

The Urban Financial Metabolism of Energy Poverty



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Bonds, loans and other money: tackling energy poverty and ill-health with the right financial scheme



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Joram Nauta

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Program

1. Introduction to energy poverty and urban financial metabolism (UFM) – 10 min

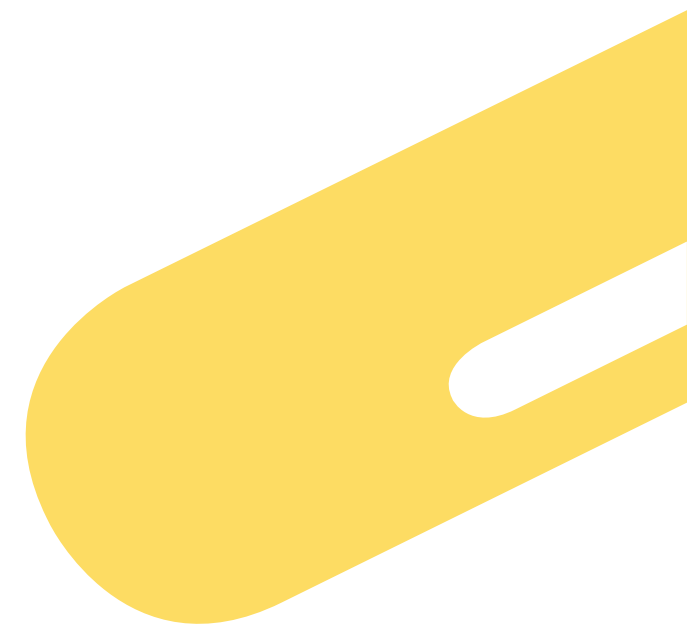
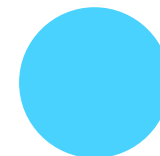
2. Results and conclusions: understanding the impact of energy poverty on municipal spending – 10 min

Developed in: H2020: Lighthouse project Making City



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1. INTRODUCCION TO ENERGY POVERTY AND URBAN FINANCIAL METABOLISM



Why a societal view on energy poverty?

- Transforming neighbourhoods is not only a technological challenge... but also a social & financial one
- There is more than a personal business case there is a societal one as well..
- Not being able to participate in the energy transition will in the end have effects (specifically those at risk of energy poverty)

”the cost of doing nothing may outweigh the initial extra societal investment”



Energy poverty and public spending



- Energy poverty restricts households in many aspects of **well-being** in terms of **material property, recreational and leisure activities, social isolation, culture, expression and management of emotions, mental health, health and adequate nutrition** because of their (very) limited financial means (Bartiaux et al., 2021).



Municipal spending & energy poverty

Spatial planning and management

Spatial determinants influence EP vulnerability (Mashhoodi et al., 2019)

Recreation, sports and culture

EP restrict households in recreation & culture (Bartiaux et al., 2021)

Public order and safety

EP increases the likelihood of experiencing physical violence (Hailemariam et al., 2019)

Education

Energy poor households can experience limited access to education (Bartiaux et al., 2021)

Health services

A growing body of literature has consistently confirmed the negative impact of EP on health (Nie & Li, 2023)

Administration & permits

Local economic development

Environment

Building retrofits mitigate CO2 emissions & energy poverty (Riva et al., 2023)

Local utility services

bill balancing to deal with EP results in municipal utility debt (Carley, 2022)

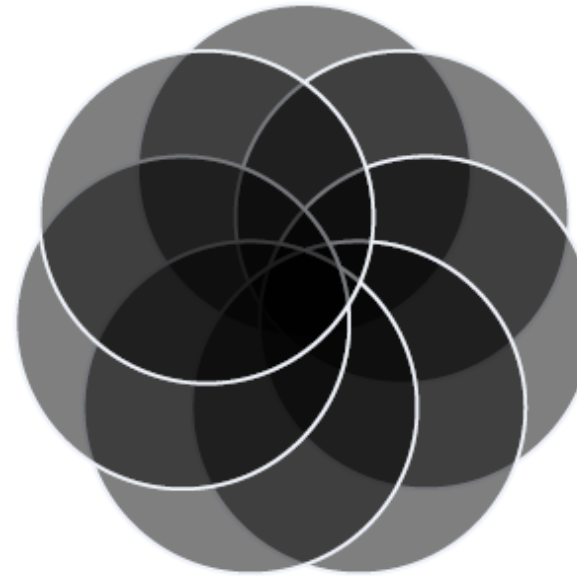
Transport

problems with energy poverty, are linked to individuals being unable to meeting basic needs on transport (Middlemiss, 2022)

Social services

Seek government assistance is a key coping strategy for dealing with EP (Carley, 2022)

Areas of municipal expenditure Impacts of energy poverty



Research goal; Making City

- Our study was aimed to develop in-depth understanding of the causal mechanisms through which household energy poverty affects municipal expenditure.
- An Urban Financial Metabolism perspective is adopted to study the financial impact of energy poverty on local public spending.



