nterstitial spaces between a previous way of knowing and doing, and a new way” (*Burnett & Nunes, 2021*)
  - “[W]here the institutional arrangements of an organisation may be deemed futile or unattainable, but its substitution remains uncertain” (*Nunes & Parker, 2021*)
- Instantiations of transition?
  - The micro-political dynamics behind efforts to negotiate and identify some form of compromise over clashing and/or competing institutional logics
  - “Critical junctures” (*Acemoglu & Robinson Paulo 2012*)
  - “Adjacent action situations” (*McGinnis 2011*)

Burnett, A. & Nunes, R. J. (2021) Flatpack Democracy: power and politics at the boundaries of transition. Environmental Policy and Governance

Nunes, R. J. & Parker, G. (2021) Institutional liminality, ideological pluralism, and the pragmatic behaviours of a ‘transition entrepreneur’. Geoforum

Nunes, R., Fried, J., dal Poz, E., Winter, K., vonl Wirth, T. & Johnston, M. (2021). Learning at the institutional liminality of transitions. Urban Living Labs as inter-boundary spaces of the FEW Nexus. Working Paper. Centre for Real Estate and Planning Research, Henley Business School.



# Urban Living Labs (ULLs) as instantiating boundary objects of transition

- Norton (2015) proposed the “construction of boundary objects and boundary institutions as one of the key heuristics guiding environmental decision-making and sustainable change.
- ***Conceptualized ULL as ‘inter-boundary spaces and defined***
- ***Principles guiding inter-boundary work in ULLs.***

Key principles boundary work*	Explanation*	Examples of guiding inquiry to inform ULL
Interpretive flexibility	Ability to “tack back and forth” between being specific and abstract. Allowing different interpretations of purpose and value, while being able to deliver on concrete project aims.	<ul style="list-style-type: none"> <li>• Who is facilitating and designing processes of inter-boundary work in the ULL?</li> <li>• How is flexibility and reflexivity of learning and knowledge co-creation in ULL ensured?</li> </ul>
Common information and work frame	An explicit aim or a common project requirement exists that connects the communities of practice in their collaboration.	<ul style="list-style-type: none"> <li>• What is the specific theme of the ULL?</li> <li>• What are the different understandings of this common work frame?</li> <li>• How does this common theme still allow for bearing different meanings?</li> </ul>
Different facilitated communities of practice	Different communities of practice or urban actor groups collaborate in the formation of inter-boundary work.	<ul style="list-style-type: none"> <li>• Which communities of practice (e.g. urban actors) are holding stakes in identifying solutions to the sustainability challenge?</li> <li>• How can absent communities become represented in the lab activities?</li> </ul>
Contextualization and socio-spatial embedding	The socio-historic and socio-spatial contexts of the boundary objects and boundary spaces are made transparent and explicit.	<ul style="list-style-type: none"> <li>• What are the socio-historic and spatial context factors of the ULL location?</li> <li>• Why is the ULL relevant within that specific context?</li> <li>• What leads to an active local embedding of the ULL in its context?</li> </ul>
Power dynamics of (inter-)boundary space and context	Boundary objects are embedded in particular social contexts, that is, they are located at the nexus of very specific relations of power.	<ul style="list-style-type: none"> <li>• Which are the roles and agency distributed among the involved ULL actors?</li> <li>• Which actors do agenda setting, funding and coordinate the uptake of outcomes related to ULL activities?</li> <li>• How do power and influence in the ULL change over time?</li> </ul>
Accountability of boundary activities	Effective boundary activities assure the accountability of their processes and outcomes, for example by transparent responsibilities, management rules and/or an accountable institutional embedding within a network of partners.	<ul style="list-style-type: none"> <li>• Which are the responsibilities and decision-making mechanisms in place among the ULL actors?</li> <li>• How is the legitimacy and uptake of ULL outcomes planned (related to formalized urban governance and planning)?</li> </ul>

## Urban Living Labs (ULLs)

*To what extent do ULLs provide a transformative learning platform for addressing FEW nexus gaps in integrative governance?*

- Living Labs (LLs) are defined as **user-centred, open innovation ecosystems**.
- LLs are both **practice-driven organisations that facilitate and foster open, collaborative innovation**
- LLs operate as **intermediaries among citizens, research organisations, companies, cities and regions for joint value co-creation**

<https://enoll.org/about-us/>



# Rotterdam (The Netherlands) - Blue City

## Lab: *A Practice Space*

**BLUE  
CITY  
LAB**





# Rotterdam (The Netherlands) - Blue City Lab: *A Practice Space*

**BLUE  
CITY  
LAB**



# Bristol (UK) - Waste FEW ULL: A Visioning Space

**Bristol's FEW ULL Waste Challenge**

**CURRENT**



Market Gardens?  
Local employment?

