

2nd International Conference

# Micro Perspectives for Decentralized Energy Supply

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## Renewable energies and their impact on local value added and employment

Block III:

The Role of Energy in Development Processes

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# Background and Research Objective

## municipalities and regions in Germany

- play an important role in the transition from fossil-fuel based to RE systems
- many have ambitious objectives with regard to an energy supply system based on RE

**motive:** regional economic effects that can be induced by the use of RE

## central questions:

- what is the extent of value added and employment effects on a local or regional level?
- what are the potentials to generate local value added by different RE technologies?



# What is Value Added?

value added =  
the transformation of available goods (intermediate goods) to goods of higher monetary value

## Calculation of value added:

1. net value added =  
output - intermediate consumption - depreciation
2. net value added =  
net profits + net wages + taxes

value added is not:  
turnover, investment, rate of return,.....



# The IÖW Model

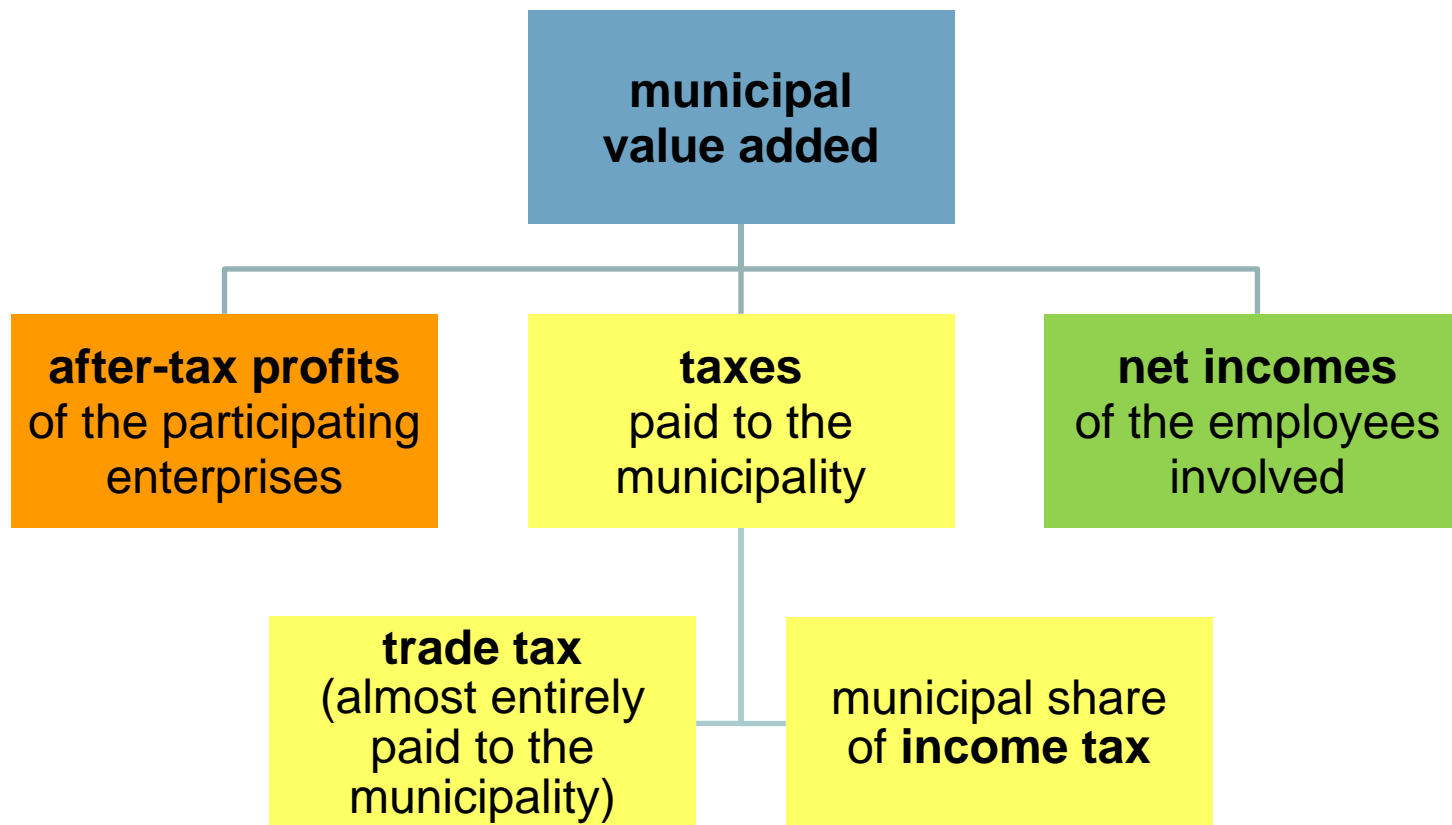
- **29 RE technology value-added chains**  
(decentralized power and heat generation, provision of wood and biofuels)
- value-added chains are derived from the specific cost structures of each RE technology
- **4 value-added stages**
  1. systems manufacture
  2. planning & installation
  3. operation & maintenance
  4. system operator
- each value-added stage can be subdivided in several value-added steps
- basis for the assessment of value added: specific turnovers in relation to the installed capacity (€/kW) / installed collector surface (€/m<sup>2</sup>) / produced amount (€/l, €/t,...)

