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A systems approach to understanding urban household energy-water nexus metabolism in Cape Town

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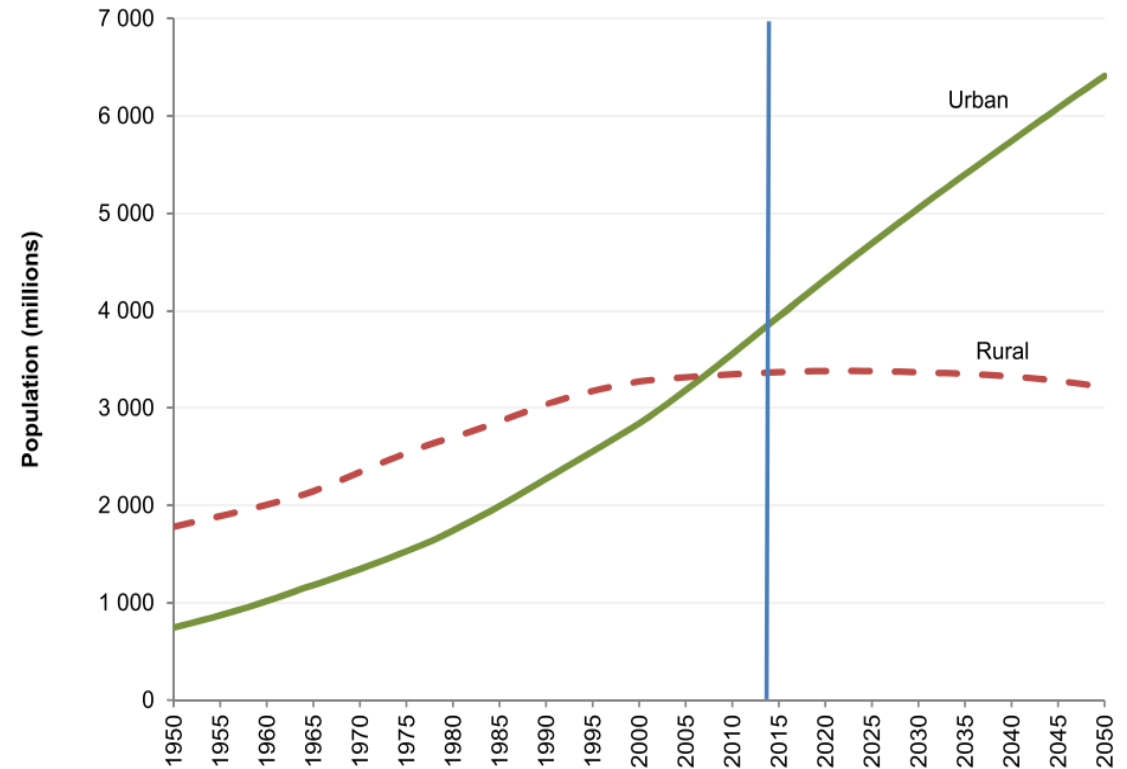
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Introduction

- Global population is expected to reach 9.8 billion people by 2050
- The current rate at which resources are extracted, produced and consumed would not be able to sustain this increased population
- By 2030 human reliance on food is expected to increase by 35%, energy by 50% and water by 40%
- As of 2007 more people live in urban areas than rural areas



Source: UN-DESA (2015)



Research Objectives

The overall objective of this research is to assess explore the household energy-water nexus metabolism of Cape Town in order to identify high leverage intervention points.

This will be achieved through the following research sub-objectives:

- To undertake a critical review of the energy-water nexus metabolism at an urban household level.
- To develop a systems dynamics model of the energy-water nexus metabolism of Cape Town.