Urban Financial Metabolism (UFM)



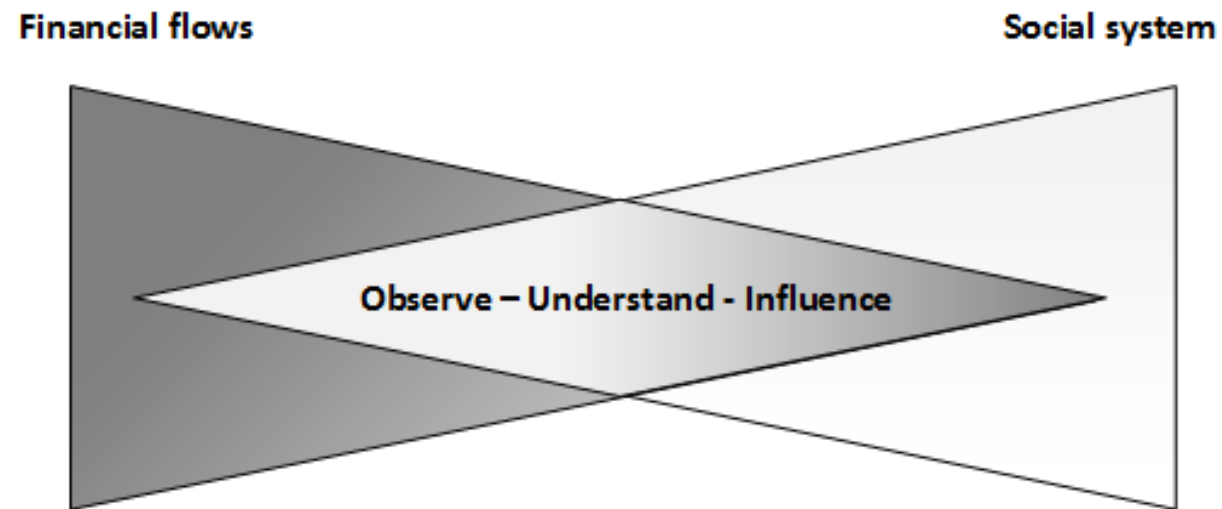
- UFM is a tool for analysing and visualising the financial metabolism of a particular area – e.g. neighbourhood, borough or any other part of the city.
- UFM aims to create comprehensive overview of monetary flows and stocks in an area across domains – e.g. health, economy, mobility, water, energy, etc.

(Woestenburg et al., 2018)



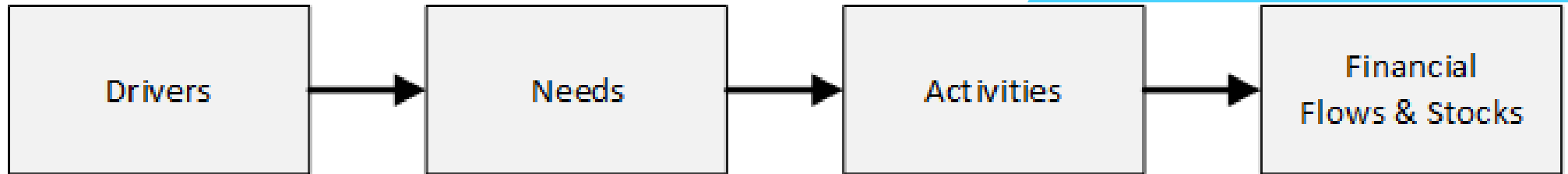
Urban Financial Metabolism

'Individual actions create a web of spatio-temporal paths that shape urban metabolism' (Dijst et al. 2018, p. 194).



Financial flows and the social system. Adapted from (Dijst et al. 2018)

UFM – causal chains



“stocks and flows are a result of activities that are undertaken by the individuals and communities. These activities may be considered a manifestation of the needs of these individuals and communities, which in turn, are influenced by more general endogenous and exogenous drivers” (Dijst et al. 2018, p. 192).