# Components of Municipal Value Added



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# Model Implementation for an Average Model Municipality



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## characteristics of the model municipality:

- 75,000 residents
- installed capacity according to the German average per capita in 2011
- manufacturing capacity according to the German average per capita in 2011
- import and export according to the German average

## model input:

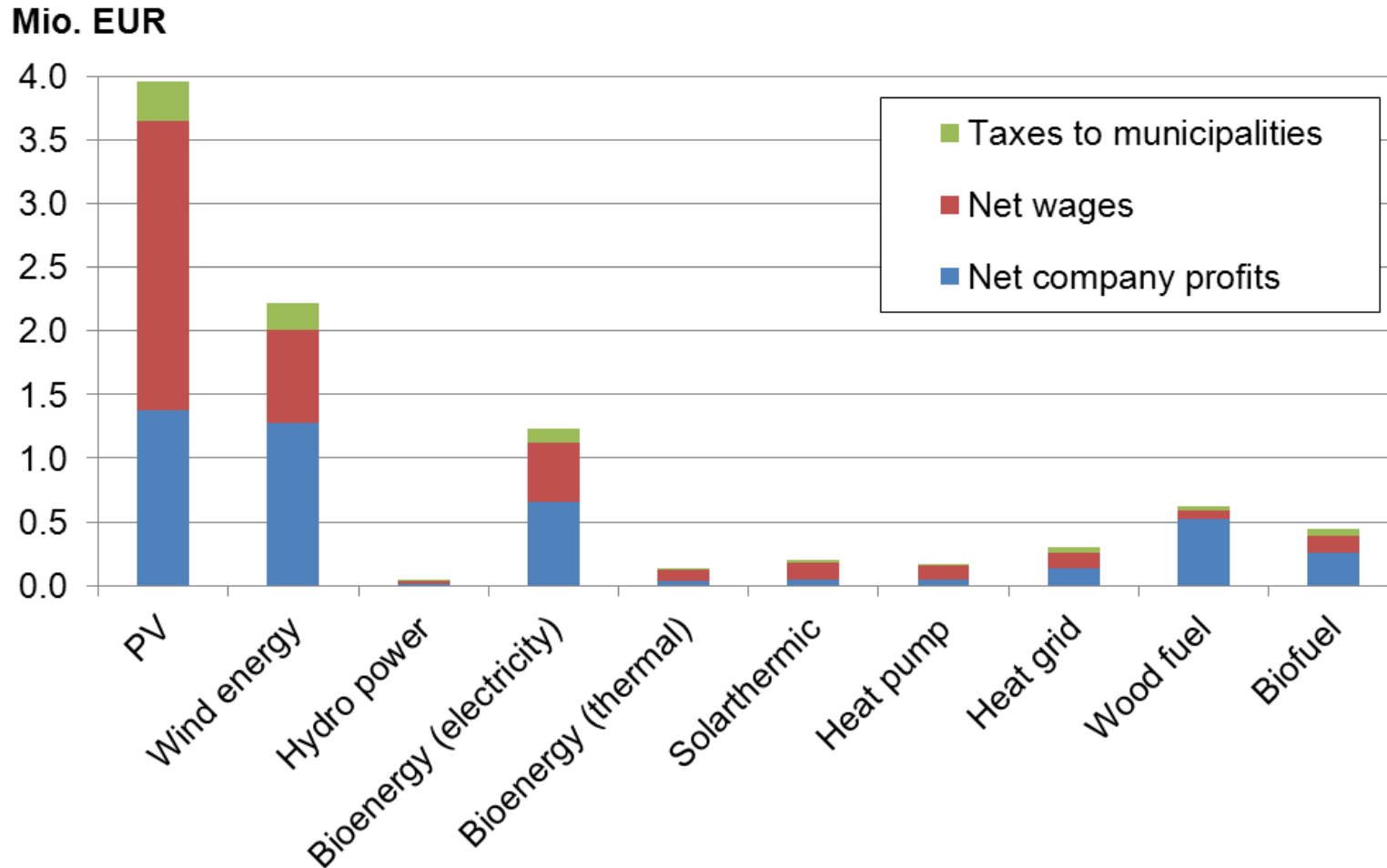
- total installed capacity in the year 2010  
+ half of the newly installed capacity in the year 2011
- consumption of wood and biofuels in 2011

