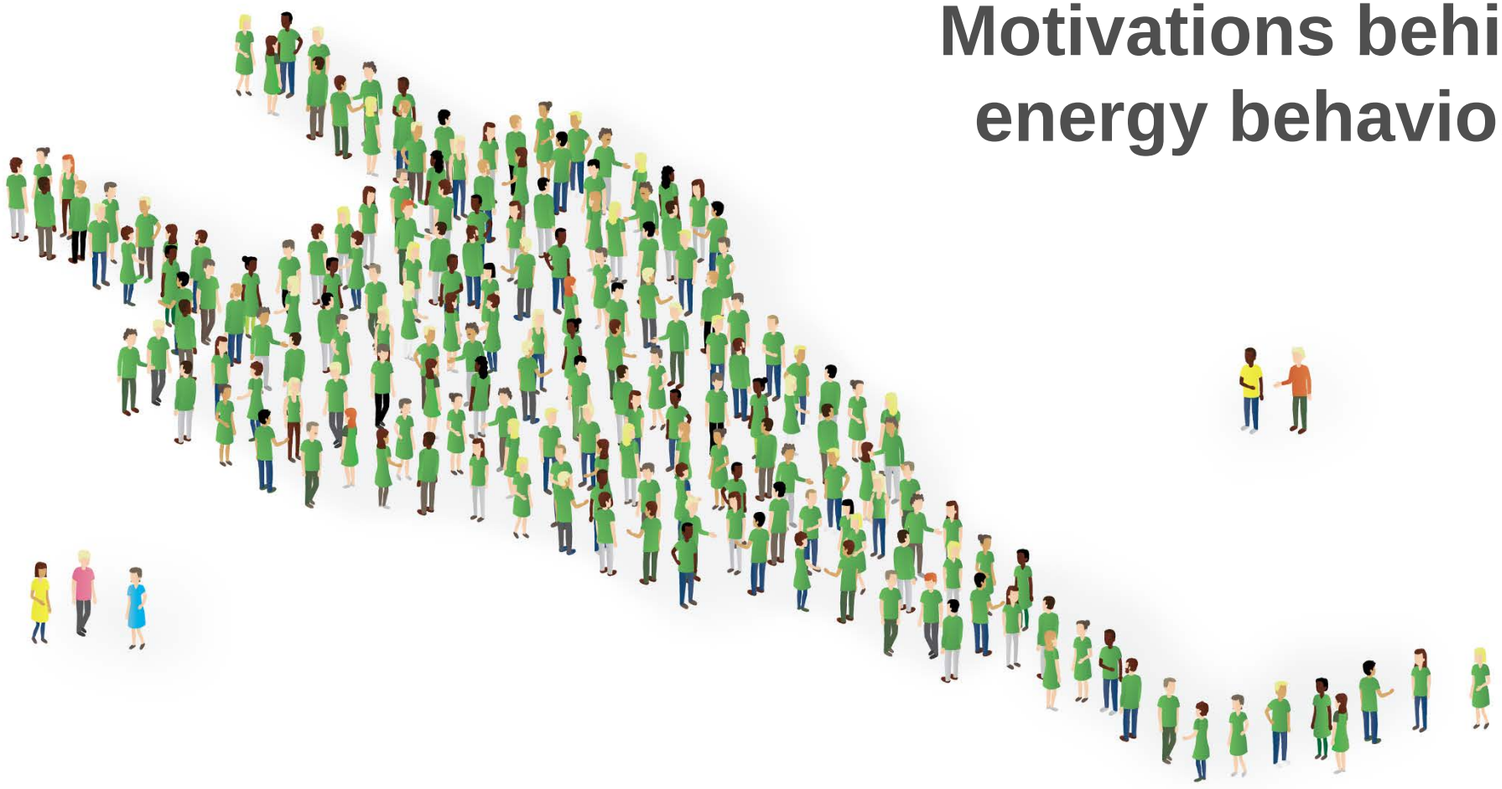
What drives energy consumers?

Motivations behind sustainable energy behaviours and beliefs



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Sustainable energy transition

Commission proposes new rules for **consumer centred** clean energy transition

Consumers are **active and central players** on future energy markets

http://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition

People at the centre of the energy transition

For a successful energy transition, people need to:

- **Accept** sustainable solutions
- **Adopt** sustainable solutions
- **Change** their energy behaviours
- **Reduce** their energy demands
- **Shift** their energy demands
- **Invest** in energy efficiency

What motivates sustainability?

Favourable outcomes for self, e.g.:

- Money
- Status
- Pleasure
- Feels good
- Social approval

Favourable outcomes for “the collective”, e.g.:

- Moral considerations
- Doing good

References: Abrahamse, 2007; Bord et al., 2000; Steg et al., 2015

What motivates most strongly?

Collective versus **Individual** versus **Control**?

