

ACCESSIBLE
ENERGY COSTS
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THE ENERGY DIVIDE

Assessing Equitable Access to Energy Efficiency in Housing

INCENTIVISE
INFORM
INTEGRATE

Mentors: Harry Boumeester and Michaël Peeters

Fakton: Martijn Nawroth

Delegate: Nikos Katsikis

Dylan Schroevers | P5 | 25-06-2025



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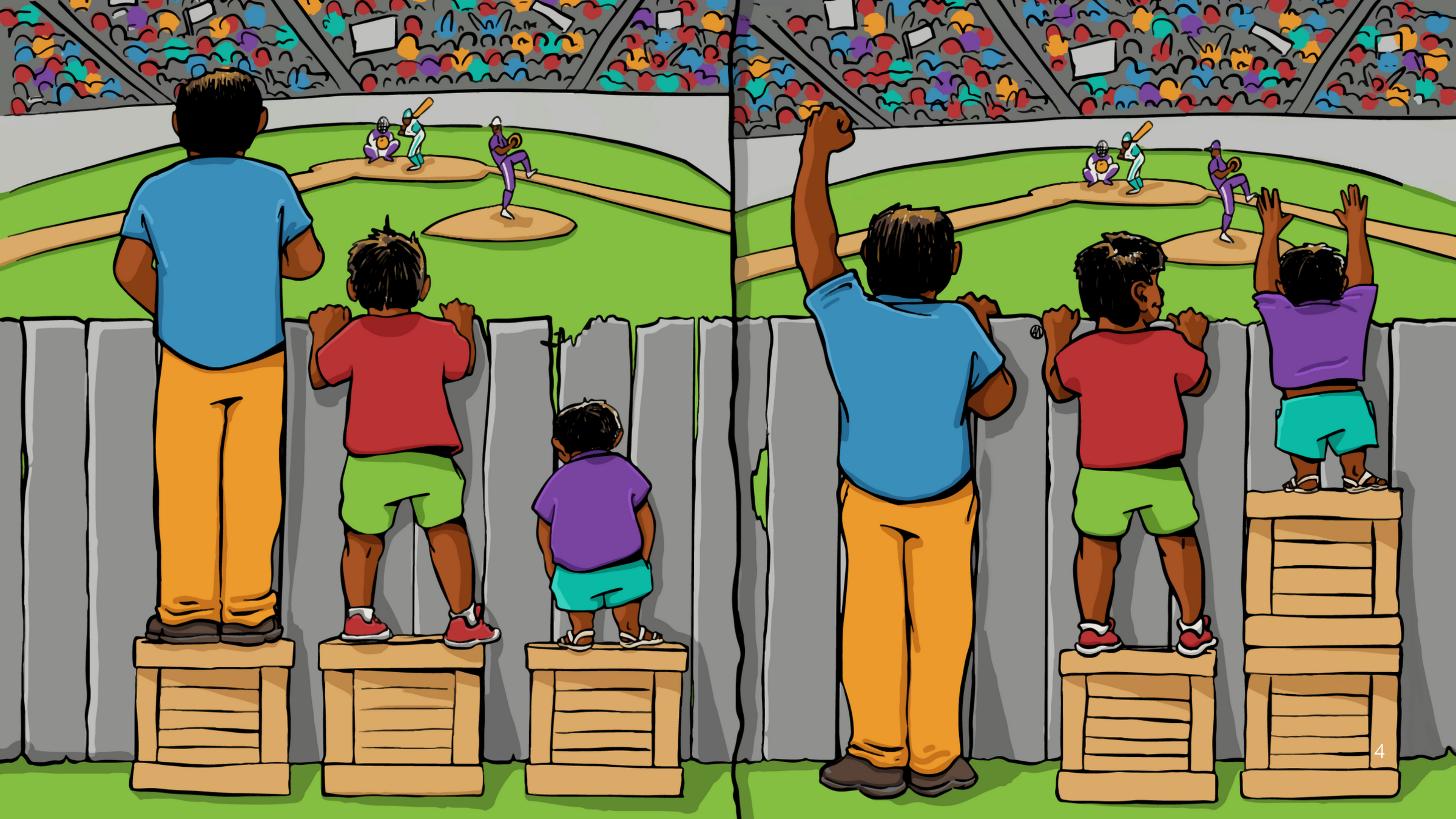
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Context

