

## Climate policy for the next won decade

# Citizens ownership and democracy

is needed for an in time transition to  
Persistent Energy Conservation and 100% Renewable Energy Systems

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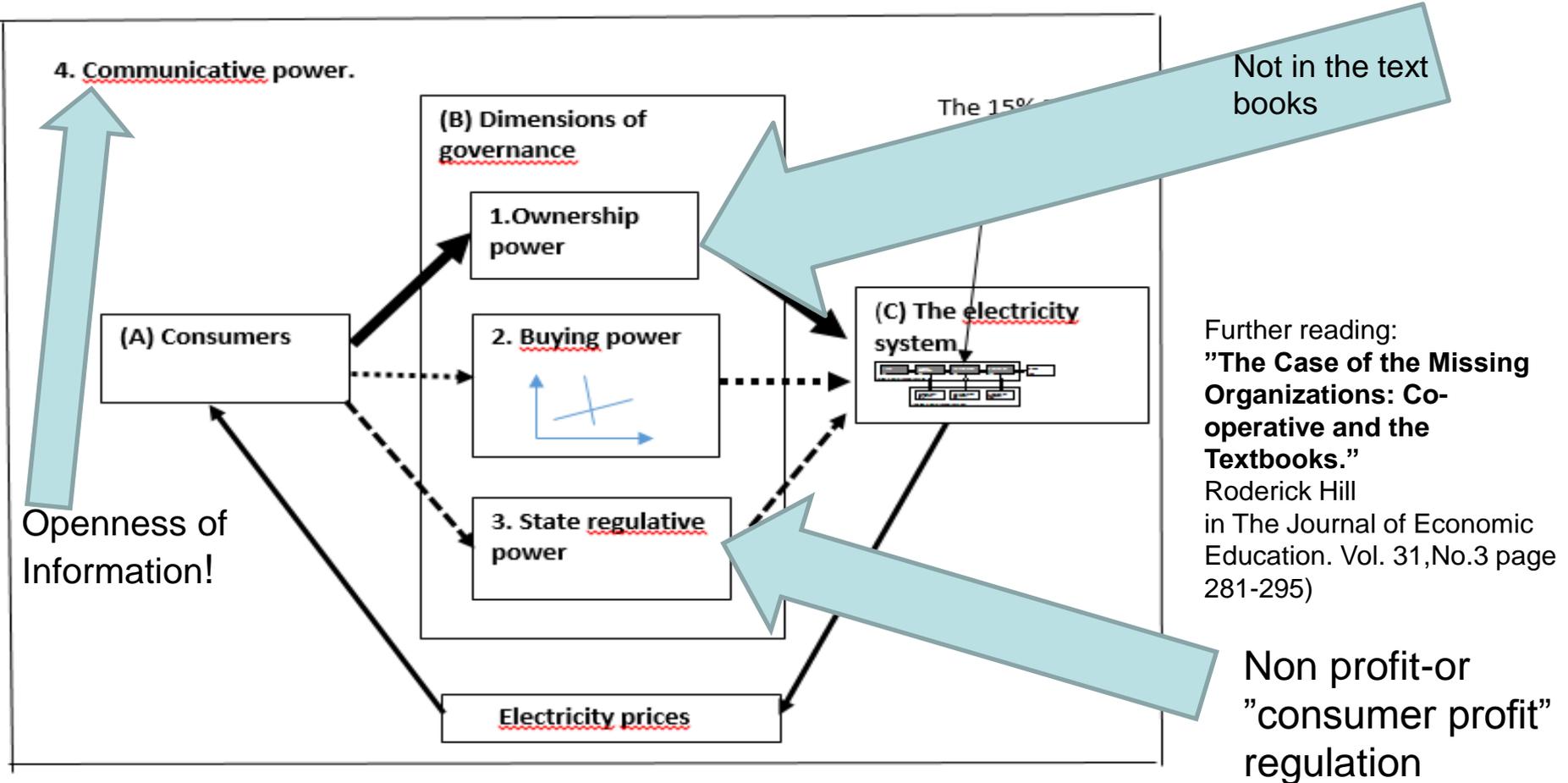
### The Lost Decade

Copenhagen February 28 to March 1 2019

# 1. Citizens/consumer ownership gives:

**Economic space for the green  
transition**

# Consumer ownership in a context



**Ownership models should always be seen in a context!!**

## Historically there has been consumer and municipality ownership of heat and electricity production in Denmark

1. 60% of the heat market is district heating, and owned by consumers and municipalities.
2. The whole direct electricity supply system historically has been consumer and municipality owned.

