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IEA FORSCHUNGS  
KOOPERATION

## IEA SHC Task 52: Solar Heat & Energy Economics in Urban Environments

AEE – Institute for Sustainable  
Technologies (AEE INTEC)  
Franz Mauthner, M.Sc.

15. Oktober 2014

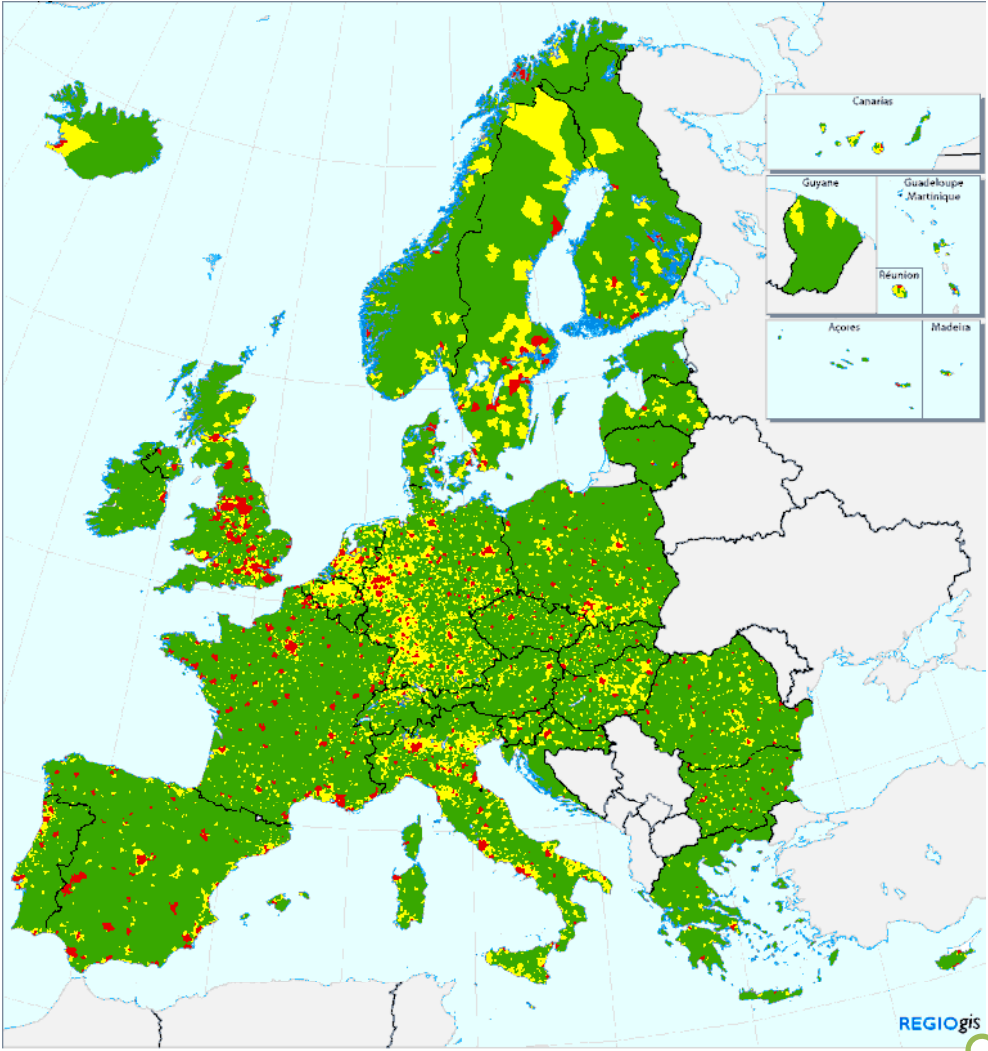


**Task 52**  
Solar Heat and Energy Economics  
in Urban Environments

# Facts and global trends



# Facts and global trends



**Degree of Urbanisation 2011**

- Densely populated areas