Sustainable Development Goals

SUSTAINABLE DEVELOPMENT GOALS

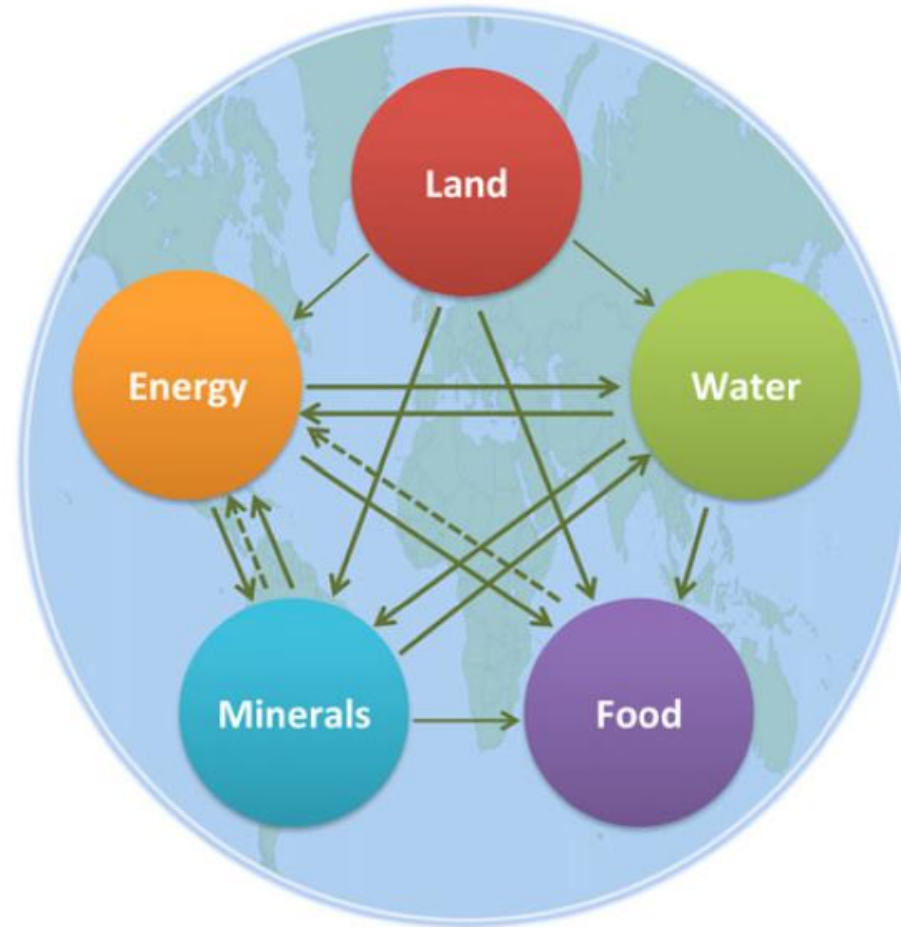
17 GOALS TO TRANSFORM OUR WORLD



Source: United Nations (2015)