Income

Energy label

Energy costs

Wealth growth

Access to subsidies

HIGH

HIGH

LOW

HIGH

HIGH

LOW

LOW

HIGH

LOW

LOW

Contents

- Problem
- Research questions
- Methodology
- Results
- Recommendations
- Discussion
- Conclusion

Problem

The Dutch housing market faces an ongoing housing crisis and sustainability goals, yet these intersect in a way that risks deepening **inequality**, as **energy-efficient** renovations bring **financial benefits**, but are **less accessible** for certain households.

Research question

How does demographic and socio-economic status influence the access to energy efficiency in the Dutch owner-occupied housing market in terms of energy costs, wealth growth and access to subsidies?

Research questions

1. How are **demographic and socio-economic characteristics** distributed across **EPC categories** in the Dutch owner-occupied market?
2. How do **energy costs relative to income** vary across **income groups** in the Dutch owner-occupied housing market?
3. How do **price and time on the market effects of EPCs** in the Dutch owner-occupied housing market affect equitable **wealth growth**?
4. How **efficient** are current **subsidy schemes** (ISDE/ NWF) in terms of **uptake, targeting and overcoming barriers**?

Methodology

Phase 1

Setting context for the research

WoON 2021

Descriptive analysis on demographic and socio-economic status across EPCs

Example

Household X (income, age, education, household size) is disproportionately overrepresented in E-G rated dwellings.

Methodology

Phase 2

Examining energy costs
relative to income

WoON 2021 data
ISDE Monitor 2023

Descriptive analysis,
connected to phase 1

Example

Income group X bears a
disproportionate amount of
energy costs relative to
income

Methodology

Phase 3

Examining wealth growth

NVM transaction data

SpringCo EPC data

Descriptive and statistical
analysis of price effects and
time on the market

Example

EPC A shows positive price
effects compared to D.

Household X resides more in
EPC A, thus benefits from
more wealth growth than
household Y.

Methodology

Phase 4

Examining the access to subsidies

ISDE Monitor 2023

Interviews

Municipality, RE brokers, TNO, RVO, Nibud and VEH

Example

Income group X uses the Investeringssubsidie Duurzame Energie (ISDE), more than group Y.

According to the interviews reasons for this are X & Y.