- Intermediate
- Thinly populated areas
- No Data

Sources: EFGS, JRC, Eurostat, LandScan, REGIO-GIS

0 1,000 Km

© EuroGeographics Association for the administrative boundaries

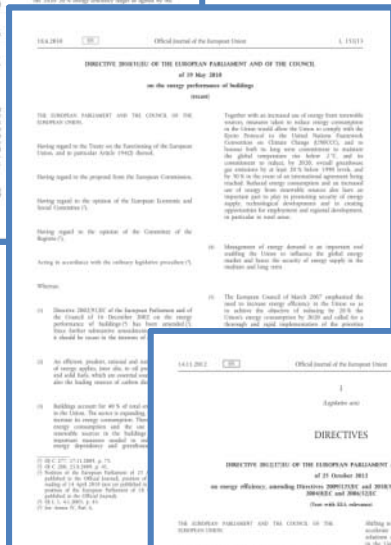


Half of urban population and 40% of People in Europe live in cities

# Energy transition in an EU context



Directive 2009/28/EC on use of energy from renewable sources



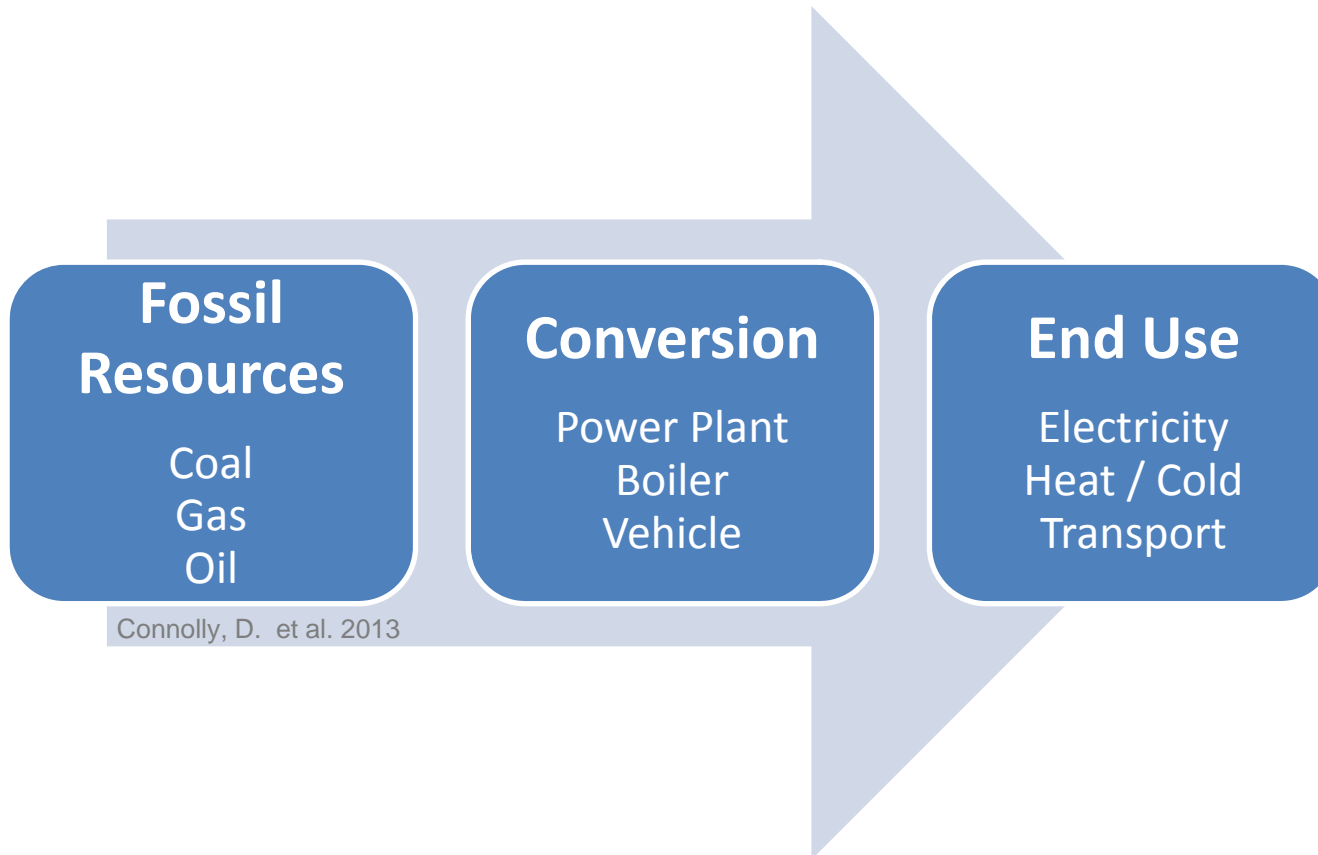
Directive 2010/31/EU on the energy performance of buildings