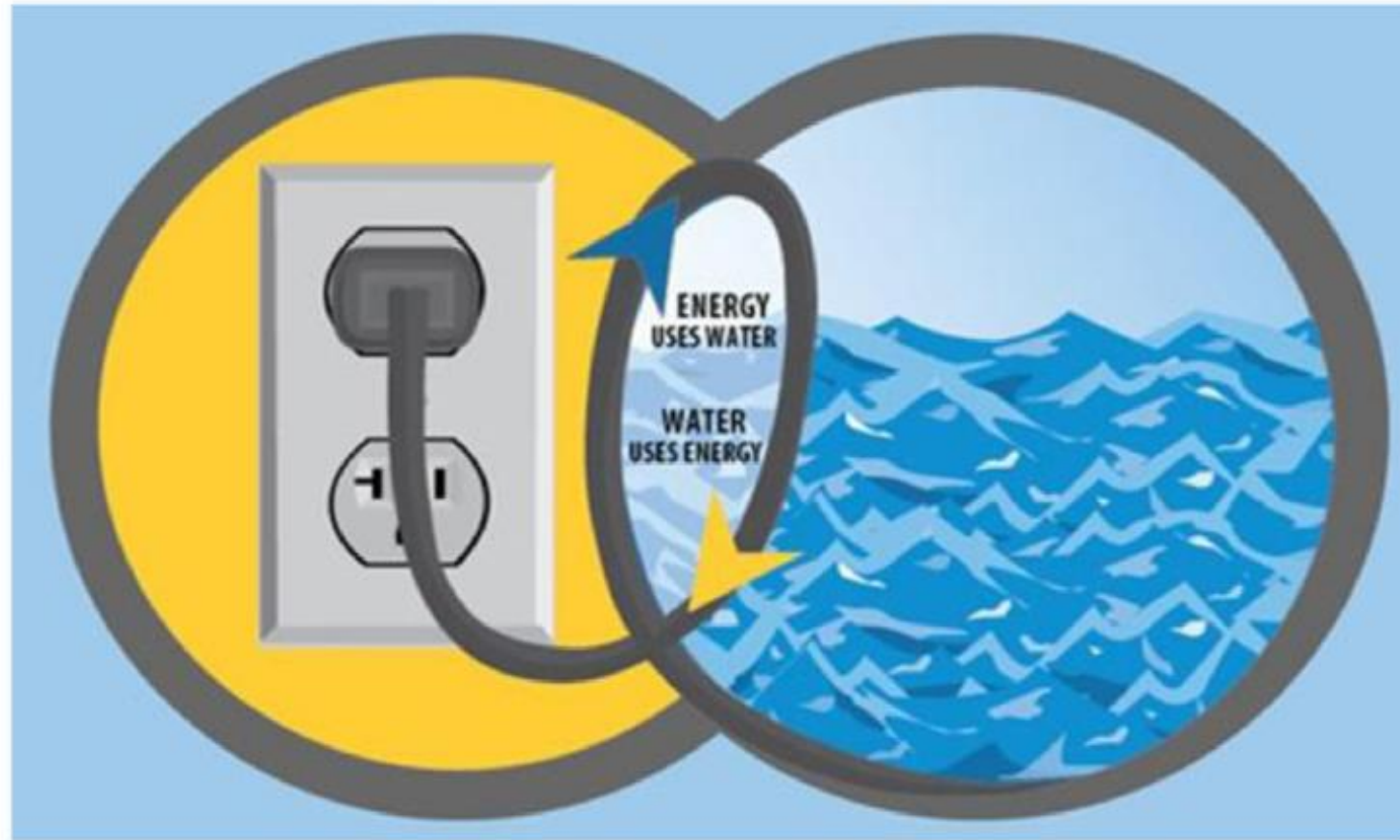
Resource Nexus



Source: Bleischwitz et al. (2013)



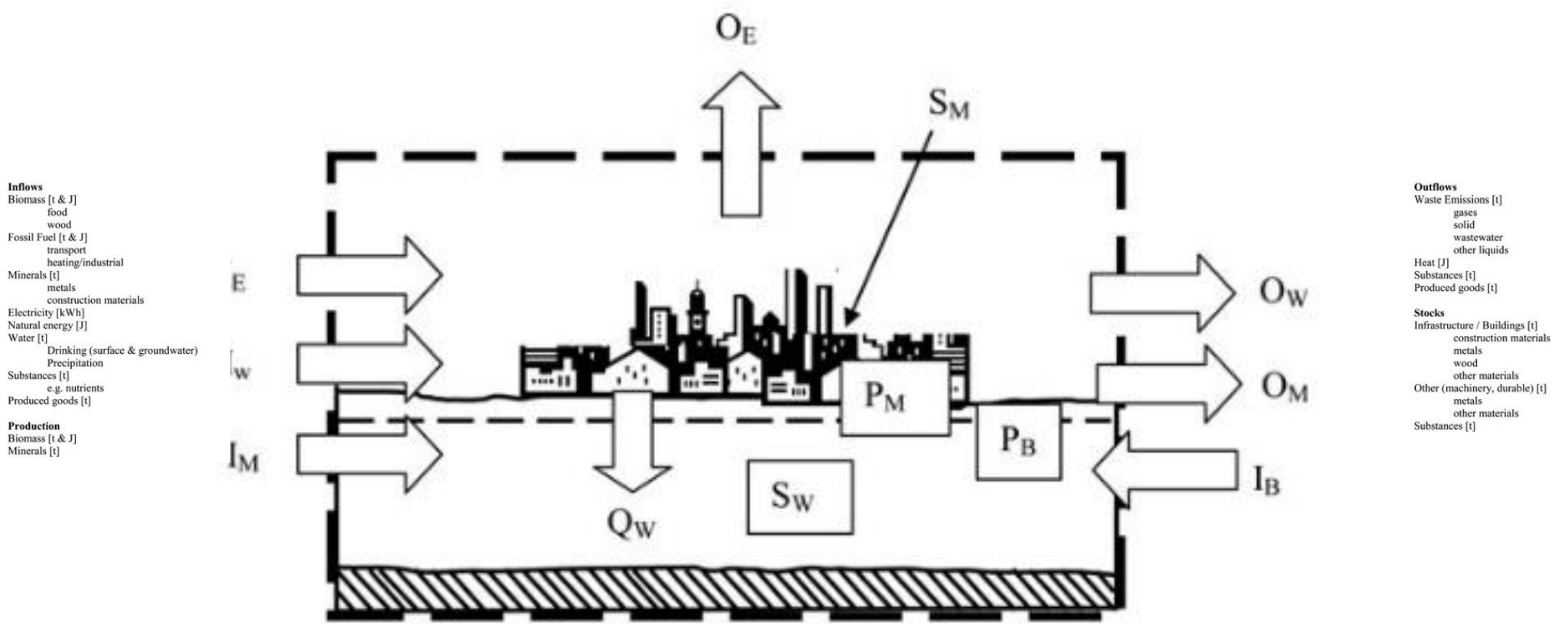
Energy-Water Nexus



Source: Hamiche et al.(2016)