Main components of the Urban Financial Metabolism framework. Adapted from (Dijst et al. 2018)



2. CONCLUSIONS: UNDERSTANDING THE IMPACT OF ENERGY POVERTY ON MUNICIPAL SPENDING



Research design- Making City



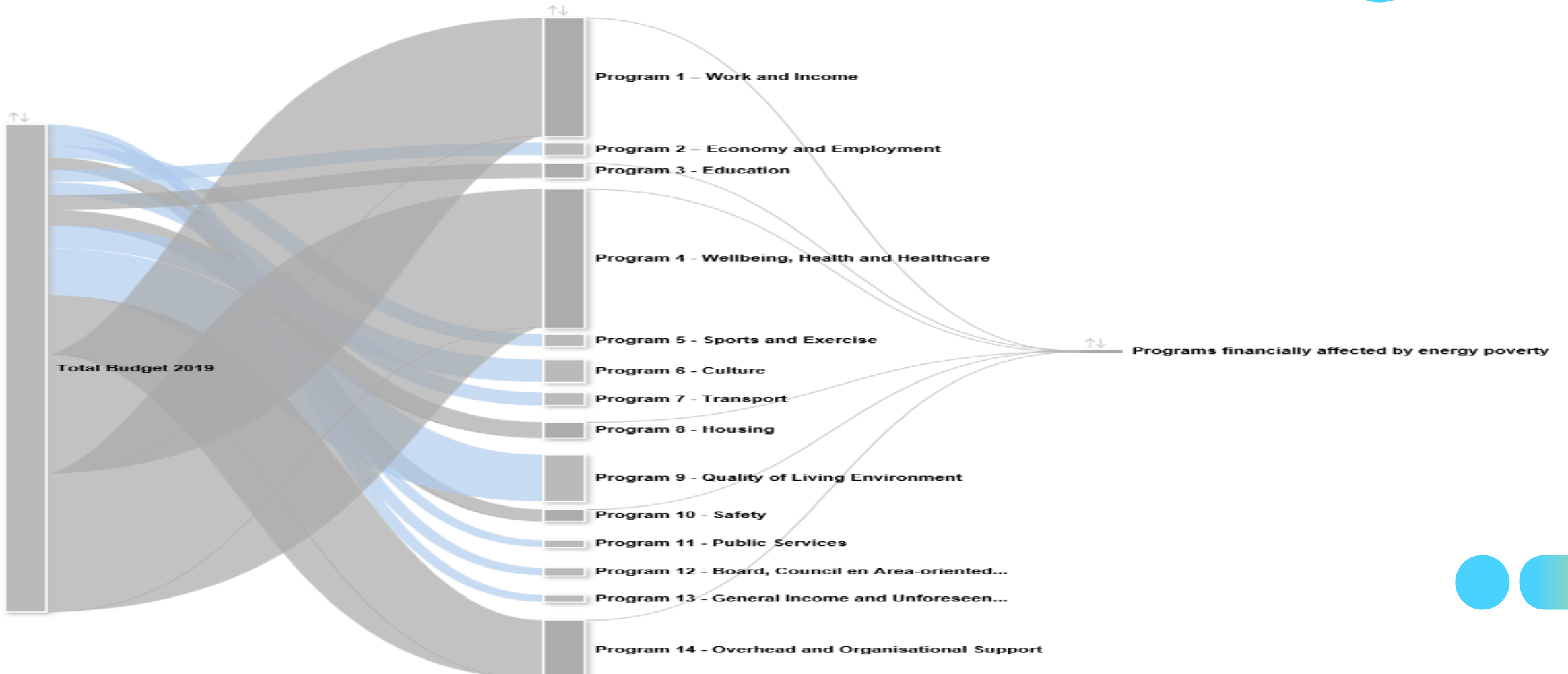
A single in-depth case study approach on Groningen combining multiple research methods

- Step 1 – Two workshops were organized with local policy experts to identify which of the twelve financial programs are expected to be affected by an increase in energy poverty
- Step 2: In-depth analysis of identified programs to establish the underlying causal chains through policy analysis and in-depth interviews.



Research design

Selected program budgets from city of Groningen (NL)



How to do this

Applying UFM thinking to connect Energy Poverty to local government spending in 4 steps