(In around 2004 the large power plants were sold to the state owned companies DONG and Vattenfall.

In Copenhagen the District System Operator was sold to DONG.

## Sammenligning af distributionspriser per kWh 2018. (Her fokus på KONSTANT/Aarhus versus RADIUS Kbh.)

Årligt forbrug	2000 kWh øre/kWh	4000 kWh øre/kWh	15000 kWh øre/kWh	100000 kWh øre/kWh	250000 kWh øre/kWh
<b>1) RADIUS/ København</b>	44.9	37.4	31.9	31.2	13.1
2) Gennemsnit Øst selskaber	45.1	32.2	22.8	20.0	10.4
3) RADIUS kWh pris højere end Øst selskaber 1) minus 2) i øre/kWh	- 0.2	5.2	9.1	11.2	2.7
4) Så mange % er RADIUS dyrere end Øst selskaber.	-0.04 %	16.2%	39.9 %	56%	26%
<b>5) KONSTANT/Aarhus</b>	29.1	19.8	14.7	12.9	7.0
6) RADIUS højere end KONSTANT 1) minus 4) i øre/kWh	15.8	16.6	17.2	18.3	6.1
<b>7) Så mange % er RADIUS dyrere end KONSTANT</b>	<b>54%</b>	<b>83%</b>	<b>116%</b>	<b>142 %</b>	<b>86%</b>

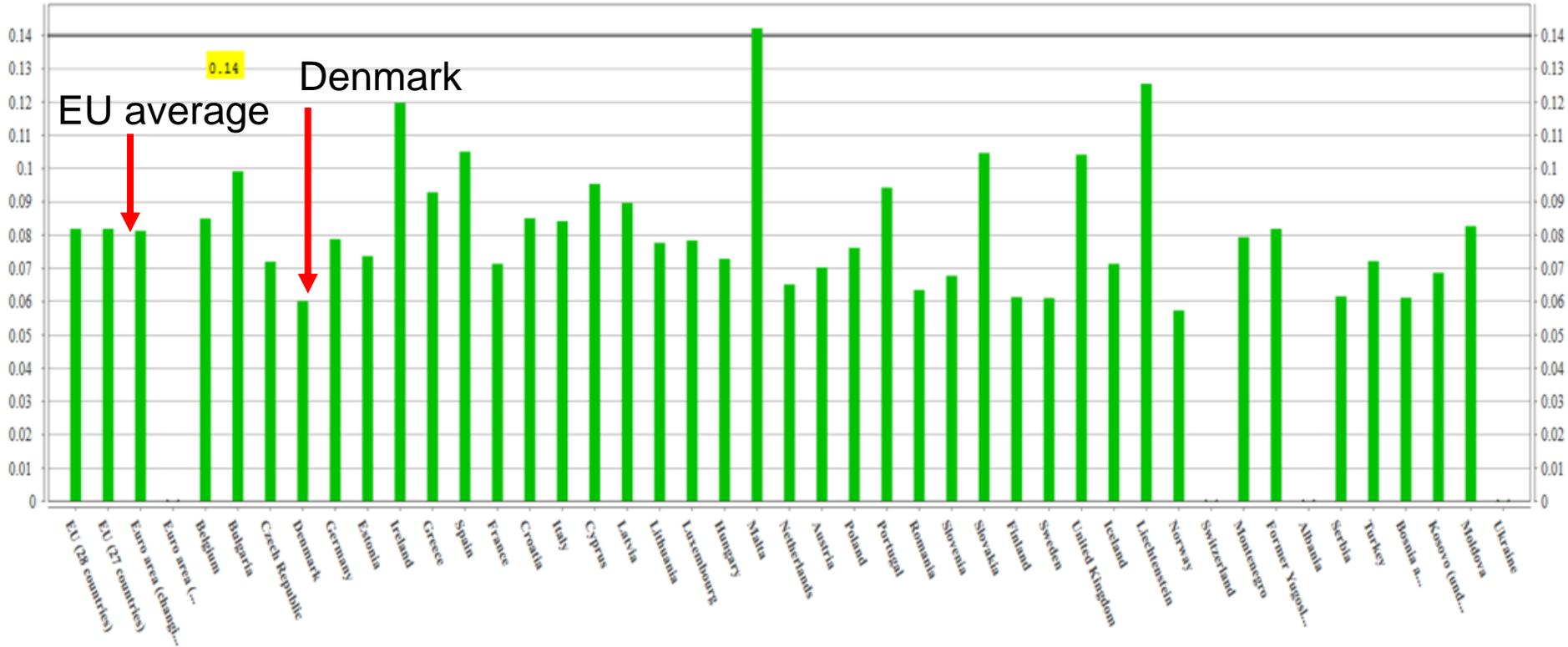
Udregnet på grundlag af: Elforsyningens nettariffer og priser per 1. jan.2018

DANSK ENERGI.

