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Sustainable Urbanisation Global Initiative (SUGI)
FOOD-WATER-ENERGY NEXUS

BELMONT FORUM

URBAN EUROPE

European Commission


# INtegrated analysis and modeling for the management of sustainable urban FWE ReSOURCEs

**Acronym**: IN-SOURCE

**Duration**: 2018–2020

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# Objective

Development and application of tools for case studies in order to quantitatively assess the predicted impact of changes in urban land use due to population, climate change, the energy transition and the challenges of providing a truly resilient infrastructure

**FOOD**

*Indicators:*
Quality, sustainable production, security of supply, land use, energy footprint, $CO_2$ footprint

**FOOD → WATER**

- Impact of food production and food waste treatment on water quality
- Climate change impact on food production and water demand

**FOOD → ENERGY**

- Use of waste food for energy production
- Impact of urban farming on transport and processing energy

**WATER → FOOD**

- Water treatment for irrigation
- Water treatment for food process water
- Water treatment for potable water

**WATER**

*Indicators:*
Water quality, water quantity and long term sustainability, resilience, land use, water footprint

**WATER → ENERGY**

- Energy requirements in wastewater treatment for different water quality and possible reuse
- Wastewater sewage sludge treatment for thermal energy generation, phosphorous recovery

**ENERGY → FOOD**

- Smart micro grids for resilient food refrigeration chain and food logistics
- Demand side management potential of food chain refrigeration (supermarkets)
- Energy efficiency of food production

**ENERGY → WATER**

- Smart grids and renewables for resilient water supply and treatment
- Wastewater plant efficiency and demand side management (DSM), reuse
- Energy efficiency of water supply

**ENERGY**

*Indicators:*
$CO_2$ emissions, reliability and resilience, land use footprint

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