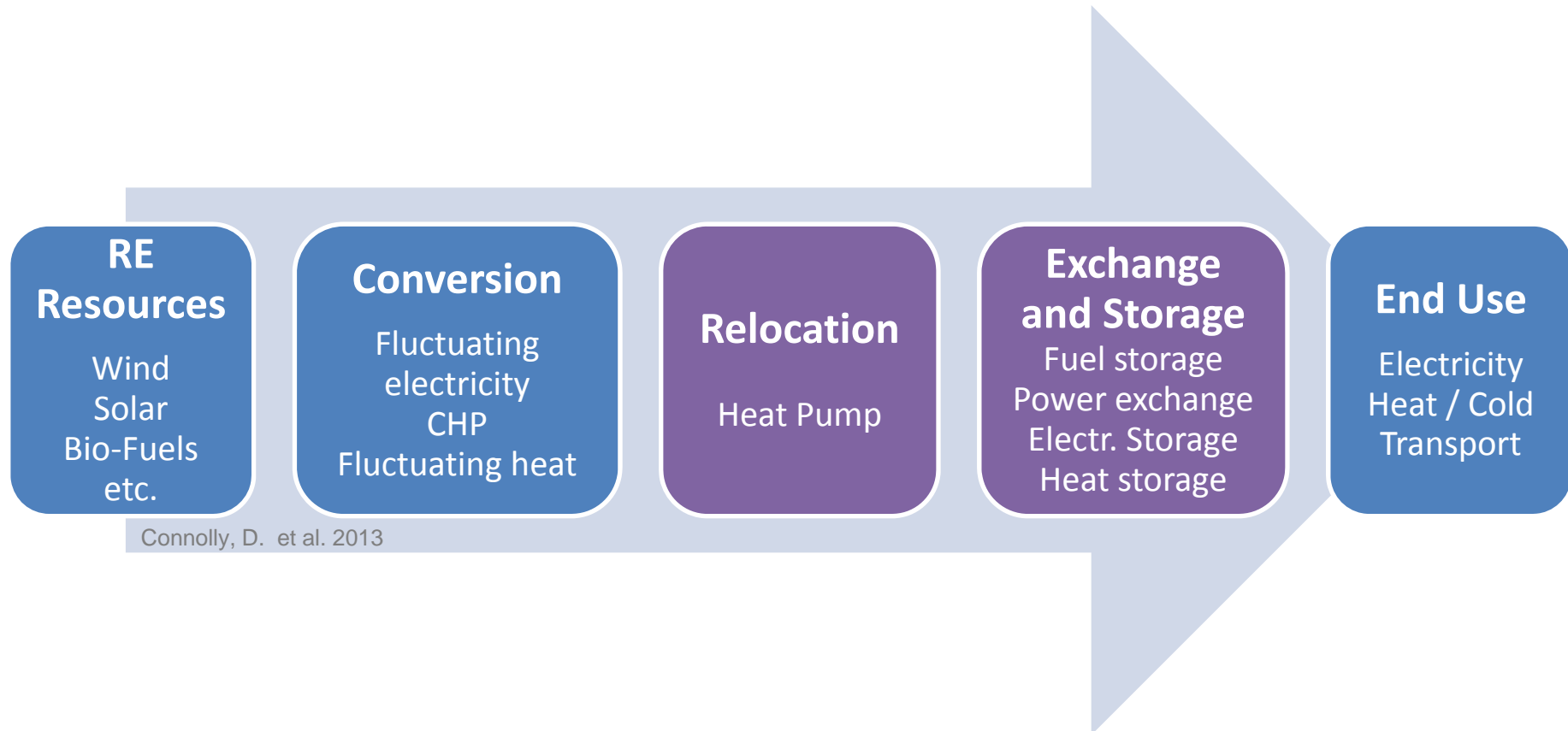
Directive 2012/27/EU on energy efficiency



