



**HAL**  
open science

## Supply chain network design and Circular Economy

Chaima Zormati, Abdessamad Ait El Cadi, Abdelghani Bekrar, Tarik Chargui

► **To cite this version:**

Chaima Zormati, Abdessamad Ait El Cadi, Abdelghani Bekrar, Tarik Chargui. Supply chain network design and Circular Economy. Mardi des chercheurs 2025, Apr 2025, Valenciennes, France. <hal-05024863>

**HAL Id: hal-05024863**

**<https://hal.science/hal-05024863v1>**

Submitted on 8 Apr 2025

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

# Chaima Zormati

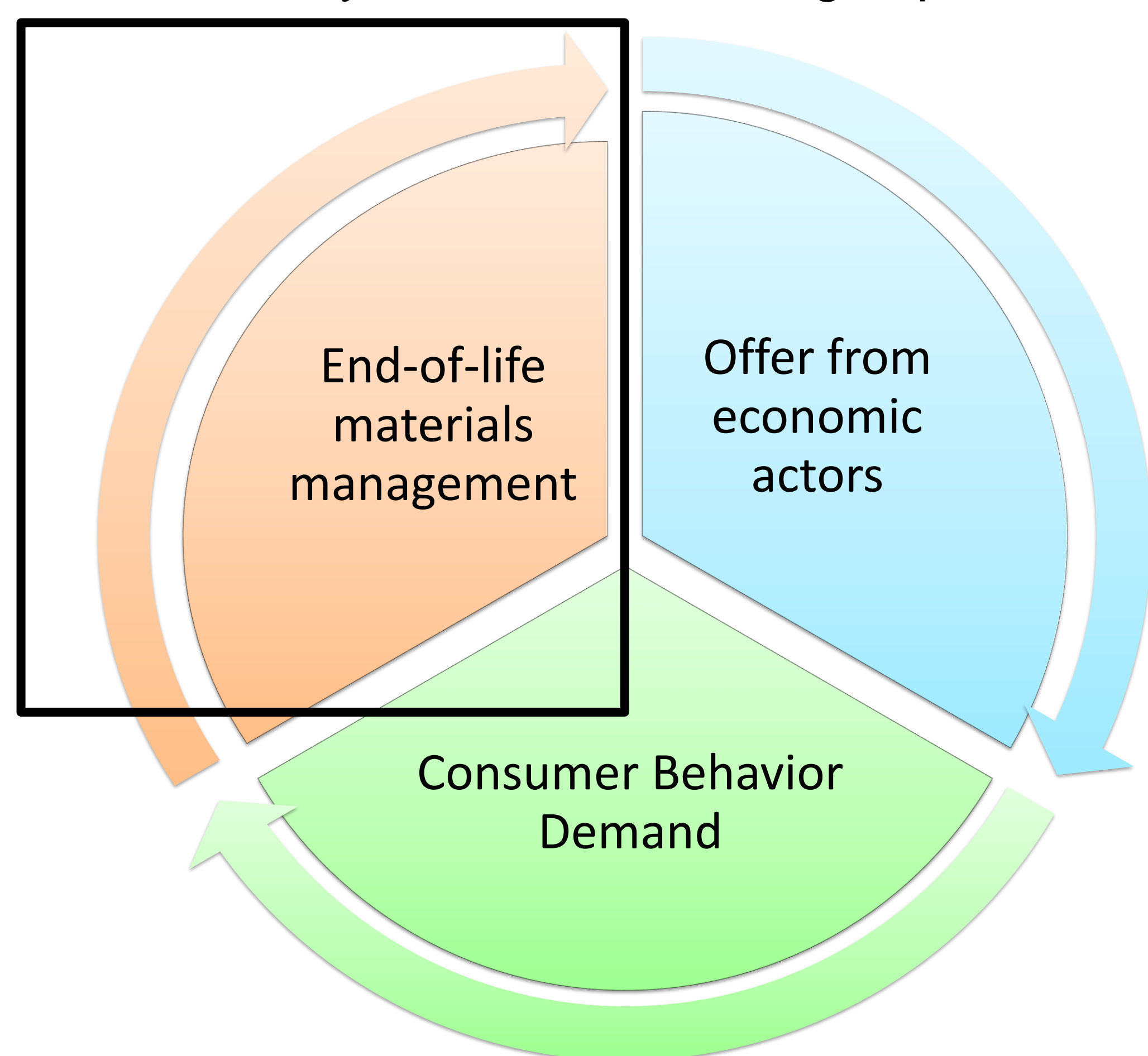
## Supply chain network design and Circular Economy

