The Moveable Nexus: Design-led urban food, water and energy management innovation in new boundary conditions of change

International Consortium

Wanglin Yan (Lead PI) and Bijon Kumar Mitra, Japan Andy van den Dobbelsteen(PI), the Netherlands Greg Keeffe(PI) and Kevin Logan, UK Geoffrey Thün(PI), USA Sami Sayadi(PI), Qatar Rob Roggema(Co-PI), the Netherlands













European

The Moveable Nexus is





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URBAN EUROPE





WP.1 Project Management (Milestones & Deliverables)

M-NEX develops the three research platforms through participatory workshops in a row.





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The Principles of Design-led Nexus Approach



(Yan and Roggema, 2019)













8-12 October '18, Belfast



24-28 Feb '19, Doha

30 Jun-5 Jul '19, Detroit





ORU



2-6 Mar '20, Groningen



WP.3 Evaluation Tool: FEW-print

Measuring the costs of Food, Thermal energy, Electrical energy, Mobility, Water, Waste in ecological print.





OR

UM





European

WP.3 Functions of FEW-print in Design-led Approach



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WP.4 Participation Tool: Actor-Network (ANT) Map

Manually Drawn ANT



KUMU Based ANT





INTER-PERSONAL RELATIONSHIPS / POLICY



Link: : https://kumu.io/GeoffreyThun/fwe-detroit-large



Sustainable Urbanisation * 🔹 🐇 Global Initiative (SUGI) OOD-WATER-ENERGY NEXUS





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M-NEX_DET

WP.5 Amsterdam Living Lab: Developing the FEW-print Calculator



Angle of approach:

enhance quality of life by FEW Nexus interventions and reduce environmental footprint

Theme: energy transition

Coming up: stakeholder design workshop

European

M-Nex Living lab: October 2020

Inform urban farming: 2nd part Food component



Continue from right





WP.5 Belfast Living Lab: Adapting the Post-industrial City





WP.5 Detroit Living Lab: Mapping FEW access and actors

Food Energy Water Dialogues: Detroit



Stakeholder Engagement // M-NEX_DET



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Link: https://vimeo.com/291997016

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WP.5 Sydney Living Lab: The Growing Future City, West Sydney











WP.5 Tokyo Living Lab: Adapting the New Boundary of Growing and Shrinking City



OOD-WATER-ENERGY NEXU



Transdisciplinary Actor Network in Tokyo @ WISE Living Lab

Utility Company Kanagawa Prefecture Region scale [Platform] (Tokyo Gas) Technology Center for Open Research Agriculture Waterworks Forum Companies City scale Yokohama City High School Keio Univ. Yokohama SDGs Design Center Future Suburb, WISE Living Lab Keio Univ. M-NEX Neighborhood scale Tokyu Company WISE Living Lab Wat Inc. wise Living Lab て ごんかくBASE (People WISE Café) Residents NPO Morinooto









M-NEX Platform online

- Web site
 - m-nex.net

- Web wiki knowledge platform
 - m-nex.net->wiki





M-NEX Design Workshops in a row



M-NEX Consortium Kick-off: Sydney [2018.05.12 – 2018.05.16



M-NEX Design Workshop: Qatar [19.02.22 – 19.02.28]



M-NEX Design Workshop: Sydney [19.11.02 – 19.11.09]



M-NEX Design Workshop: Belfast [2018-10.08-2018.10.12]



M-NEX Design Workshop: Detroit [19.06.30 – 19.07.05]



M-NEX Design Workshop: Groningen [2020.03.02 – 2020.03.06]

+ Active Living Lab activities with stakeholders









Publications

Articles

Yan, W., & Sakairi, T. (2019). Geo CPS: Spatial challenges and opportunities for CPS in the geographic dimension. *Journal of Urban Management*, 8(3), 331–341. https://doi.org/10.1016/j.jum.2019.09.005

Sukhwani, V., Shaw, R., Kumer, B., & Yan, W. (2019). Optimizing Food-Energy-Water (FEW) nexus to foster collective resilience in urban-rural systems. *Progress in Disaster Science*, *1*, 100005. https://doi.org/10.1016/j.pdisas.2019.100005

Mitra, B. K., Shaw, R., Yan, W., & Takeda, T. (2019). Water-Energy-Food Nexus: A Provision to Tackle Urban Drought (pp. 69–86). Springer, Singapore. https://doi.org/10.1007/978-981-10-8947-3_5

Yan, W., & Roggema, R. (2019). Developing a Design-Led Approach for the Food-Energy-Water Nexus in Cities. Urban Planning, 4(1), 123–138. https://doi.org/DOI: 10.17645/up.v4i1.1739

Nakayama, S., & Yan, W. (2019). The package redelivery problem, convenience store solution, and the delivery desert: Case study in Aoba Ward, Yokohama. Journal of Urban Management, (May), 0–1. <u>https://doi.org/10.1016/j.jum.2019.08.001.</u>

Roggema, R. (2019) City of Flows – the need for design-led research to urban metabolism. Urban Planning 4(1) 106-112). Special Issue 'The City of Flows'. Editorial. DOI: 10.17645/up.v4i1.1988

McLean, L. and R. Roggema (2019) Planning for a Prosumer Future: Central Park case study. Urban Planning 4(1) 172-186. Special issue 'The City of Flows'. DOI: 10.17645/up.v4i1.1746.











Publications

Book in editing

Roggema Rob and Yan Wanglin. (2020). transFEWmation: Towards design-led food-energy-water systems for future urbanization. Springer. Main contributors and chapters:

- Andy van den Dobbelsteen, The Regenerative City positive opportunities of coupling urban energy transition with added values to people and environment.
- · Seán Cullen and Greg Keeffe. Spatialised Method for Analysing the Impact of Food.
- · Keeffe, G. and Cullen, S. A flexible scaffold: design praxis in the FEW-nexus'.
- Nick ten Caat, Nico Tillie, Martin Tenpierik. Pig farming vs. Solar farming: exploring novel opportunities for the energy transition.
- Thün, G., Sanyal, T. & Velikov, K. Mapping the Food Energy Water Nexus Across Cascading Scales: Contexts for Detroit from Region to City.
- Wanglin Yan and Shun Nakayama. Redesigning the Urban Food Life through the Participatory Living Lab Platform Practices in Suburban Areas of the Tokyo Metropolitan Region.
- Roggema, R, Tillie, N, Keeffe, G. and Nakayama, S. (2020) Landscape first: thriving nature-based urbanism in Western Sydney.
- Galloway W, Kevin Logan. A proposal for A Database of Food Energy Water Nexus Projects.











Appendix

Key Facets and mid-term Achievements

Trans-disciplinarity

- Research team is a combination of architects, planners, analysts, business, and policy consultants.
- Stakeholders cover governments, public utilities, companies, NPOs and research institutes.
- Co-Design, Co-production, Co-delivery and Collaborative action
 - 5 Int'l workshops and frequent workshops at local
 - Milestones and deliverables are achieved by teams collaboratively.

Platform and Tools for Action (Living Labs)

- Urban living labs are established at each city with support of local stakeholders.
- Tools for evaluate FEW print and map actor network are developed and applied local.
- Web site ad wiki site are installed (<u>m-nex.net</u>) and contents are developing incrementally.

Sustained Engagement of All Stakeholders

- Flexible scheme for establishing living lab.
- Collaborative projects with stakeholders at living lab.
- Joint project/event with SDGs

M&IE for Sustained Process of Dynamic Adaptation

- M-NEX platform is flexible to adapt to local context of each city.
- Each team is developing supportive projects in cooperated with stakeholders