Income

EPC

Energy costs

Wealth growth

Subsidies

Results context

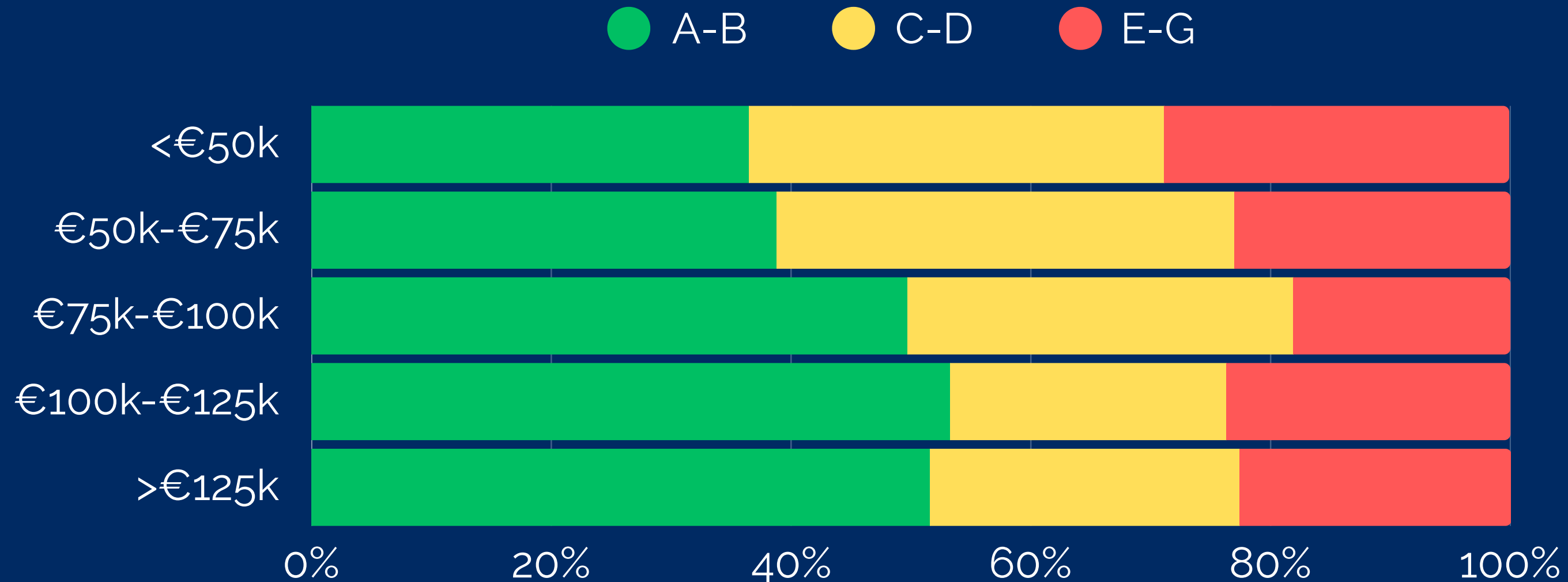


Fig. 3 Cross-Tabulation Income x EPCs (Data sources: WoON 2021)

Lower Income → Lower EPCs

Results context

- Age younger, EPC worse
- Household size smaller, EPC worse
- Education low, EPC better

Less access to better EPCs for low-income, young, single person households

Income

EPC

Energy costs

Wealth growth

Subsidies

Results context



Fig. 4 Residential Mobility (Data sources: WoON 2021)

Threshold for moving to better labelled dwellings

Segmentation

Household Segmentation per Income Category					
Nr.	EPC	Income	Age	Education	Household composition
1	A-B	> €75k	> 35 years	Low and High	Multi-person with(out) children
2	C-D	< €75k	< 35 years	Mid	Single person
3	E-G	< €50k or €100k -€125k	< 35 years	High	Single person

Fig. 5 Segmentation based on Overrepresentation (Data sources: WoON 2021)