# Municipal Value Added in the Model Municipality - Differentiated by RE Technologies (2011)



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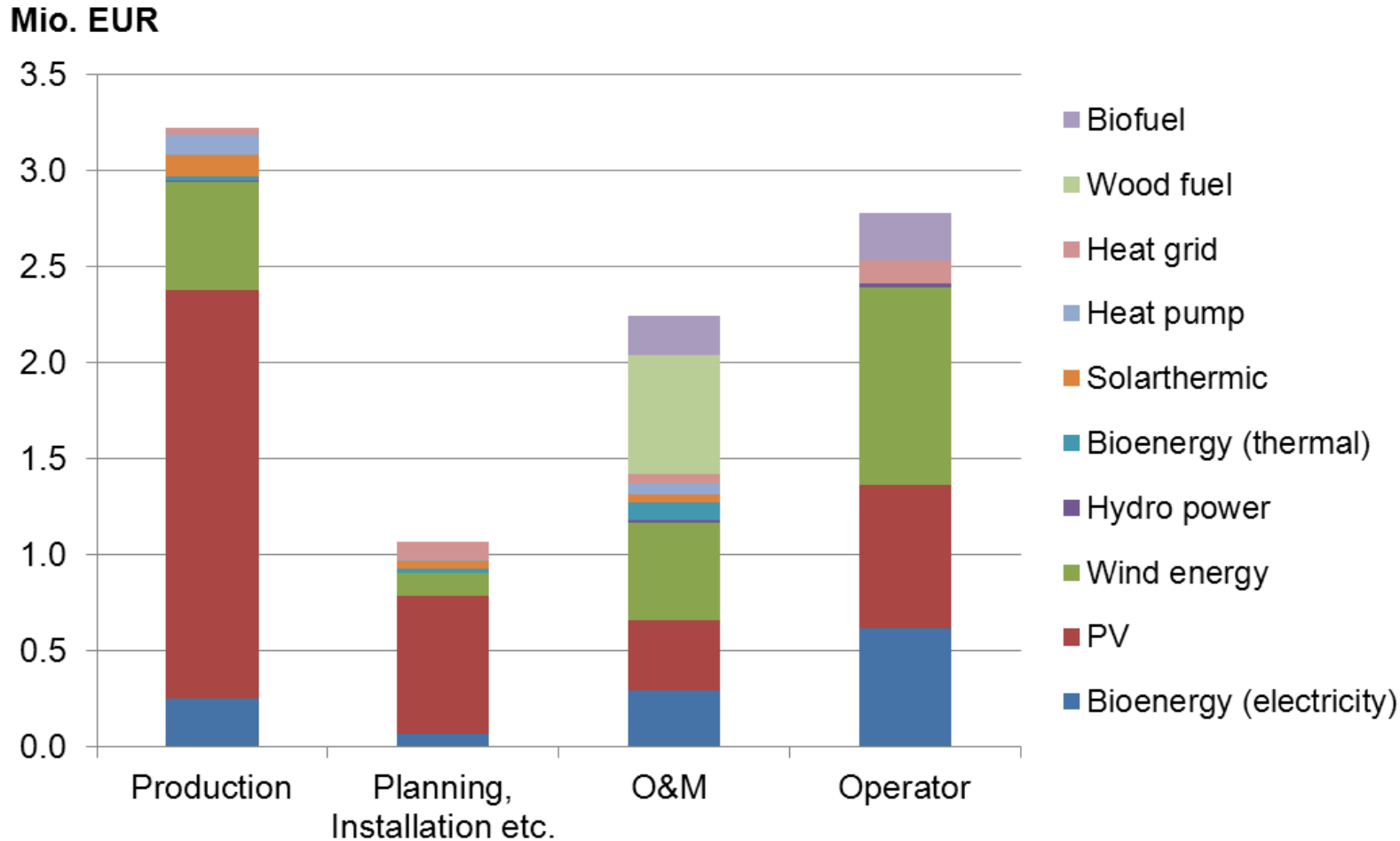
total municipal value added (2011): 9.3 million euros

# Municipal Value Added in the Model Municipality - Differentiated by Value-Added Stages (2011)



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total number of employees in the RE sector (2011): 166





## → IÖW-model can be used to quantify effects of value added and employment for

- different RE technologies
- every value-added step
- every component of value added
- different geographical units

## → limits of the method:

- no assessment of indirect effects generated on upstream value-added stages
- impacts from a substitution or a crowding out of economic activities due to the use of RE cannot be quantified
- ecological and social aspects are not considered



# Transferability of the Model to Other Countries

## overall findings (for Germany):

- (decentralized) RE have the potential to create value added and employment in many regions all over the country
- trigger for value added and employment are local companies engaged in all parts of the RE technology value-added chains

## possible difficulties / points to discuss:

- the model requires a great number of statistics and data and has to be adapted to the tax system
- typical RE-technologies and corresponding value-added chains in countries of the Global South?
- import of RE technologies and services vs. local content?
- ....



**Thank you for your attention!**

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Climate and Energy

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