Modelling / testing **energy optimisation** (inc. external cost-benefit) from gas usage (e.g. **storage/peak load vs transport**) and ideally including inclusion of commercial or other captured food waste

Electricity generation  
Biomethane to gas grid  
Biomethane to vehicles



Farms

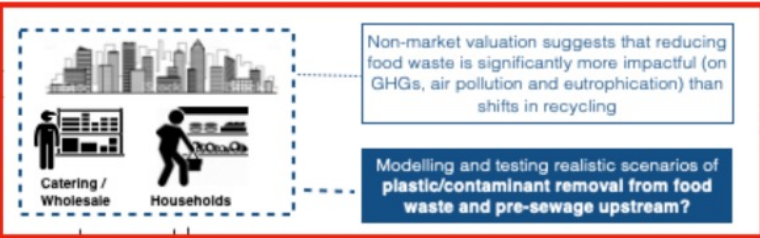
Digestates recycled to land



**Food Waste / Plastics**  
Household collections + some commercial, abattoirs

Non-market valuation suggests that reducing food waste is significantly more impactful (on GHGs, air pollution and eutrophication) than shifts in recycling

Modelling and testing realistic scenarios of plastic/contaminant removal from food waste and pre-sewage upstream?



**upstream reduction**

**Sewage**  
Phosphates: diet (40%), food additives (29%), laundry (14%)

**Bristol Water Recycling Centre**

**Anaerobic digestion**

**Food waste**  
Plastics / contaminants

**Sewage sludge**

4 mg/l phosphorous uptake in sludge

9mg/l phosphorous

5mg/l phosphorous - recovery neither mandated by regulation nor economically viable in terms of end-product value