Do You Care About the
Environment?

Take a coupon for a FREE professional tire check!

- Like balloons, your tires lose pressure over time.
- Improper tire pressure increases fuel consumption which *harms our environment.*
- Properly inflating tires cuts back vehicle emissions.

Source: www.fueleconomy.gov

Participating stations:

Snappy Lube #23
1402 N. Main Street
Blacksburg, VA 24060

Snappy Lube #24
2405 Market Street
Christiansburg, VA 24073

Do You Care About your
Finances?

Take a coupon for a FREE professional tire check!

- Like balloons, your tires lose pressure over time.
- Improper tire pressure increases fuel consumption, which is *expensive.*
- Properly inflating cuts back fuel costs.

Source: www.fueleconomy.gov

Participating stations:

Snappy Lube #23
1402 N. Main Street
Blacksburg, VA 24060

Snappy Lube #24
2405 Market Street
Christiansburg, VA 24073

Take a coupon for a FREE professional tire check!

- Like balloons, your tires lose pressure over time.
- The average U.S. driver travels 12.000 miles yearly.
- Not everyone checks their tires regularly.

Source: www.fueleconomy.gov

Participating stations:

Snappy Lube #23
1402 N. Main Street
Blacksburg, VA 24060

Snappy Lube #24
2405 Market Street

References: Bolderdijk, Steg, Geller, Lehman & Postmes, 2013

Human values

- Hedonic
- Egoistic
- Altruistic
- Biospheric

References: Bouman et al., under review; Steg & De Groot, 2012; Steg et al., 2014

Value conflicts

Could be reduced by:

› Making sustainable behaviours more beneficial

› Strengthening or supporting biospheric values

References: Bouman et al., forthcoming; Steg et al., 2015

Sustainable options can also **feel good** because they are **meaningful**

When:

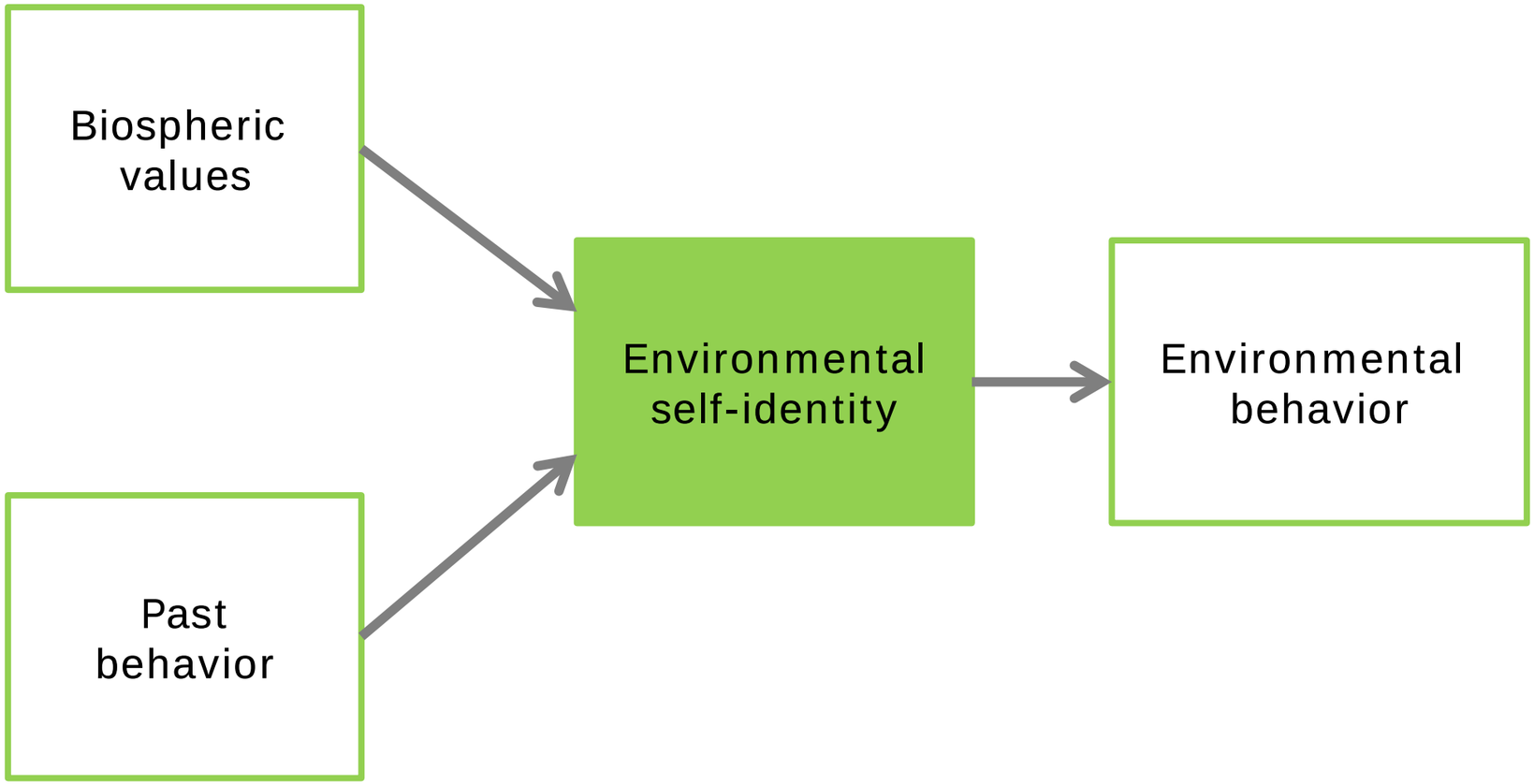
› Autonomous
› Strong biospheric values
› Primary benefits for environment

