

# The Role of Prosumers in Energy Cooperatives

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Workshop The New Roles of the Consumers  
in the Energy Market

KNAW and Tilburg Law and Economics Center

February 23, 106

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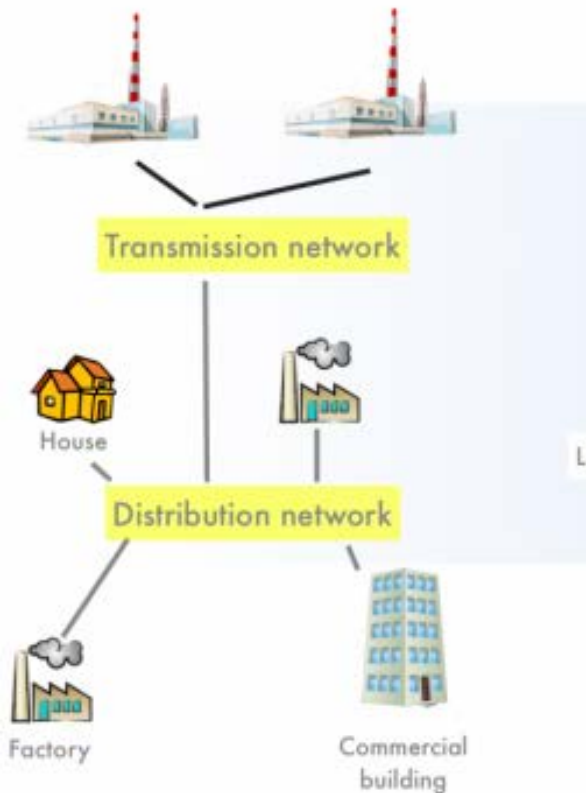


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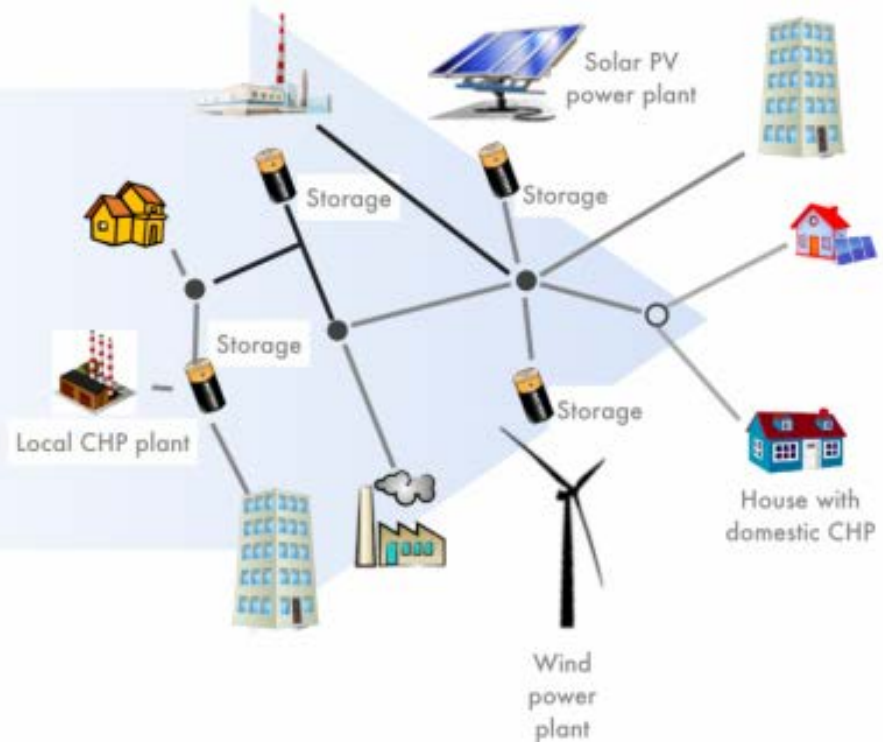