## Consumer and citizens ownership in the context of openness of information and a non profit public regulation

1. A consumer/municipality ownership system combined with a non profit public regulation gives a "consumer profit" system with "innovation for low prices" (and consumer values).
2. These low prices have given (and can give) economical "space" for policies with consumer financed subsidies to green technologies.
3. This made comparatively early introduction of renewable energy economically possible in Denmark concurrently with comparatively low electricity prices.

# EU electricity prices for small companies (2017)



Reference:

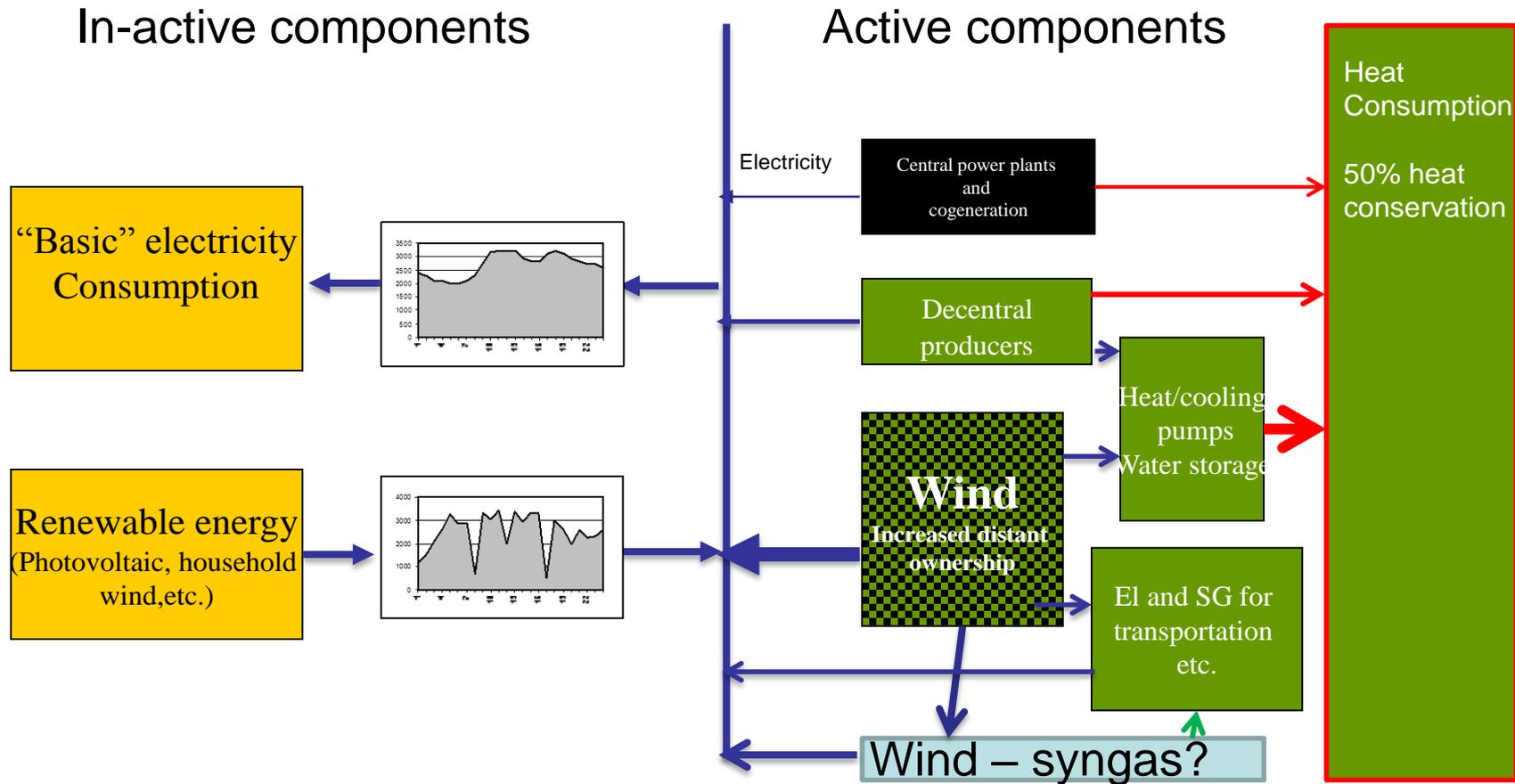
<http://ec.europa.eu/eurostat/tgm/mapToolClosed.do?tab=map&init=1&plugin=1&language=en&pcode=ten00117&toolbox=types>