Then:

› Self-signal
› “Warm glow”
› Encourages future sustainable behaviours

References: Taufik, Bolderdijk & Steg, 2014; Venhoeven, Bolderdijk, Steg & Keizer, 2015

Environmental self-identity



References: Van der Werff, Steg, & Keizer (2013; 2014)

What others do and think (de)motivates us

Why:

› Interdependence

› Collective action

› Gives context

What:

› Group identity

› Group values

› Group norms

Groups and group identities

To name a few:

› Households
› Neighbourhoods
› Companies
› Political orientations
› Nations / cultures

What it means to be a member of a group

Group norms

› Injunctive – what you're ought to do

› Descriptive – what members actually done

References: Keizer, Lindenberg & Steg, 2013; Schultz, 1999; Schultz et al., 2007

What it means to be a member of a group

Group norms

- Injunctive – what you're ought to do
- Descriptive – what members actually do
- Corporate Environmental Responsibility
  - Powerful when employee moderately cares
- Green washing

References: Keizer, Lindenberg & Steg, 2013; Ruepert, Keizer & Steg, 2017

What it means to be a member of a group

Group values

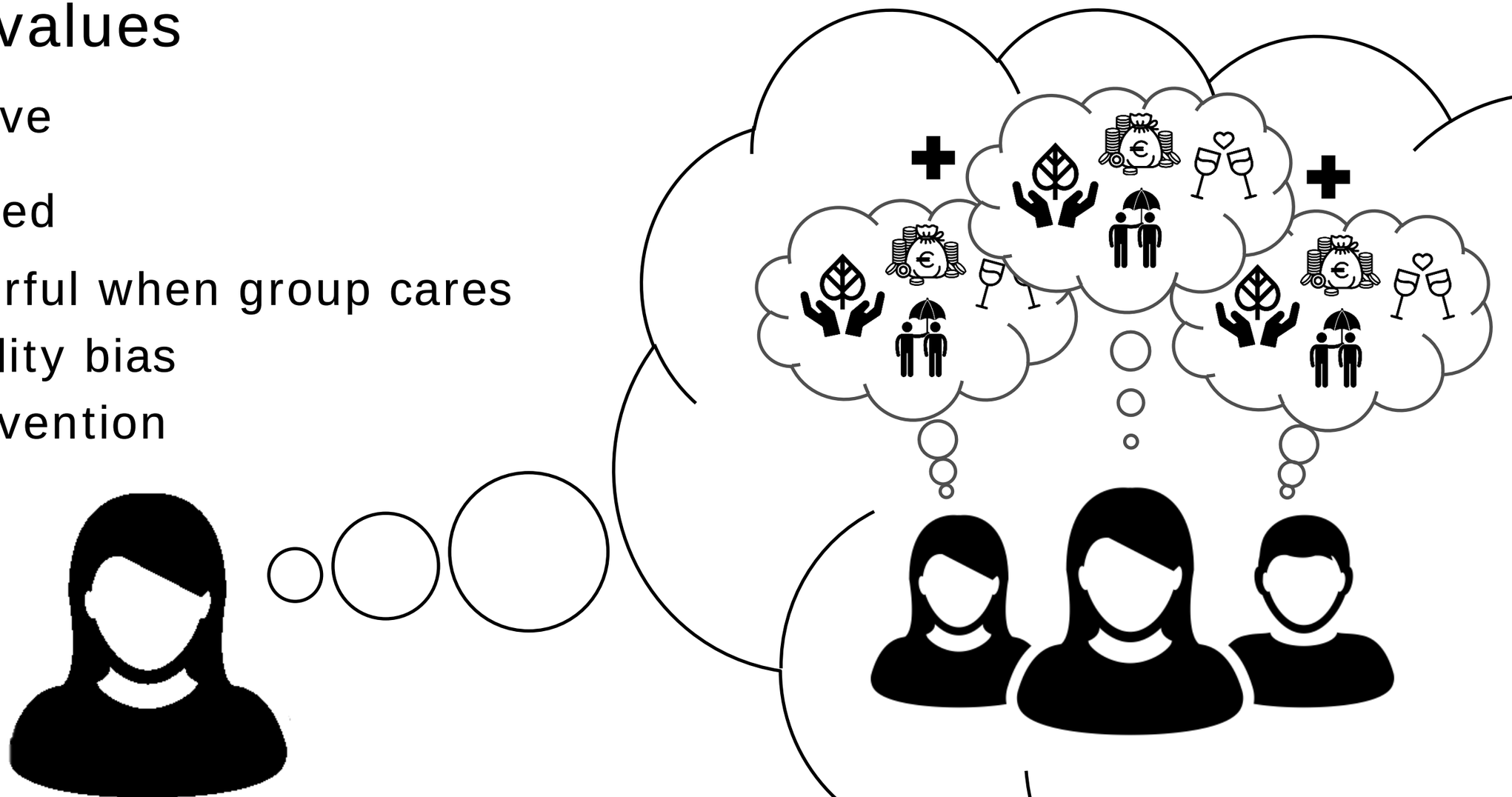
› Objective

References: Bouman & Steg, 2017

What it means to be a member of a group

Group values

- Objective
- Perceived
  - Powerful when group cares
  - Morality bias
  - Intervention



References: Bouman & Steg, 2017

To sum things up

Sustainable energy behaviours motivated by:

- Personal factors
  - Personal values
  - Environmental self-identity
- Group factors
  - Group identity
  - Group norms and values

To sum things up

Sustainable energy behaviours motivated by:

- Personal factors
  - Personal values
  - Environmental self-identity

} Do it for the environment

- Group factors
  - Group identity
  - Group norms and values

} Keep norms and values aligned
Stress sustainability

What knowledge we need

- Understanding energy use behaviour
- Promoting sustainable energy use
- Acceptability of energy systems and policies
- Multi-method approach
- Cross-cultural research
- Interdisciplinary research

Future directions

- How to let technological and social solutions interact
  - (Semi-) automatic solutions
  - Smart appliances

- Intervention studies
  - How to move from extrinsic to intrinsic motivators
  - How to inform people about status of the grid

- Representative national panels
  - Smart meter data
  - Individual and group motivations

www.epgroningen.nl /
www.rug.nl/

Relevant research projects

MatchIT – Efficient demand and supply matching by incentivizing end-users in buildings.

An electricity grid that integrates renewable energies and enables flexible consumer and production technologies requires a reliable, efficient and socially acceptable energy infrastructure, in which households, commercial buildings and industrial buildings are connected. MatchIT proposes an interdisciplinary framework that integrates research on physical (e.g., generators), social (e.g., acceptability) and technological (e.g., ICT) aspects of the grid, which could improve current electricity infrastructures reliability, efficiency and acceptability.