Results energy costs

Income

● Gas ● Electricity

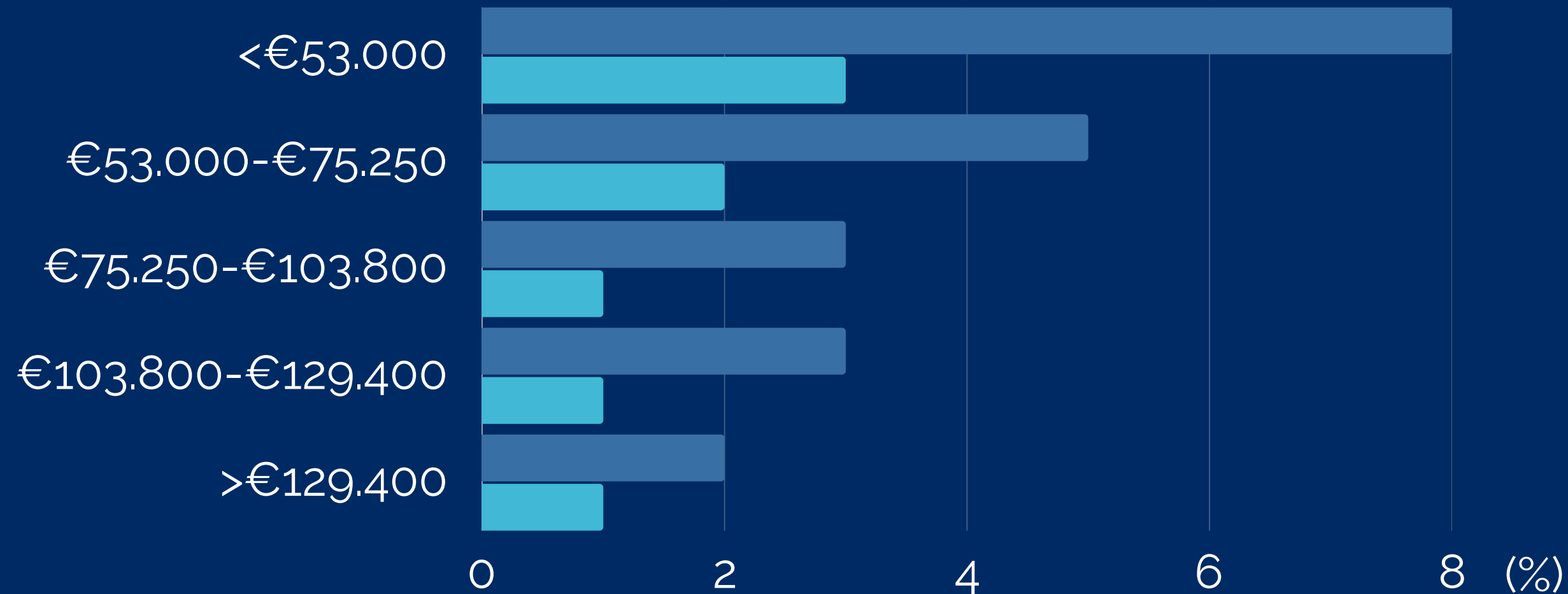


Fig. 6 Gas and Electricity Costs relative to Income (Data sources: ISDE Monitor 2023)