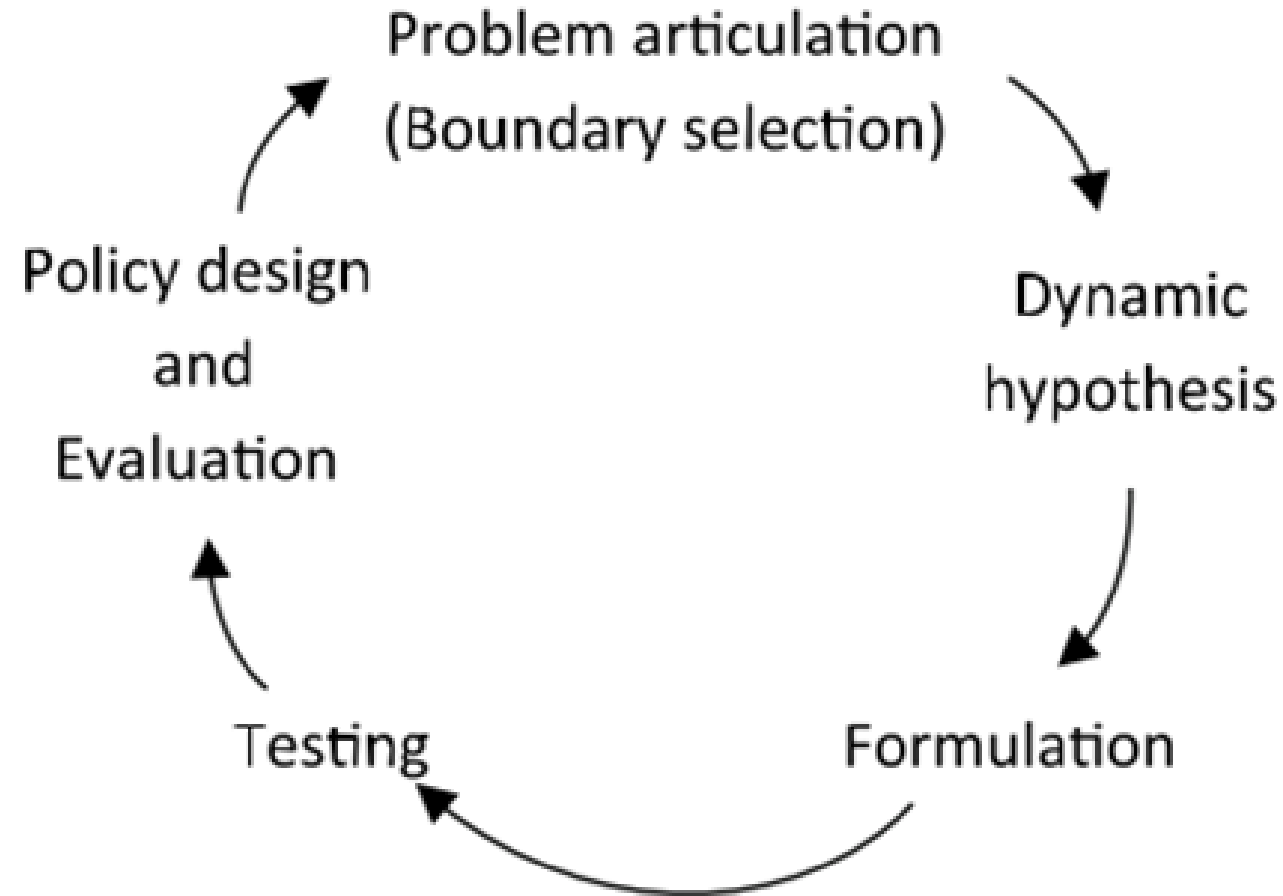


Urban Metabolism



Source: Kennedy & Hoornweg (2012)

The way forward: System dynamics modelling



Source: Sterman (2000)



THANK YOU