# The Energy System of Today: Fossil Fuels



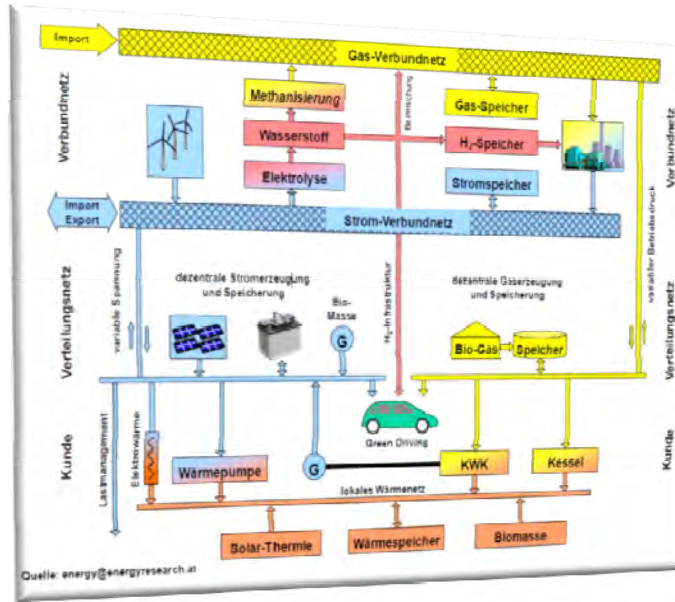
# The Energy System of Tomorrow: 100% RE



Connolly, D. et al. 2013



# The Smart Energy System



Smart  
electricity  
grids

Smart  
thermal  
grids

Smart gas  
grids



Task 52  
Solar Heat and Energy Economics  
in Urban Environments

# IEA SHC Task 52: “SolarUrban”



What can be the future role of solar thermal in smart urban energy systems?

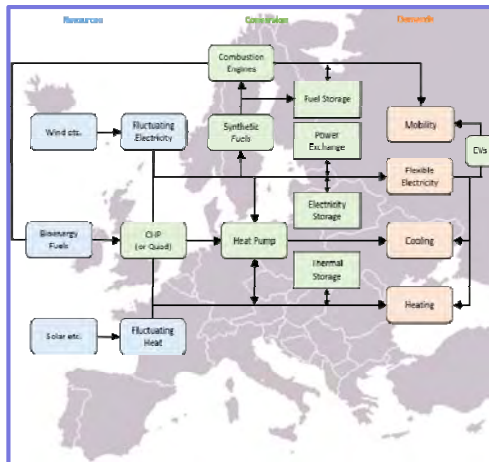




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# IEA SHC Task 52: “SolarUrban”

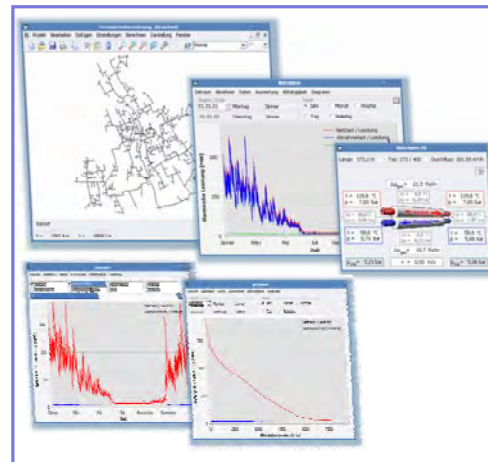
Operating Agent: S. Herkel, Fraunhofer ISE, DE