## 2. Socio-technical characteristics of the change to 100% RE

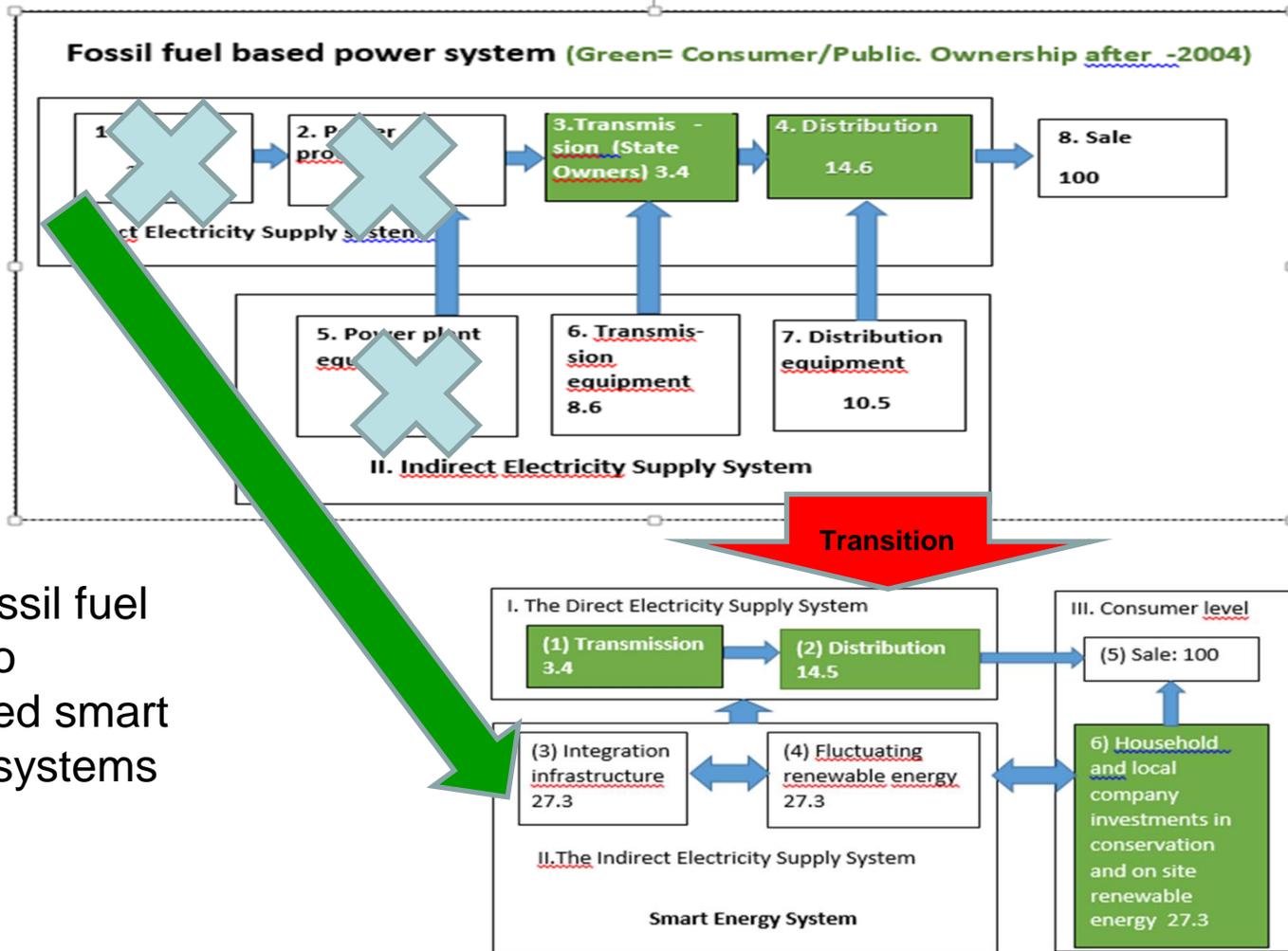
# The Paradigmatic change

1. From **stored fossil fuels** to **fluctuating renewable energy**.
2. From **sector based fossil fuel systems** to **integrated smart energy systems** based on renewable energy and energy conservation.