Income

EPC

Energy costs

Wealth growth

Subsidies

Results wealth growth

Price per m2

● A ● B ● C ● D ● E ● F ● G

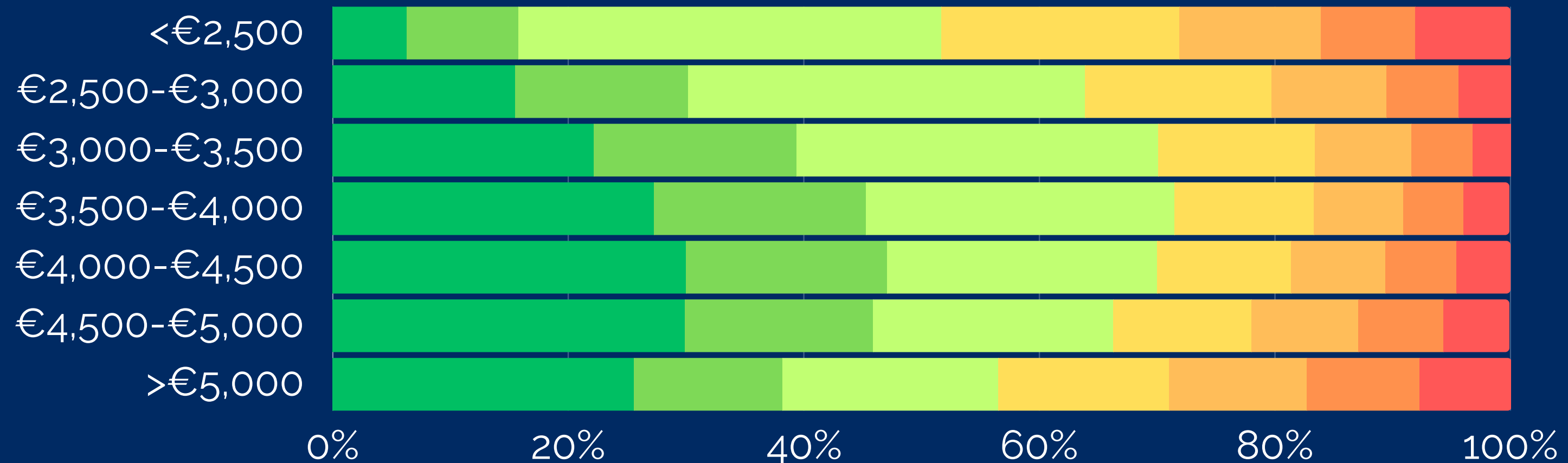


Fig. 7 Price per m2 x EPCs (Data sources: NVM & SpringCo)