AIT-EL-CADI Abdessamad, BEKRAR Abdelghani, CHARGUI Tarik  
LAMIH-UMR CNRS 8201, Université Polytechnique Hauts-de-France Valenciennes, France  
{Chaima.Zormati, Abdessamad.Aitelcadi, Abdelghani.Bekrar, Tarik.Chargui}@uphf.fr

### Theoretical framework

#### What is the circular economy and its principles?

➤ The circular economy is becoming an essential paradigm in the transition to sustainable development. It is based on the minimization of waste and the recovery of resources through optimized reverse flows.

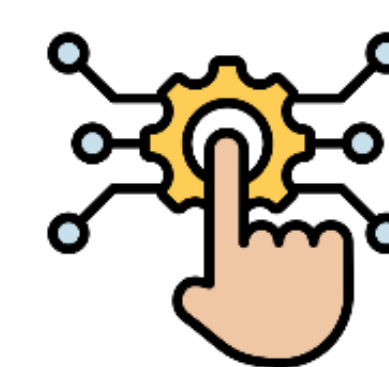


- Redesigning transport and distribution networks to facilitate reverse logistics and the management of closed-loop supply chains.
- The integration of the "R"s of the circular economy (Reuse, Recycle, Repair, Recover) into the supply chain requires logistical optimization and adapted transport models.