# The New Economy

Yesterday  
Centralized Power



Tomorrow  
Clean, local power



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# Electric and self-propelled carriage



<http://elektrischvervoernederland.nl>

<http://www.autobuzz.be/nl/mercedes-toont-zelfrijdende-auto-van-de-toekomst/>

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# 3D Printing: De-globalization of Production Processes



<http://www.3dprimeur.nl/3d-toepassingen/maakindustrie/vandaag-printen-we-een-brug/>

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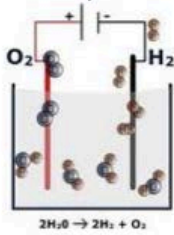
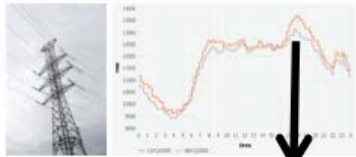


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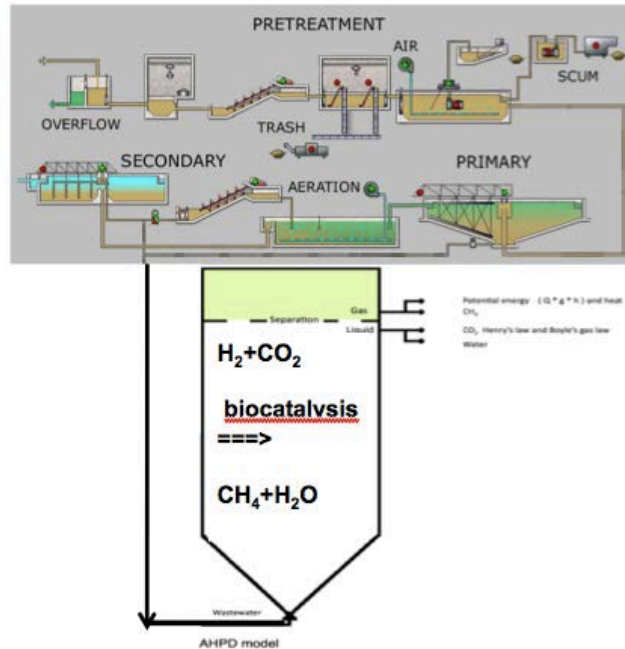
# From a Linear to a Circular Economy

Further developments: E-peak shaving



**NEW TECHNOLOGY**

- 99% CH<sub>4</sub>, 1% CO<sub>2</sub>
- Hydrogen production by electrolysis
- Valorization E-peaks via biohydrogenation



A circular economy is an economy in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life ([www.wrap.org.uk](http://www.wrap.org.uk))

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# Economic and Political Effects

- *De-globalization of production processes*
- *New business opportunities and higher attractiveness of country sides when cities are within reasonable vicinity*
- *Shifting institutional arrangements to regional and local authorities*

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# Social Effects: Joint Production Motivation

**Joint production motivation** results from productive activities, *where participants perceive the created joint value as their own* (Lindenberg and Foss 2011)

Effects:

- Perception of mutual interests dominates over conflicting ones
- Mutual dependencies dominate over one-sided ones
- The normative frame will likely be activated and maintained, dominating the hedonic and gain frames

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# Preconditions for success

- Ambitious, but realistic goal
- Institutional embedding
- Facilitating political arrangements

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Goal Foundation 'Samen Energie Neutraal': Within 10 years energy-neutral village or neighborhood

Used Energy

=

Generated Energy

At the community level



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# Five Principles of Foundation 'Samen Energie Neutraal' (SEN)

- Inhabitants lead the process, supported by SEN
- Save energy simultaneously with increasing living comfort at equal or lower housing costs
- Combine energy saving with energy production, individually and collectively
- Engage local entrepreneurs
- Empower the local community by providing financial means to local cooperatives through the jointly owned energy company NLD-Energy

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# Examples of Participation in representative villages and neighborhoods