**Sewage treatment**

**Treated effluent**



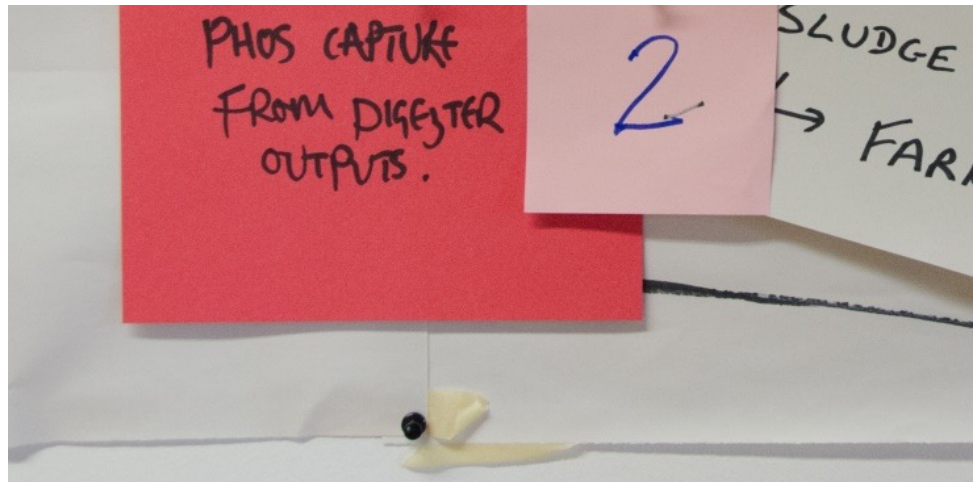
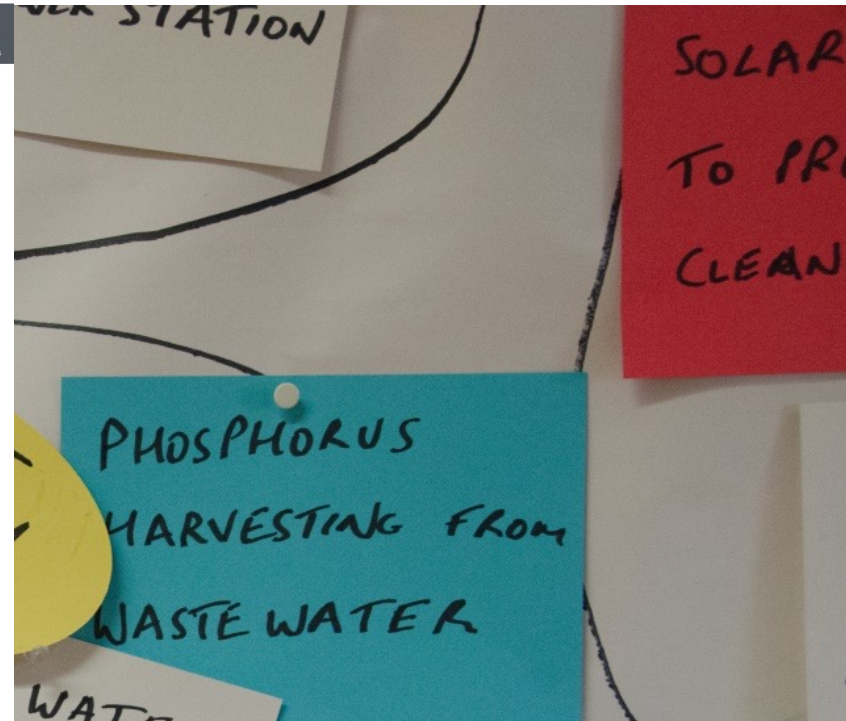
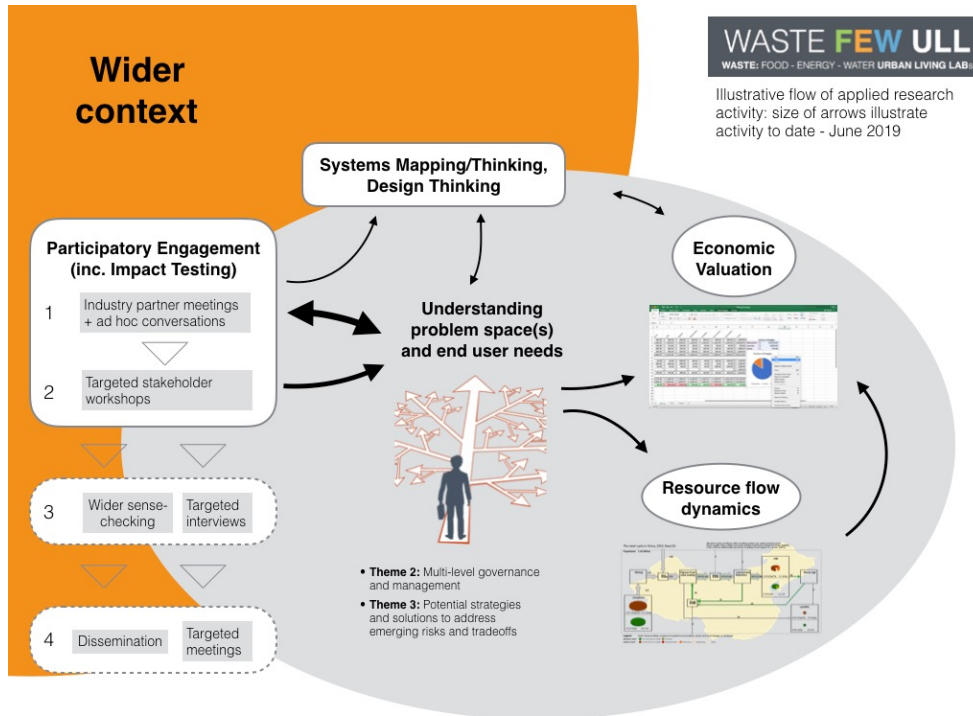
**downstream recycling/recapture**