We integrate cross-sectorial expertise on power distribution, control systems, building automation, computer science, and social and behavioral science to propose an interdisciplinary framework that uses innovative distributed control algorithms and an ICT platform coupled with intelligent automated techniques to improve demand-supply matching in a financially and psychologically way that is attractive and acceptable to end-users. Notably, we study interactions and interdependencies between key physical, psychological and technological layers. This significantly moves forward the state-of-the art where these issues are typically studied in isolation, with the risk of flawed or even inaccurate views.

www.matchit.info

Smart Grids Plus ERA-Net

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KTH VETENSKAP OCH KONST

ELLEVIO METRY

BIGS – Beijng Groningen Smart cities.

Models, policies and an ICT infrastructure to reduce household energy demand and to promote smart energy use in smart cities. Smart cities anticipate sustainable prosperity of their citizens. In order to accomplish this objective, the current development of cities is undergoing drastic technological shifts that need to be followed by innovative regulatory and behavioural changes with the final goal of increasing sustainability of cities. These changes require a strategy that integrates multiple disciplines and provides a comprehensive understanding and support from a psychological, technological and economic perspective. We propose an interdisciplinary framework that uses innovative and smart technologies to understand and promote sustainable use of energy and aid effective decisions by the end-users. The framework provides a means for analysis and development of psychological models to understand citizens' behaviour towards the use of energy, and proposes innovative regulation policies

that take into account the new findings. We propose to use the cities of Groningen and Beijing as real environments to analyse the behaviour of citizens under diverse economic, institutional and cultural factors. The application of the technological infrastructure to both cities will give us deeper insights about the reasons and effects of the actual energy use among their citizens, and consequently, a sound input to formulate and propose general policies or regulations tailored for specific regions.

http://jstp-bigs.com/

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中国社会科学院 Chinese Academy of Social Sciences, CASS

Special issue – early 2018

On key topics on why and how consumers play a vital role in the energy transition

http://magazine.ieee-pes.org/