Lower price → Lower EPC

Results wealth growth

- Multi-linear regression
- Housing characteristics
- Price discounts per EPC

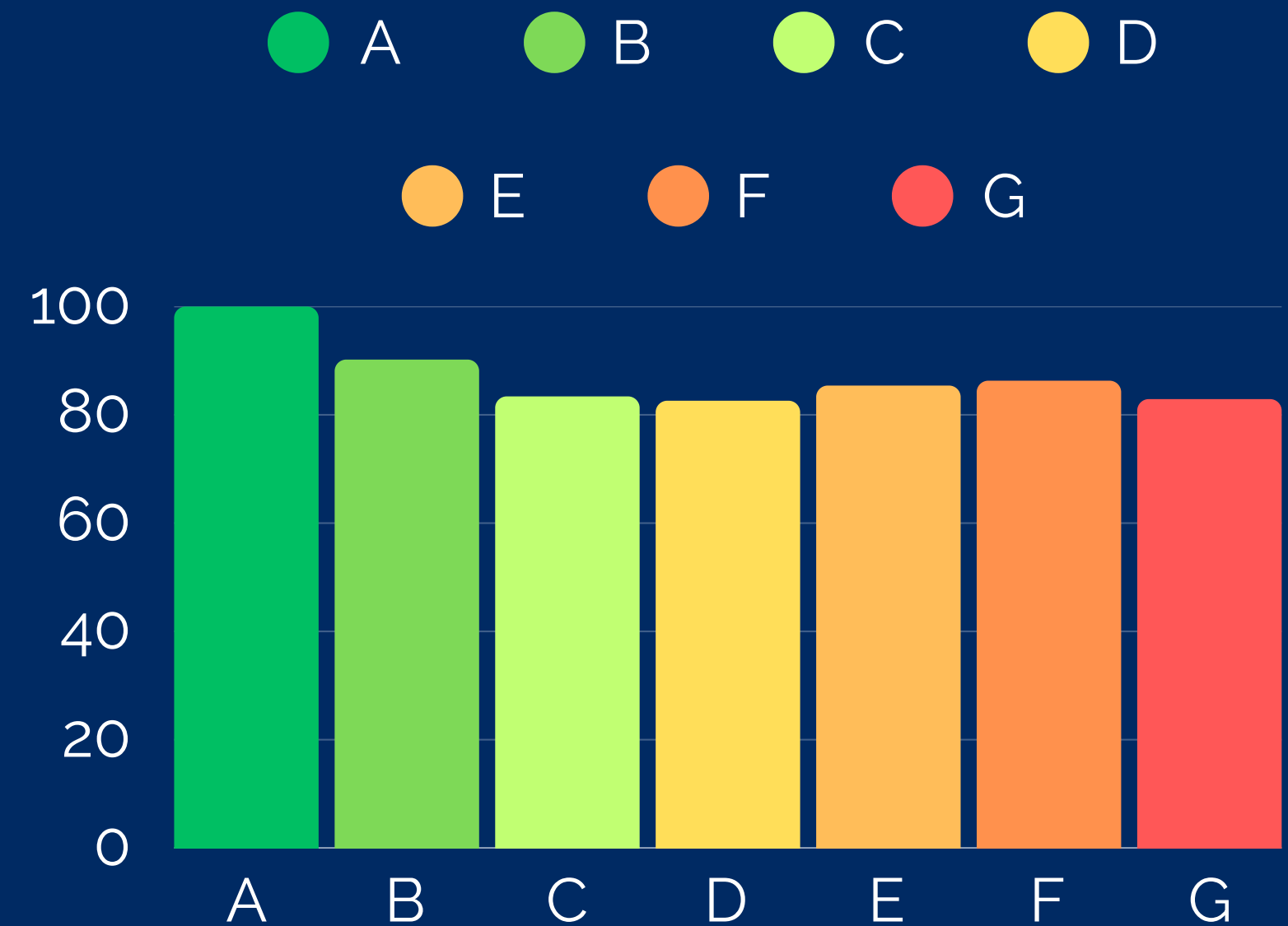


Fig. 8 Price Effects EPCs (Data sources: NVM & SpringCo)