versus

XYZ PROPOSED  
XYZ COMPLETED



# Bristol (UK) - Waste FEW ULL: A Visioning Space

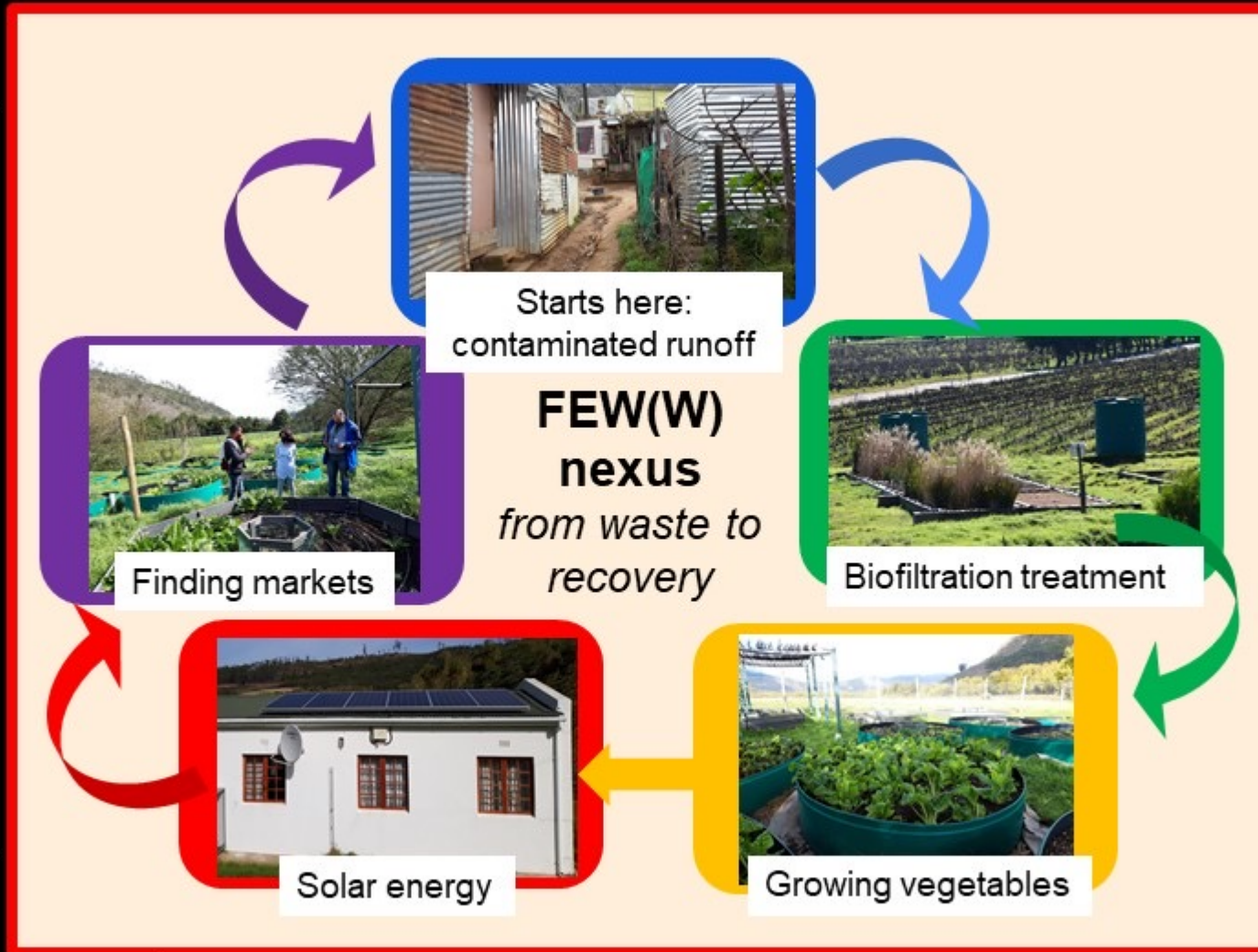




# Franschhoek (Western Cape, Africa): Water Hub ULL - An *Experimental Space*

Bounded by a willingness and engagement in social learning

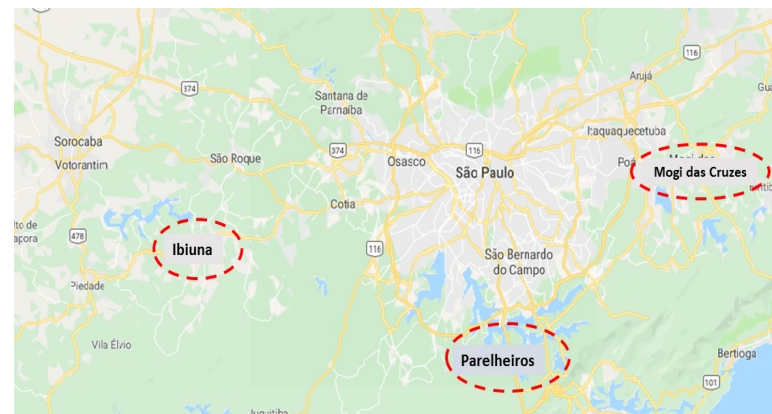
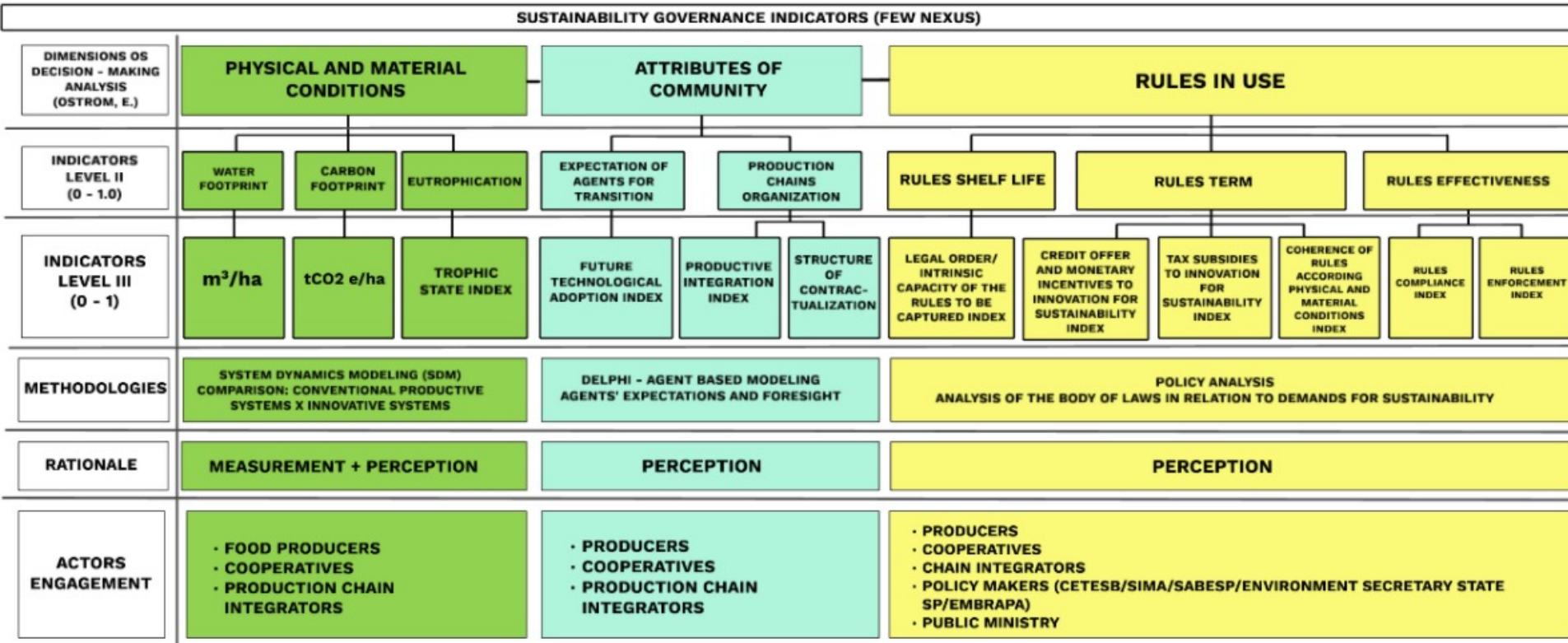
Bounded by ability to monitor, measure, and manage



Institutional support from research, IoT & authentic feedback

FEW(W) operations require a dedicated risk assessments

# Sao Paulo (Brazil) - 'In Natura' ULL: A Policy Space



# ULLs and learning at the institutional liminality of transitions?

- The **idea of the “Nexus”**, as a legitimate form of agency, is often framed for the purposes of *collective action*.
- Yet, Nexus agendas actually arise at the **institutional liminality of opposing agendas - including transitions to circular economies**.
- The ULL as boundary object is emergent, fluid, unpredictable, uncertain and contingent - ***not fixed***.
- ULLs are inter-boundary spaces that are unique, experimental, creative - which is needed for disrupting unsustainable lock-ins, ***but can this creativity and individual passion have impact w/o some form of institutional stability?***



# Thanks!

Learn more about our project here:

<https://wastefewull.weebly.com/>



Look out for our forthcoming paper too!

Nunes, R., Fried, J., dal Poz, E., Winter, K., vonl Wirth, T. & Johnston, M. (2021). *Learning at the institutional liminality of transitions. Urban Living Labs as inter-boundary spaces of the FEW Nexus*. Working Paper. Centre for Real Estate and Planning Research, Henley Business School.