2015- 2050 wind power 50%-100%  
(**Green** means large consumer ownership share.  
**Black** means distant ownership)



# Value added change in a transition from fossil fuel system to renewable energy/conservation energy system



From fossil fuel stored to integrated smart energy systems

### 3. Who should own the 100% renewable energy smart energy system?

# The era of the Renewable Energy ownership battle

Renewable energy has become a large share of energy supply in several countries.

Therefore fossil fuel based energy companies have lost market shares, and wants ownership of Renewable Energy Systems.

1. Concurrently there is an increased need for integration of fluctuating Renewable Energy.
2. This generates a need for integrating smart energy systems that has lowest transaction costs in a local ownership model.
3. Consequently there is an ongoing ownership battle between old energy companies with high integration transaction costs and local ownership models with lower integration transaction costs.

## Integration infrastructure technologies

**Base:** A consumer and municipality owned district heating infrastructure.

1. Low temperature district heating.
2. Wind power for district heating in combination with heat pumps and hot water storage.
3. Geothermal energy
4. Solar energy for heat (and cooling) in combination with season storage systems.
5. Low temperature industrial heat.
6. Wind to gas systems.
7. Wind- and solar based electricity transportation infrastructure
8. Optimal (40%) and in time (to avoid overinvestment in supply side) heat conservation measures.

From consumer **DISTANT** to consumer **NEAR** technologies

These technologies (in most cases) are **much closer to the consumers** than the distant coal mines– shipping systems-and central power plants they replace.

So we are dealing with a transition from **consumer distant** to **consumer near** technology and value-added.

## Local citizens/consumer/municipality companies have **lower integration transaction** costs than distant owners.

- The change **from distant coal extraction and large coal fired power plants to consumer near** energy sector integration requires coordination and collaboration between owners of wind turbines, the TSO (Transmission Supply Operator), district heating companies, power distribution companies, and the municipalities and the central legislative authorities.
- This coordination is **much more multifaceted than “just to” to import and burn coal, and require new organizational models that can develop, implement, coordinate and manage these many transaction activities in integrated energy systems both with regard to long term investments and day to day management.** It is difficult to handle this high degree of complexity from a distance.
- It therefore is a valid hypothesis that **the complex co-ordination and integration tasks both at the investment and operation and management level in smart energy systems may have lower transaction costs in a decentralized citizen-/consumer-/municipality ownership model than in a centralized distant ownership model.**