## Subtask A

Scenarios for 100%  
RE-supply

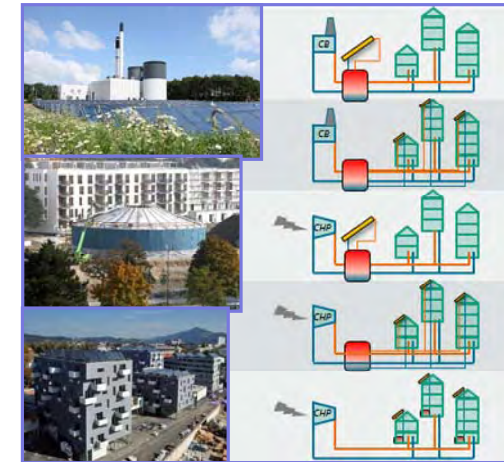
Lead: B. V. Mathiesen,  
AAU, DK



## Subtask B

Methods, Tools &  
Cases Studies

Lead: P. Bourdoukan,  
Sorane SA, CH



## Subtask C

Technology &  
Demonstrators

Lead: F. Mauthner,  
AEE INTEC, AT



# IEA SHC Task 52: “SolarUrban”

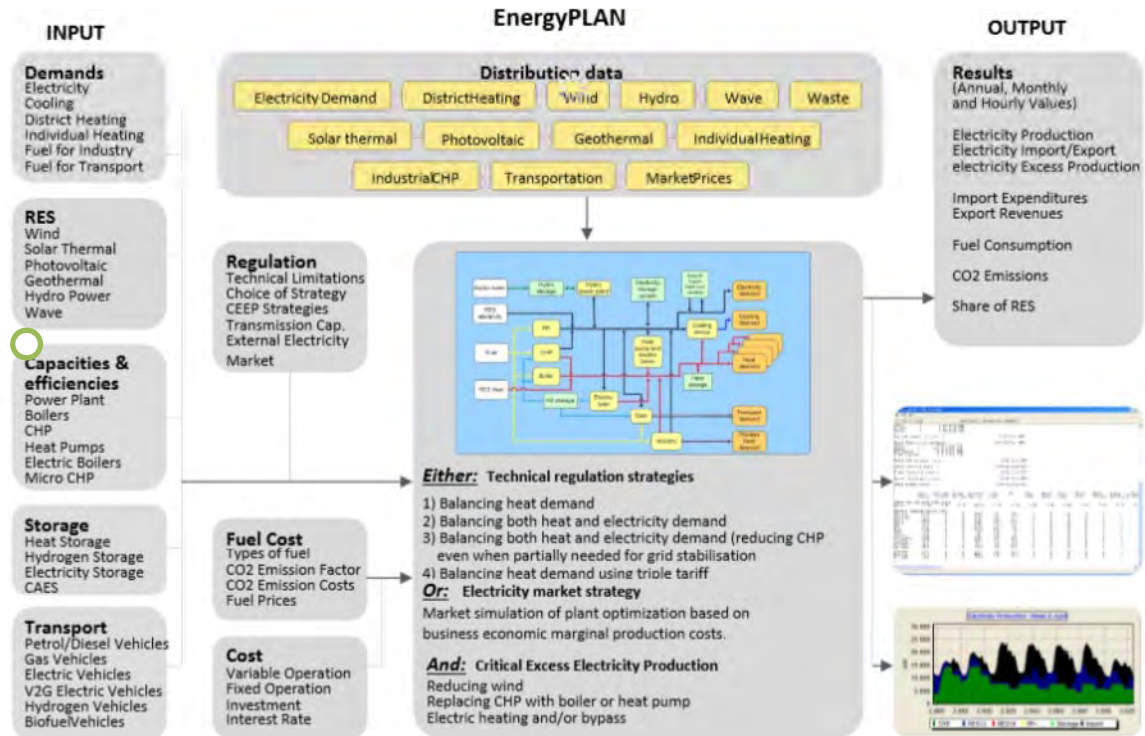
## Subtask A

Scenarios for 100%  
RE-supply

Lead: B. V. Mathiesen,  
Aalborg Uni, DK

Holistic energy  
system analysis on  
country level

**Target:** Energy  
scenarios for a 100%  
RE supply 2050





# IEA SHC Task 52: “SolarUrban”

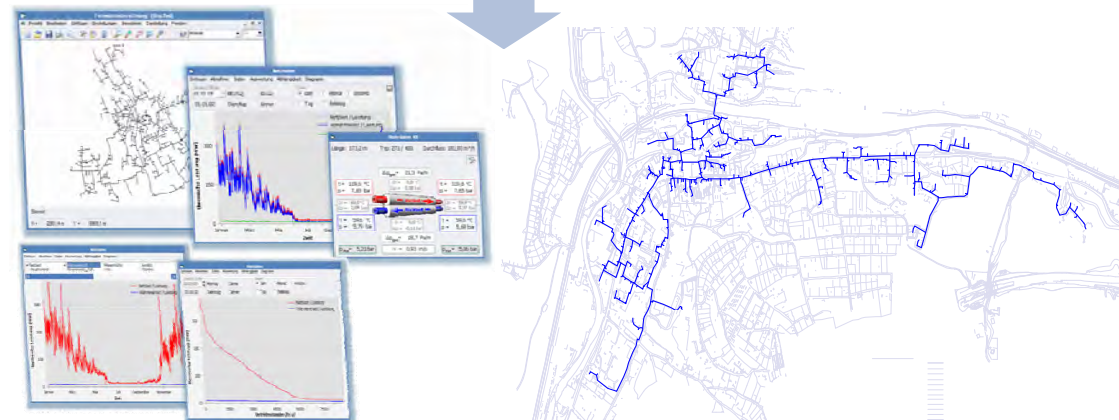