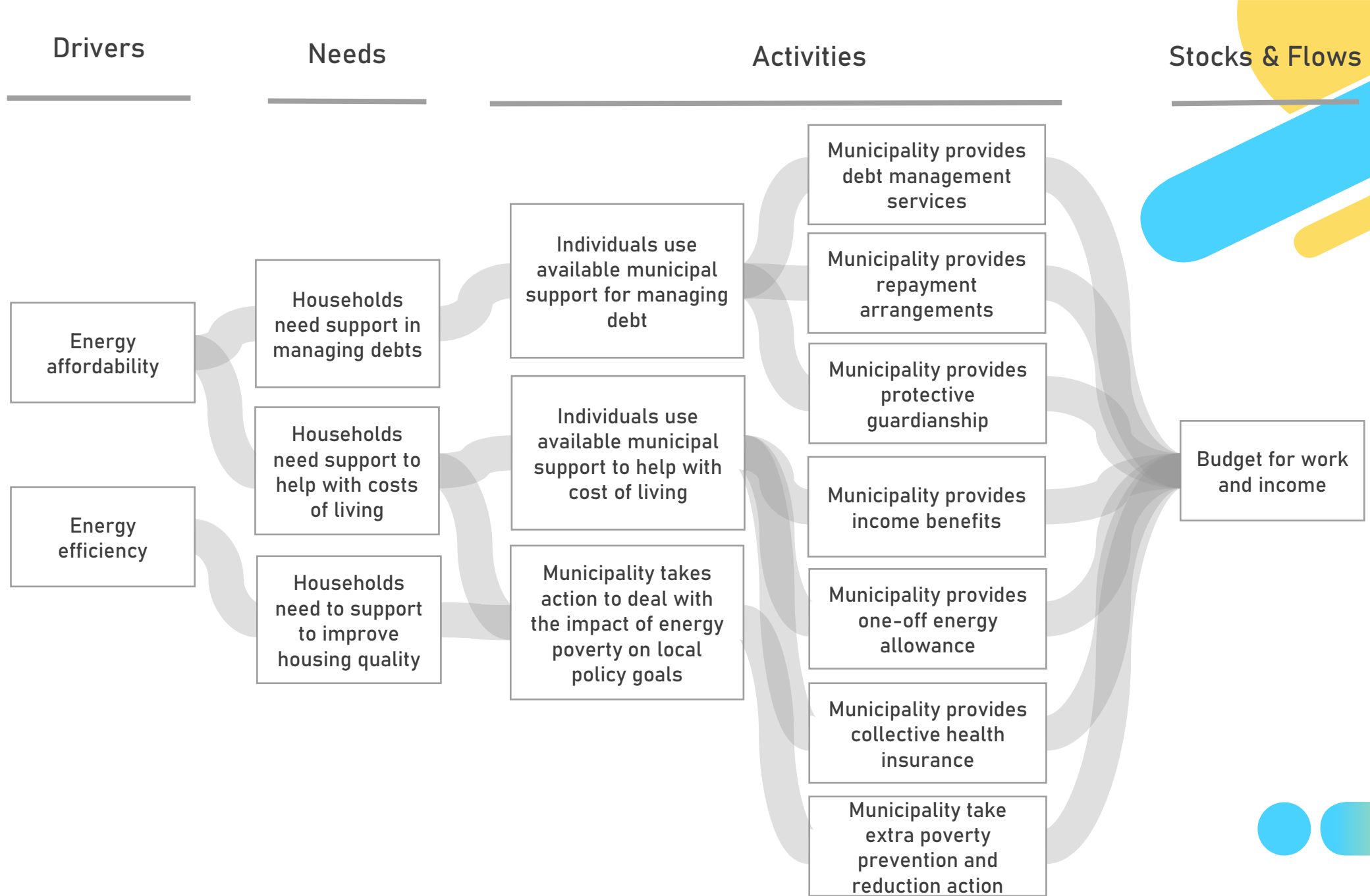
Step 1 – Identify driver of energy poverty