Income

EPC

Energy costs

Wealth growth

Subsidies

Results wealth growth

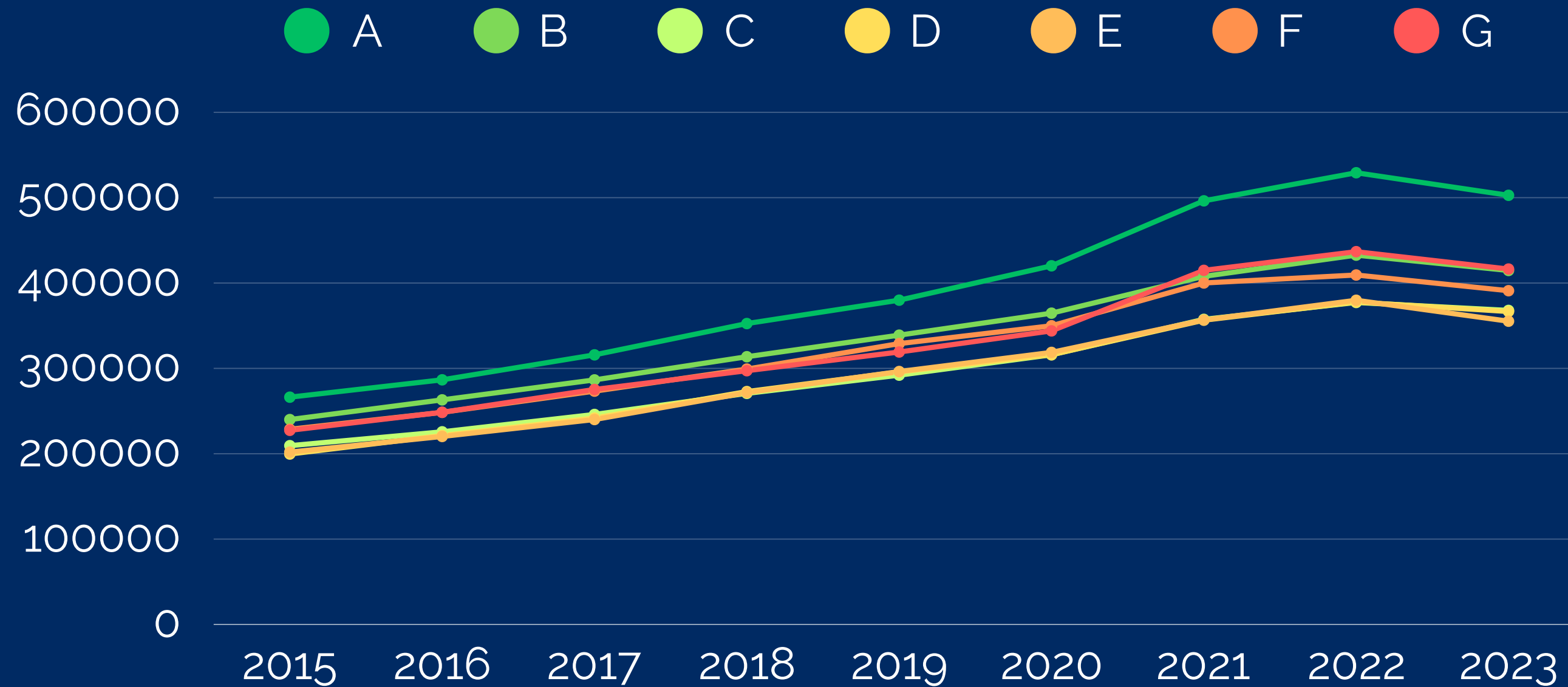


Fig. 9 Price Effects EPCs over 8 years (Data sources: NVM & SpringCo)

Results wealth growth

Price effects 2015-2023				
EPC	Price 2015	Price 2023	Gain (%)	Absolute gain
A	€266,270	€502,758	88.8%	€ 236,488
B	€240,027	€414,729	72.8%	€ 174,702
C	€209,454	€367,912	75.7%	€ 158,458
D	€199,650	€366,625	83.6%	€ 166,975
E	€201,917	€355,265	75.9%	€ 153,348
F	€228,666	€391,006	71.0%	€ 162,340
G	€227,442	€416,365	83.1%	€ 188,923

Fig. 10 Price effects and gain (Data sources: NVM & SpringCo)

