Development of a multi-criteria-based decision support tool for circular resource recovery and reuse business models

Tosin Somorin*, Solomie Gebrezgabher, Avinandan Taron, Surajidt Ghosh, Shweta Yadav, Eric Nartey, Susanne Bodach

International Water Management Institute

*Contact: t.somorin@cgiar.org

iWMI International Water Management Institute

CGIAR Nature-Positive Solutions   CGIAR INITIATIVE ON Resilient Cities

The Challenge ▶▶

- **Circular Economy** (CE) models provide multiple routes to Resource Recovery and Reuse (RRR).

- Decision makers recognize the potential of CE but have difficulty choosing business models due to **complex trade-offs and uncertainties.**

- A holistic assessment and systematic tool that considers **multi-objectives and perspectives** are needed for **informed decisions**.

Objectives ▶▶

Develop a multi-criteria decision support tool for:

- A rapid assessment of suitable locations for CE/RRR business models in a given context.

- A quick narrowing of CE/RRR business models for a given waste stream and technology options, while considering the priorities and interests of various stakeholders.

- A user-friendly interface to modify inputs and test scenarios and an interactive data visualization dashboard for result analysis.

Methodology ▶▶

- A multi-criteria decision analysis (MCDA) method that explicitly considers the priorities of various decision-makers.
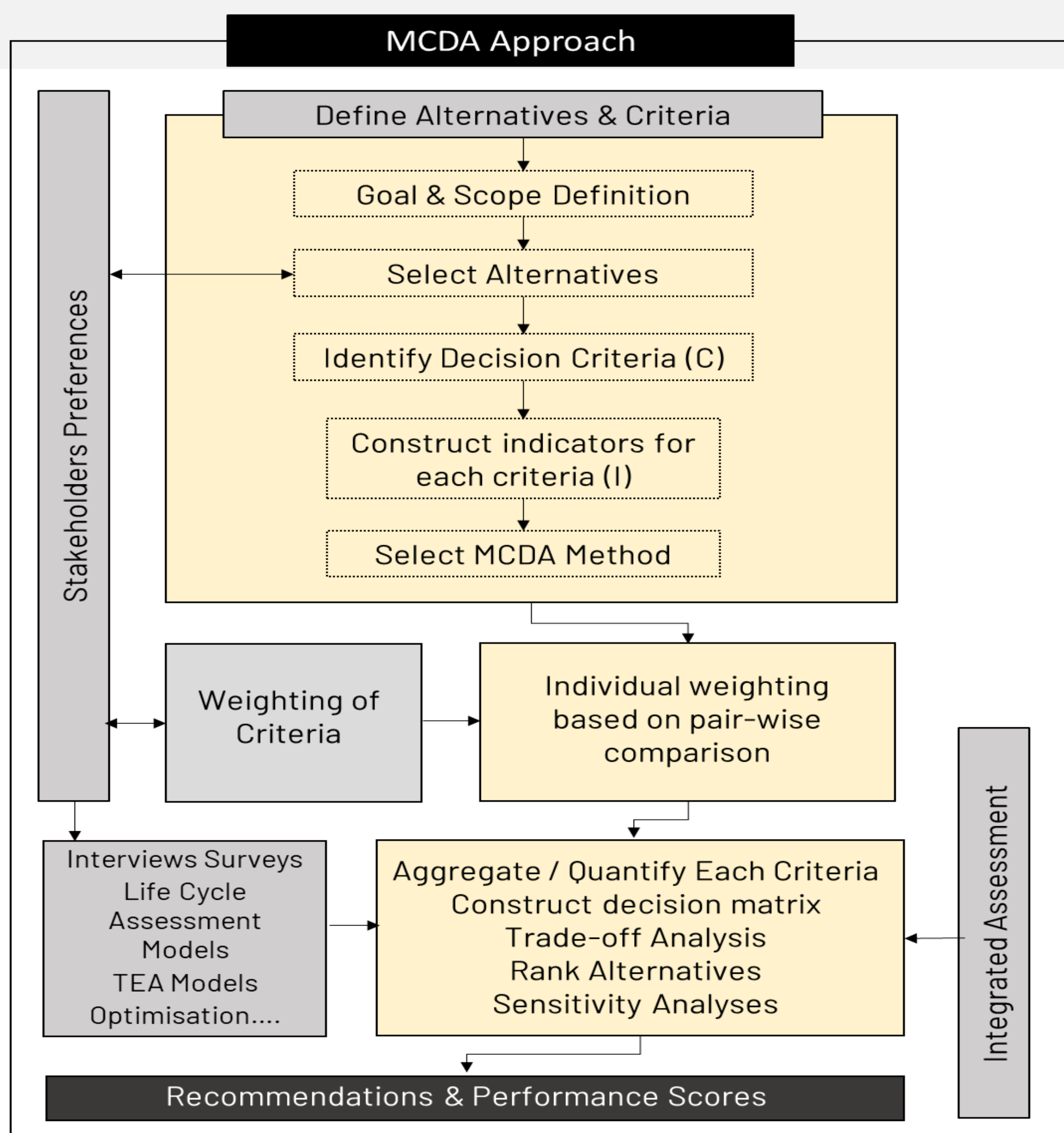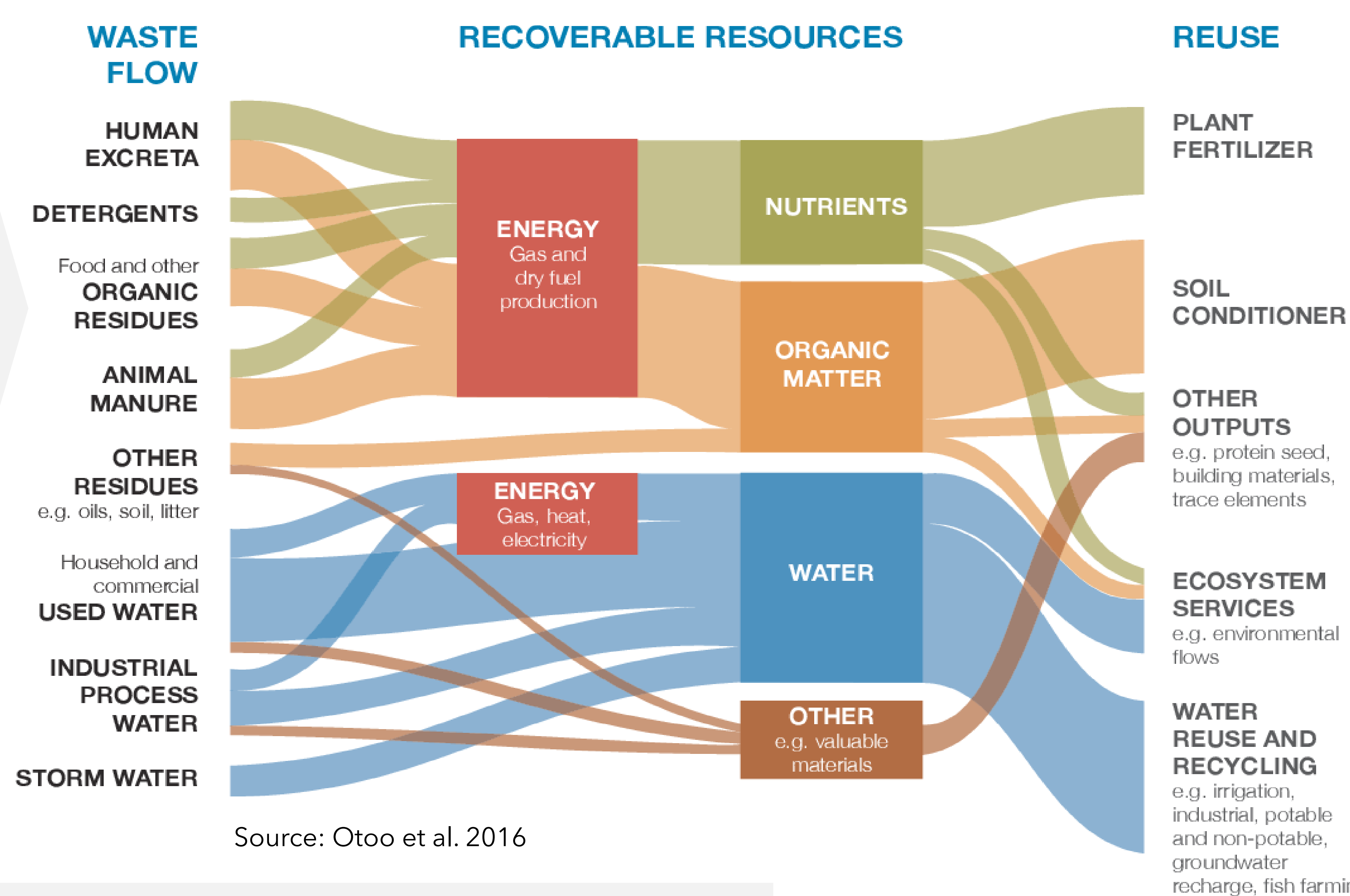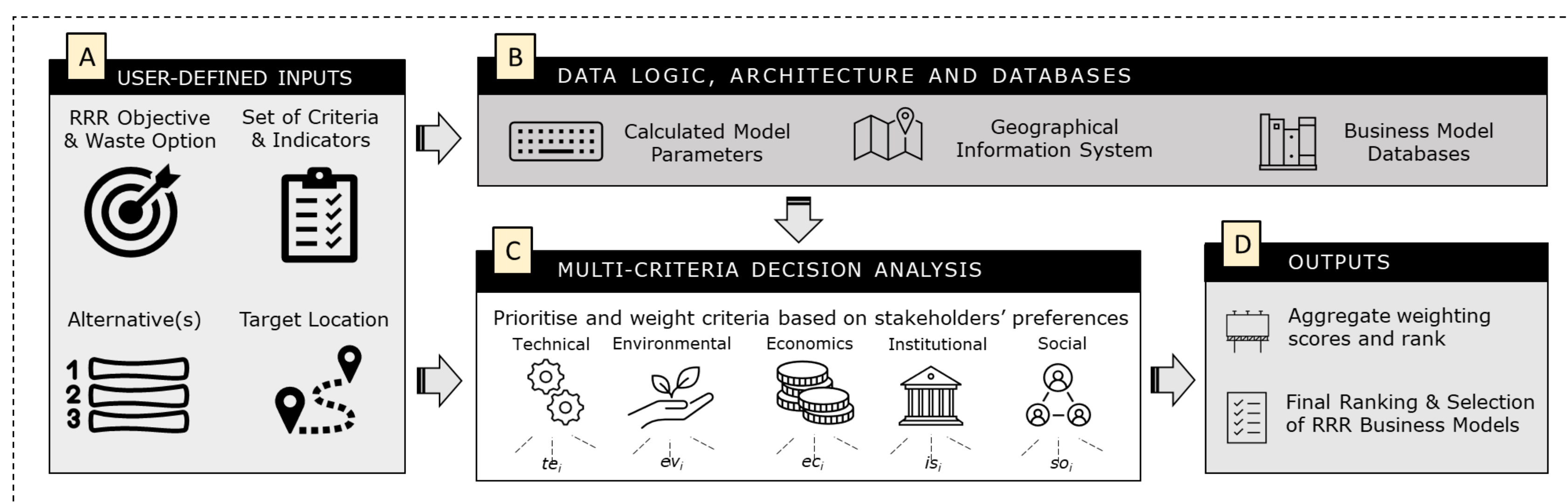