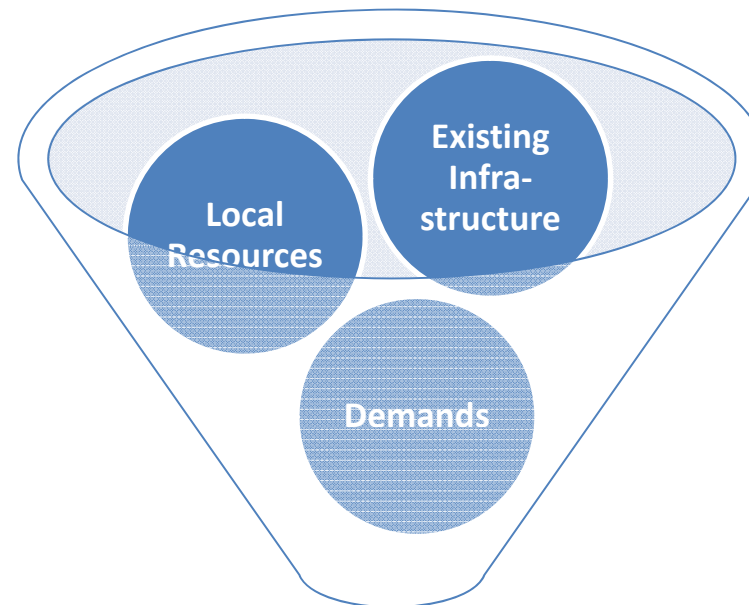
## Subtask B

Methods, Tools &  
Cases Studies

Lead: P. Bourdoukan,  
Sorane, CH

Holistic energy  
system planning on  
local level

**Target:** Methods and  
tools focusing on  
local heat planning





Task 52  
Solar Heat and Energy Economics  
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# IEA SHC Task 52: “SolarUrban”

## Subtask C

Technology &  
Demonstrators

Lead: F. Mauthner,  
AEE INTEC, AT

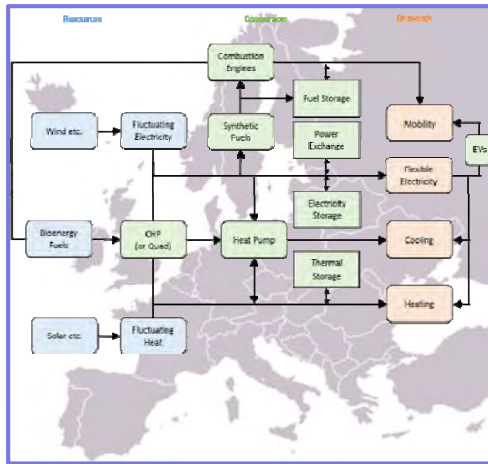
**Target:** Analysis and  
classification of best  
practice examples;  
development of  
business models