Income

EPC

Energy costs

Wealth growth

Subsidies

Results subsidies

Income

● ISDE



Income

● NWF

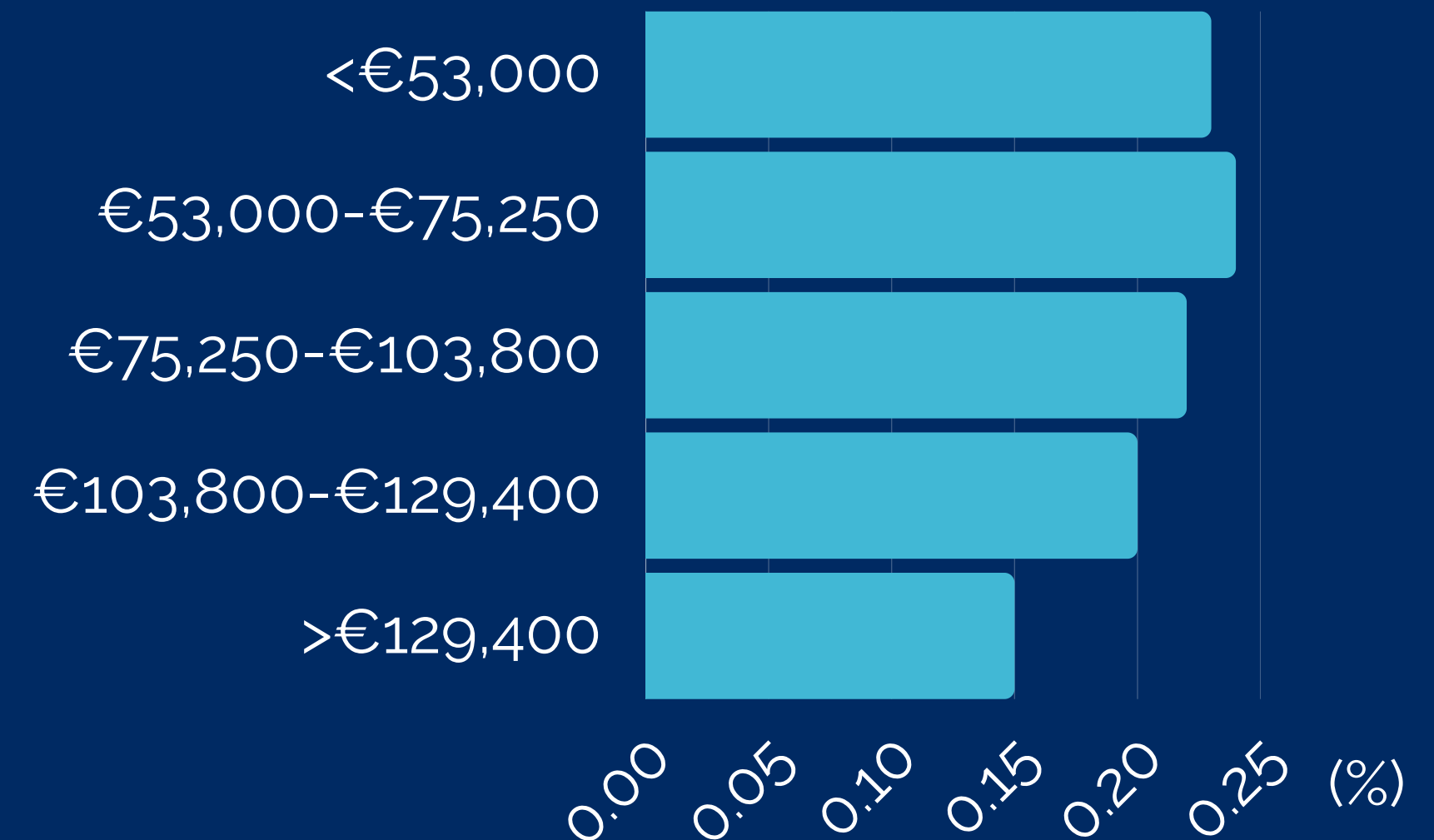


Fig. 11 Granted Subsidies of all Eligible Dwellings (Data sources: ISDE/ NWF Monitor 2023)

Results subsidies

"What I find remarkable is that, as a municipality, **we don't know the actual energy label of a home** [...] If people have stayed in a house for a long time, we only have the estimated label, which often doesn't reflect the home's actual condition."

— Municipality —

"When it comes to information from the municipality, I know that **households living in poverty** often **don't even open letters** if they see the municipal logo on the envelope."

— RVO —

"**Unburdening, and simplifying** are the key words."

— Vereniging Eigen Huis —

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Problems

Lack of accurate overview of current EPCs

Less efficient subsidy targeting

VvE's feasibility

Policy directions

Financial incentives

- Municipality
- Banks
- New buyers

0% NWF loans for VvE's

Inform

Problems

Distrust towards government

Non-efficient targeting

Policy directions

Use borrowed trust

- Health care sector
- Sports clubs
- Community centres

Use renewed EPCs

Integrate

Problems

Complex application

Fragmented responsibilities

Upfront capital needed

Policy directions

Simplifying the process

One-stop shops

Upfront availability of subsidies

Discussion

- Price effects and TOM in line with literature^{*}
- Debate about actual effects EPCs^{**}
- Difference in ability and willingness^{***}
- EPC predictions
- Dependency on individual homeowner
- Future research on policy directions

^{*}e.g. (Brounen & Kok, 2010); (Aydin et al., 2020); (Cerin et al., 2014); (Fuerst et al., 2015); (Chegut et al., 2016)

^{**}(Stangenberg et al., 2020)

^{***}(Bos et al., 2020); (Steenbekkers et al., 2021)

Income

EPC

Energy costs

Wealth growth

Subsidies

Conclusion

How does demographic and socio-economic status influence the access to energy efficiency in the Dutch owner-occupied housing market in terms of energy costs, wealth growth and access to subsidies?

Conclusion

Income	HIGH	LOW
Energy label	HIGH	LOW
Energy costs	LOW	HIGH
Wealth growth	HIGH	LOW
Access to subsidies	HIGH	LOW

Incentivise
Inform
Integrate



Let's
Incentivise
Inform and
Integrate!

Dylan Schroevers | 5913195

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