Step 2 – Identify areas of local government spending potentially affected by EP

Step 3 – Individual or community needs that

Step 4 – Identify activities to finish the causal chain

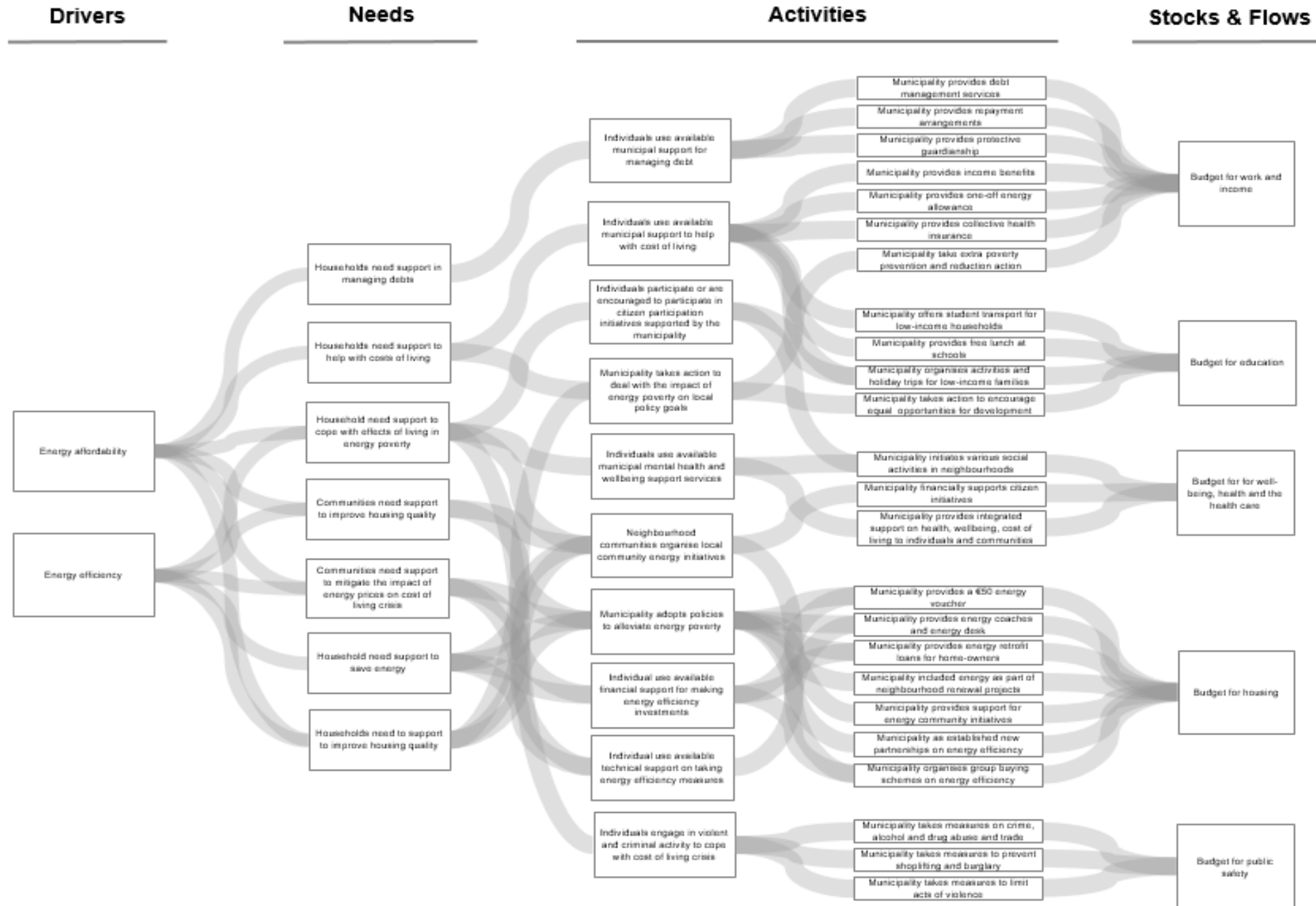




Example



The Urban Financial Metabolism of Energy Poverty in Groningen



Results



Energy poverty interlinks with the scope of a wide range of programme budgets in Groningen

Energy poverty potentially has broad financial implications on local policy areas; it can aggravate and complicate local policy issues, and encourage demand for local services.



Conclusions



Energy poverty has potentially far-reaching implications for local government.

The specific way in which energy poverty affects municipal expenditure is very situational

Addressing energy poverty has the potential to garner financial win-win resolutions across policy areas



Thank you for your attention!

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Step 2: Identify local policy areas affected by EP

Municipal policy area	Scope
1. Local utility services	water supply, sewage, waste disposal, energy, public lighting, and street cleaning
2. Transport	local roads and public transport
3. Social welfare	welfare provision, social security, social affairs, social participation and inclusion, social housing, employment services, support services for families, elderly and disabled people, social care, and back to work programmes
4. Health services	primary and preventive healthcare
5. Public order and safety	municipal police and fire brigade
6. Education	nursery schools, pre elementary and primary education
7. Spatial planning	strategic planning, urban development, zoning, housing
8. Recreation, sports and culture	Sport accommodations, cultural sector, leisure
9. Environment	Green areas and parks, noise, soil protection, air pollution, noise
10. Local economic development	Tourism, trade fairs, and support for local enterprises

Step 4: Identify activities that serve the needs of individuals and communities affected by energy poverty

Energy poverty may prompt individuals and local governments to undertake various activities

Households adopt various coping strategies to deal with not being able to pay energy bills or living in an energy inefficient dwelling.

Additionally, households may undertake various activities indirectly linked to energy poverty
Local governments may take action to address need of individuals and communities affected by energy poverty