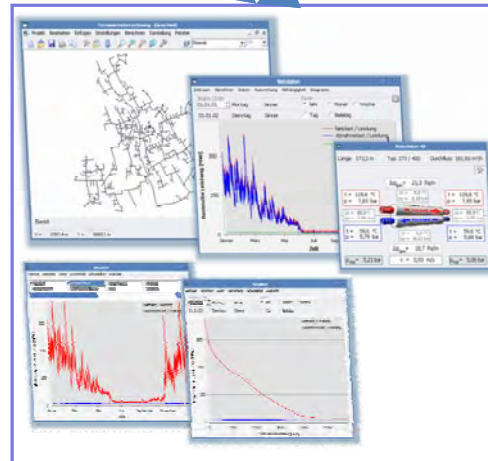




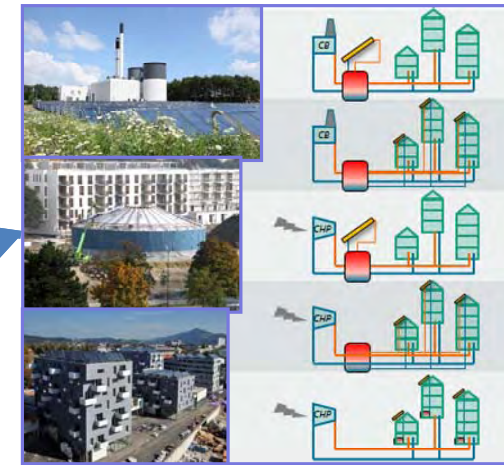
# IEA SHC Task 52: “SolarUrban”



**Subtask A**



**Subtask B**



**Subtask C**



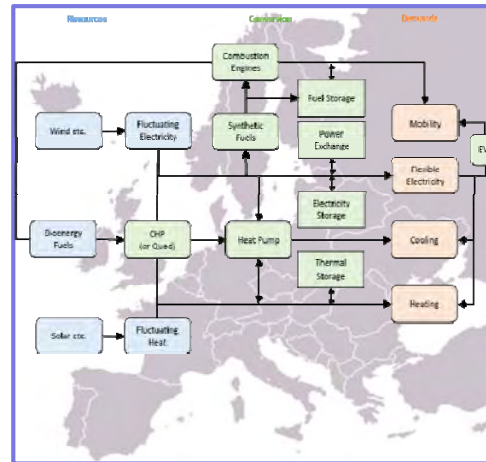


# IEA SHC Task 52: “SolarUrban”

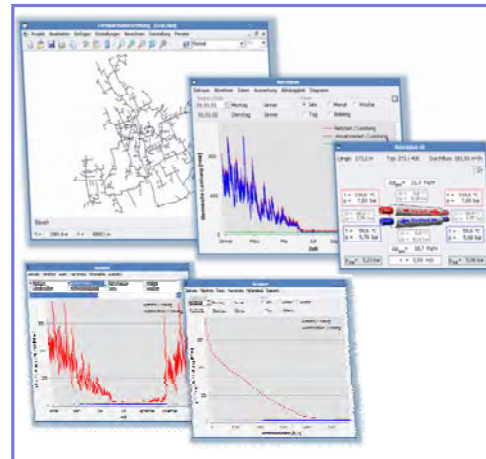
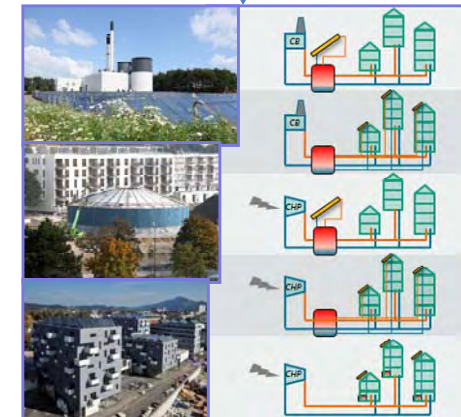
Subtask A  
“Top down”



Subtask B  
“Bottom up”



Potential for solar thermal in  
a 100% RE-scenario can  
be assessed



Techno-economic  
constraints on a local  
level can be investigated



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