# Some reasons for a large local ownership share

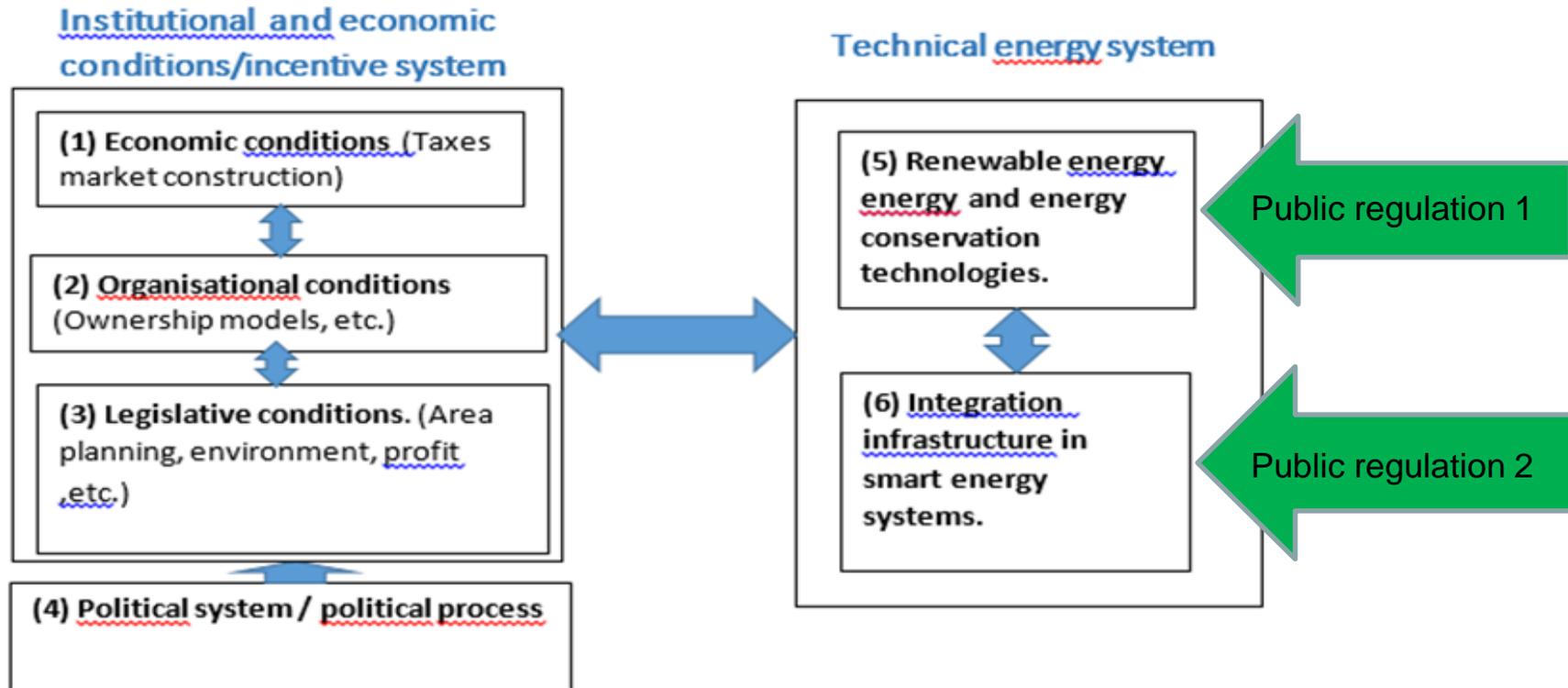
- a. **Keeps integration transaction costs low by** making the present owners of the integration infrastructure (district heat companies , heat consumers, etc) own a **majority share** of RE plants.
- b. **Keeps heat and electricity prices low** as it is a traditional consumer profit model. **(Historical experience/learning)**
- c. **Gives increased incomes in windy areas**, which are often hinterland areas with high unemployment rates and low incomes
- d. **Reduces local and regional resistance** to wind power, and thus reduces project transaction cost .
- e. **Lowers transaction costs** linked to coordination of investments (and O&M) in integrated smart energy systems.

The technological transition  
requires a high share of citizens  
and consumer ownership.

## 4. Policies for citizens and local ownership of smart energy systems

Energy system integration between electricity-, heat- transportation, wind to gas, etc., and energy conservation.

# Regulation for both renewable energy and the integration infrastructure



## Some policy suggestions for a transition to 100% RE and citizens ownership

1. Taxes that furthers integration of fluctuating Renewable Energy.
2. Expansion of low temperature 4th generation district heating
3. A systematic heat conservation policy that aims at an **optimal** (40% in DK) and **in time** reduction of heat consumption in 2050.
4. A requirement of at least 51% local and consumer ownership of wind power (onshore) in plant lifetime.
5. At least 51 % co-operative ownership of offshore plants in their lifetime.
6. Requirement of around 30% of plant surplus to a foundation for local and regional environmental purposes.
7. Wind turbines ownership preference should be given to actors having invested in wind power integration. For instant district heating companies.
8. The role of the large power companies could be to **engage in an ownership collaboration with local consumers and municipalities.**

# Suggestions for EU policies

1. Implementation of an energy **subsidiarity principle**.
2. **Same level of subsidies** to local and regional integration as at present to interconnectors.
3. Clear **EU acceptance** of policies that supports local and regional ownership of **majority shares** of renewable energy systems.

# We dont have time for:

- Ownership models causing no **acceptance and no participation**, and therefore project delay.
- Interconnector institutions/tariffs that delays energy sector integration.
- Technical analysis without policy suggestions.
- Policy illusions like the ongoing energy conservation ZERO POLICY.
- "one generation" attitudes.
- Too expensive corporate "solutions"
- Companies that will not collaborate on local ownership solutions
- "UNREALISTIC PATIENCE" .
- We need **REALISTIC IMPATIENCE!**
- So therefore-----

Thanks  
for your  
impatience!