#### Research areas

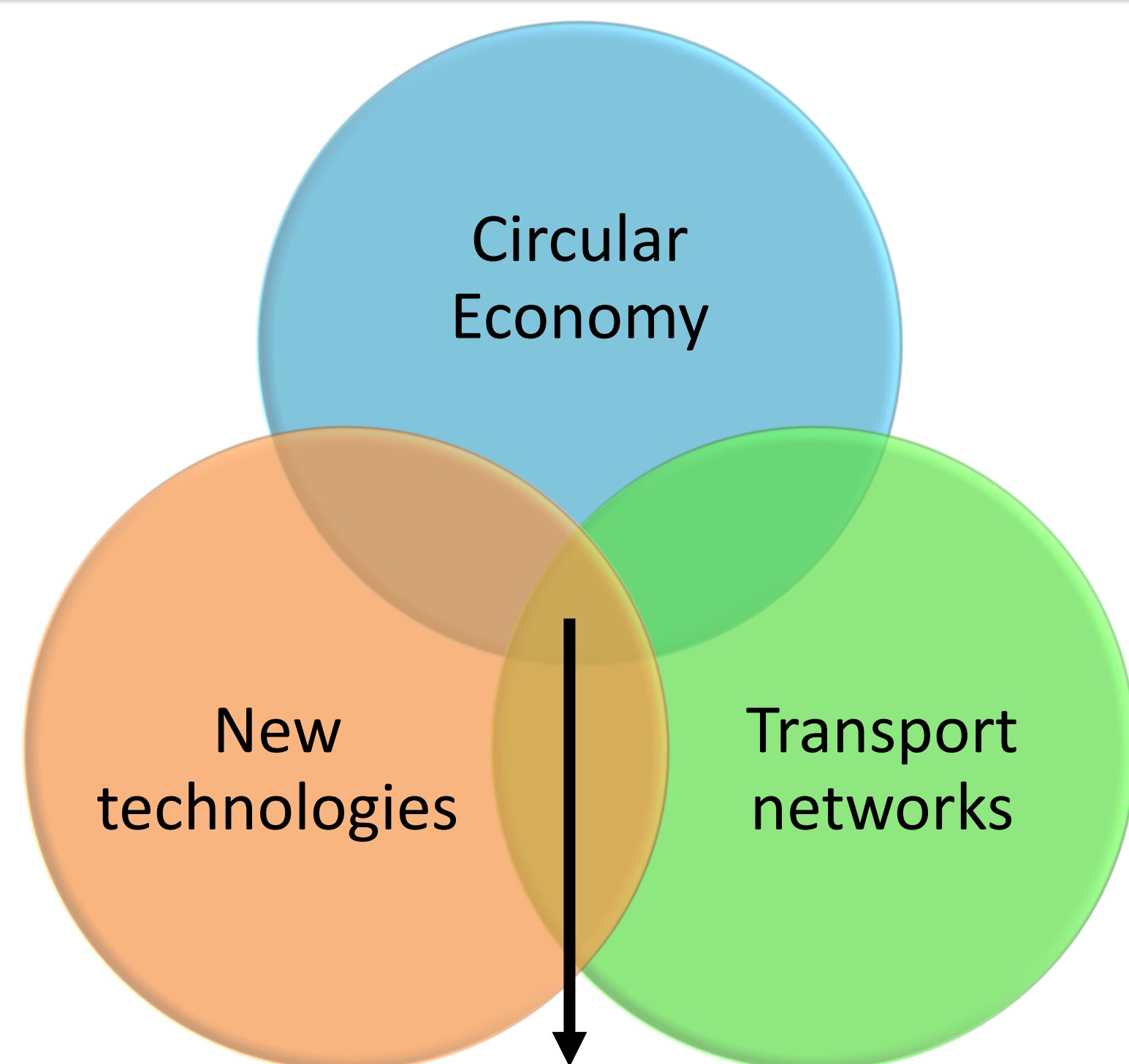


Adapting reverse logistics networks to the circular economy

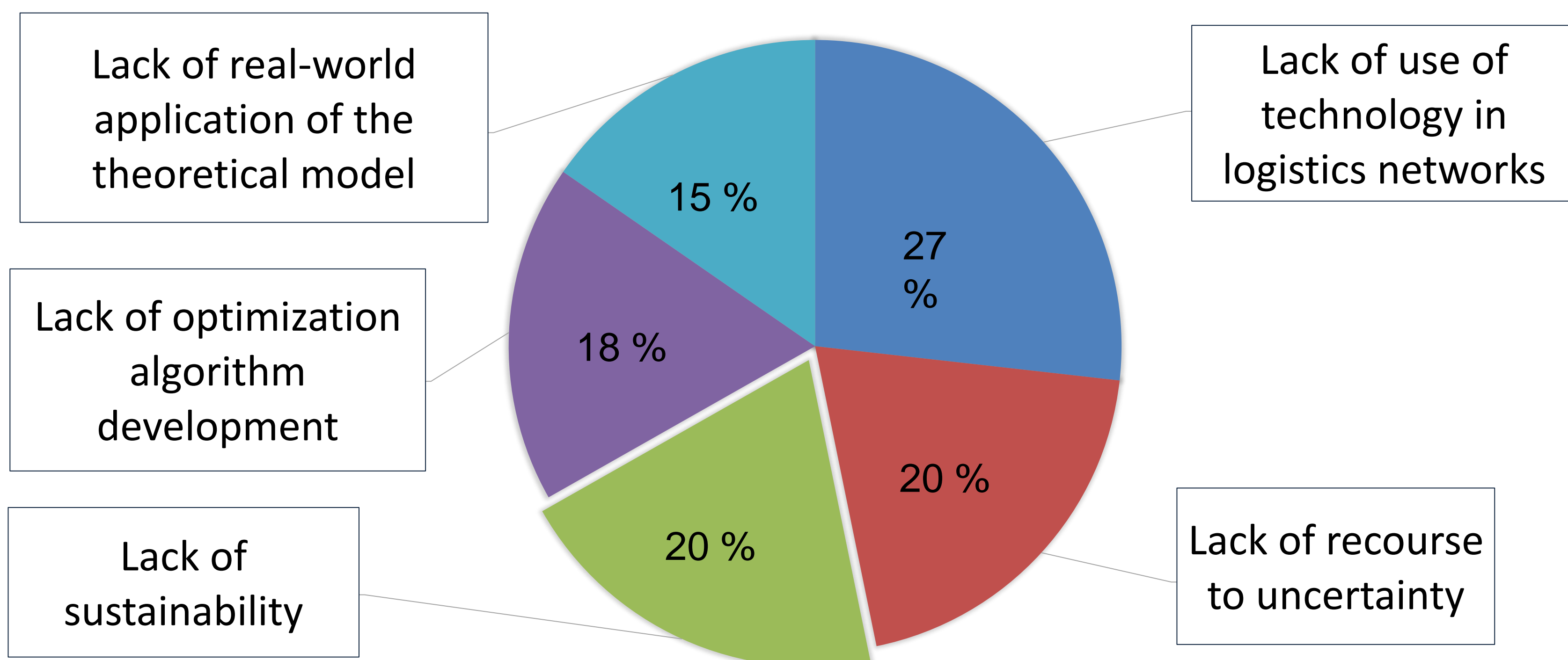


Integrating digital technologies to improve flow performance

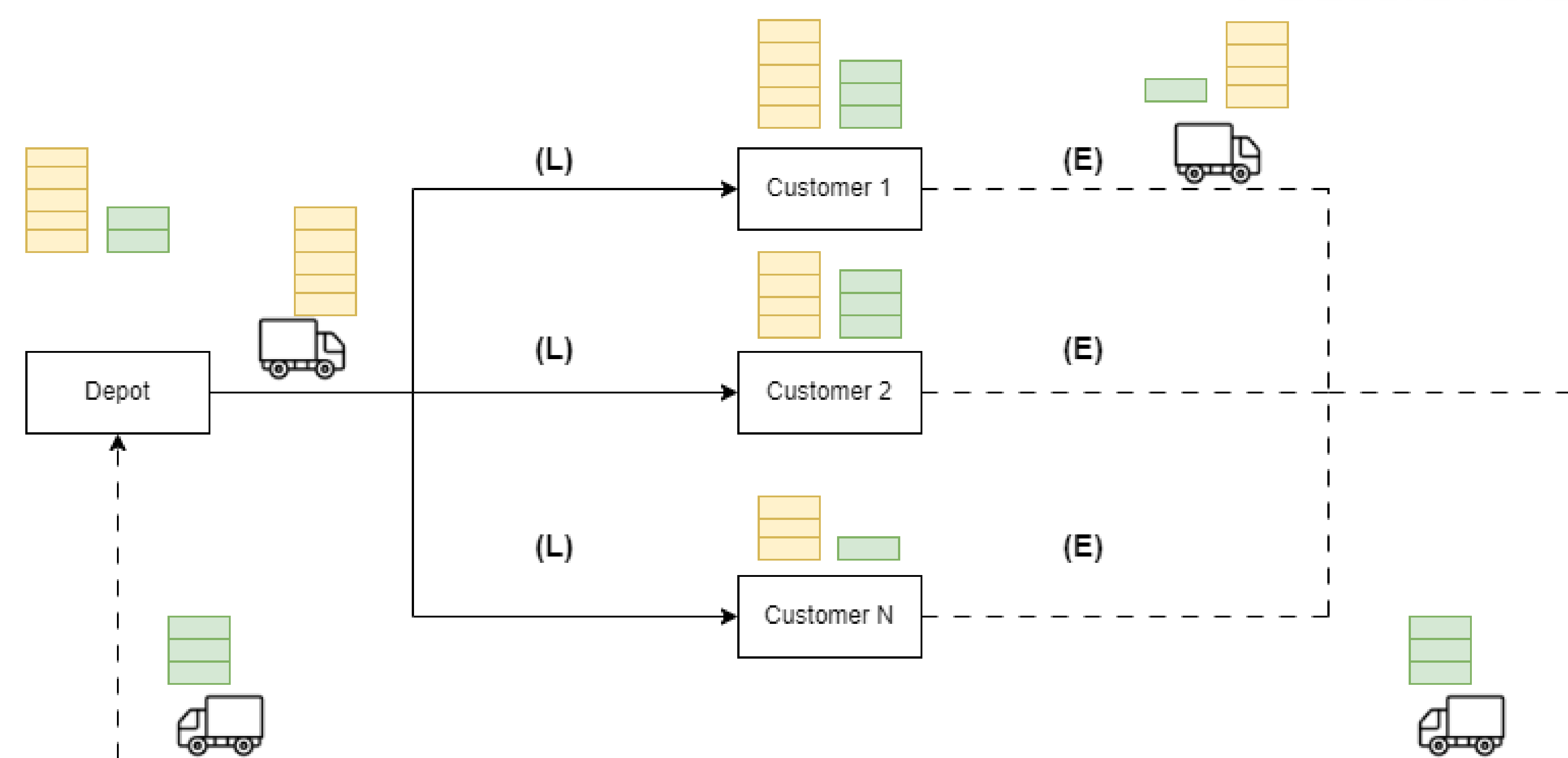
### Issues and challenges



How can we design and optimize these networks ?



### Contribution



**Target :** Developing sustainable logistics networks

Inventory routing problem with pickup and delivery and time window (IRP-PD-TW)

**Sustainability:**

Economic aspect: Transport, inventory ....

Environmental aspect: Emissions

Social aspect: Driver well-being

**Reverse logistics:** Recovery of end-of-life products (Empty pallets)

**Circular economy:** Pallet reuse