	<b>Noorderplantsoen</b>			<b>Stedum</b>			<b>Wirdum</b>		
	<b>Total</b>	<i>Owned</i>	<i>Rented</i>	<b>Total</b>	<i>Owned</i>	<i>Rented</i>	<b>Total</b>	<i>Owned</i>	<i>Rented</i>
<i>number of post boxes (houses and companies)</i>	<b>1900</b>			<b>430</b>			<b>245</b>		
<i>Absolute number of respons</i>	<b>426</b>			<b>122</b>			<b>64</b>		
<i>As fraction of post boxes</i>	<b>22%</b>			<b>28%</b>			<b>26%</b>		
<i>% interested to join</i>	<b>67%</b>	71%	55%	<b>63%</b>	64%	60%	<b>70%</b>	71%	63%
<i>% maybe</i>	<b>27%</b>	25%	32%	<b>31%</b>	30%	33%	<b>27%</b>	26%	38%
<i>% not interested</i>	<b>6%</b>	4%	13%	<b>6%</b>	6%	7%	<b>3%</b>	4%	0%
<i>% Intend to invest together with neighbors</i>	<b>25%</b>	28%	16%	<b>21%</b>	23%	7%	<b>27%</b>	29%	13%
<i>% idem maybe</i>	<b>62%</b>	64%	55%	<b>64%</b>	64%	71%	<b>65%</b>	64%	75%
<i>% idem no</i>	<b>13%</b>	9%	29%	<b>15%</b>	14%	21%	<b>8%</b>	7%	13%
<i>% Intend to invest financially with neighbors</i>	<b>13%</b>	14%	8%	<b>13%</b>	16%	0%	<b>6%</b>	7%	0%
<i>% idem maybe</i>	<b>55%</b>	62%	33%	<b>53%</b>	55%	40%	<b>68%</b>	69%	63%
<i>% idem no</i>	<b>32%</b>	24%	59%	<b>34%</b>	29%	60%	<b>25%</b>	24%	38%

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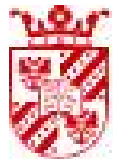
# Institutional embedding: Energy Cooperatives as Vehicles

- Energy Cooperatives **without profit objectives**
- Aim to enable citizen and companies to become **producers** of sustainable energy
- **Supply energy** aiming to reinvest profits in sustainable energy production and storage
- Promote a positive social economic **living and working environment**
- **Financially empower** local communities

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# Energy Cooperatives in the Three Northern Provinces

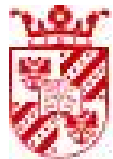


<http://www.noordelijklokaalduurzaam.nl>

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# Effects for village/neighborhood, shrinkage area, and region

- For a village of 1000 households:  
In case of a mean investment of 30.000 euro per house: 30 Million Euro
- For a shrinkage area in the Province of Drenthe with 211.500 houses in 2014:  
6.3 Billion Euro
- For the three Provinces in the North:  
More than 20 Billion Euro

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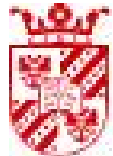
# Synergy city-country side

- Cheaper houses; no/less transport costs and more living space at the country side
- More and a larger variety of sustainable production possibilities, both in the nearby city and at the country side
- Attractive region for young persons, educated in an integrated applied program over disciplines at different levels
- Sufficient employment possibilities for indigenous persons and immigrants

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# Wind: Who decides?

Bottom up (EAZ wind)

Top down



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# Policies and legislation

- Nationally:
  - Long-term guaranteed purchase and prices for sustainable energy (compare Germany and The Netherlands)
  - Facilitate financing investments in energy saving and sustainable decentralized energy production
- Locally:
  - Stimulate local initiatives and bottom-up processes within ambitious municipal programs

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# In this way we realize sustainability in all three domains!



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# Collaboration reduces complexity and risks

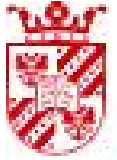


... and contributes to realizing sustainability  
and reverses shrinkage into a healthy and pleasant  
living / working environment

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