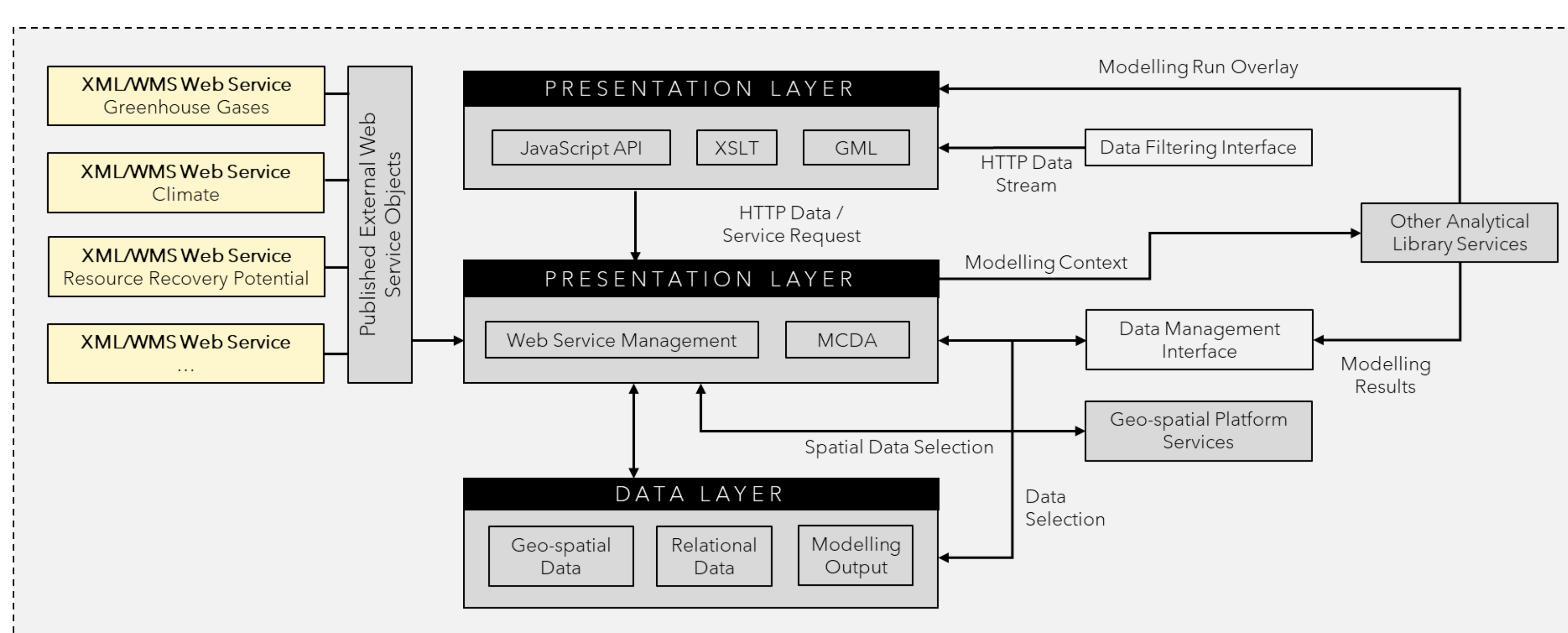Figure 1: A typical workflow of MCDA

Source: Otoo et al. 2016

Conceptual Framework ▶▶

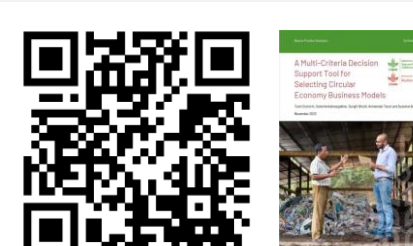**Figure 2**: Conceptual framework of the multi-criteria decision support tool

Tool Architecture ▶▶

Figure 3: Software architecture of multi-criteria decision support tool

Preliminary Outcomes ▶▶

Read More Here ▶▶

Social Group	Criteria			
	Technical	Environmental	Economic	Social
Research	0.20	0.20	0.30	0.30
Private	0.30	0.20	0.40	0.10
Development partners	0.20	0.30	0.30	0.20
Government	0.25	0.25	0.25	0.25
CSO	0.20	0.25	0.30	0.25

- Different stakeholders and interest groups have varying priorities for economic, social, and environmental objectives.

- Target tool users include Business Incubators, Metropolitan, Municipal And District Assemblies (MMDAs), Environmental Service Provider Associations, Waste Management Organizations and Planning Departments.