

Learning module

“Ecological aspects of urbanization in mountain areas” (S1)

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Module 1: Ecological aspects of urbanization in mountain areas

S1: Ecological aspects of urbanisation


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Module 1: Ecological aspects of urbanization in mountain areas

1. Urbanisation – from the diffused to the eco-city model

TOWARDS A NEW URBAN PARADIGM? - Conceiving the city of the future
Lecture 1: urbanization - from the diffused to the eco-city model



MSc. Marc Giménez Maranges – Department of geography and geology – University of Salzburg

Cities and sustainability? → The diffused and globalised city → Responses to the crisis → Eco-cities → Criticisms to eco-modernisation → Alternative paradigms → Transition processes → Conclusions

Let's start with a positive message!

Tomorrow, the world is full of solutions
https://www.youtube.com/watch?v=OSI-Kyam_Jk



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Module 1: Ecological aspects of urbanization in mountain areas

Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

Urban areas: key for the attainment of sustainability goals?



Urban areas

Main source of pressures on the environment

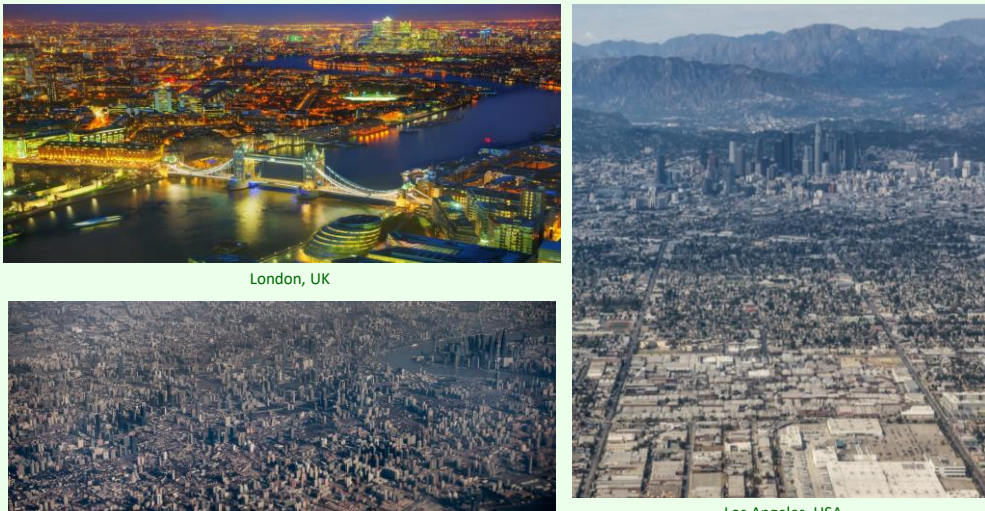
Paramount in order to generate opportunities for a more sustainable future

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Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

The diffused city model



London, UK

Shanghai, China

Los Angeles, USA

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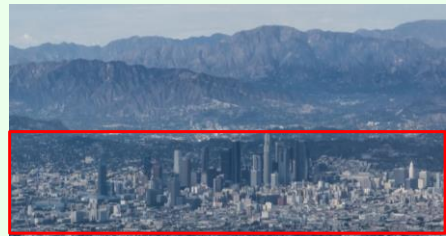


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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → Eco-cities → Criticisms to eco-modernisation → Alternative paradigms → Transition processes → Conclusions

The diffused city model

Zoning of the space

Business area

Residential area

Commercial area

Los Angeles, USA

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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → Eco-cities → Criticisms to eco-modernisation → Alternative paradigms → Transition processes → Conclusions

The diffused city model

Zoning of the space

Development of the mobility network

Lane count on motorways in the Netherlands

- 1 lane
- 2 lanes
- 3 lanes
- 4 lanes
- 5 lanes
- 6 lanes
- 7 lanes
- 8 lanes
- 9 lanes
- 10 lanes
- 11 lanes
- 12 lanes
- 13 lanes
- 14 lanes
- 15 lanes
- 16 lanes
- 17 lanes
- 18 lanes
- 19 lanes
- 20 lanes

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The diffused city model

Zoning of the space
↓
Development of the mobility network
↓
Social problems








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Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

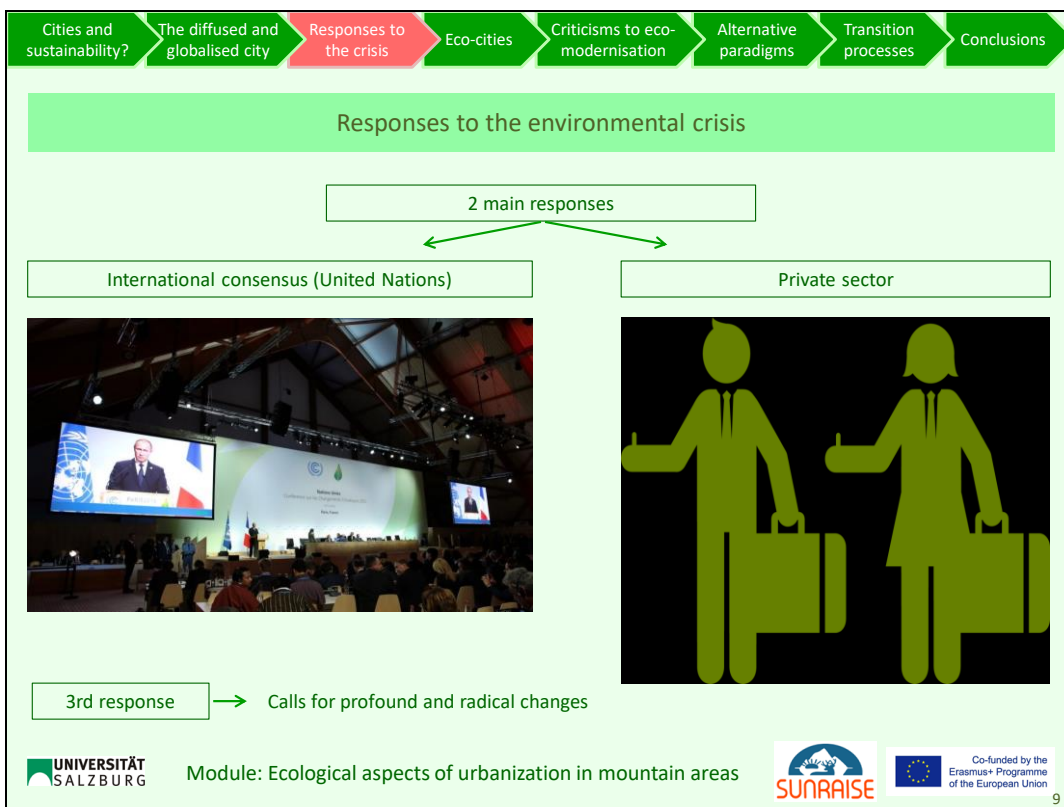
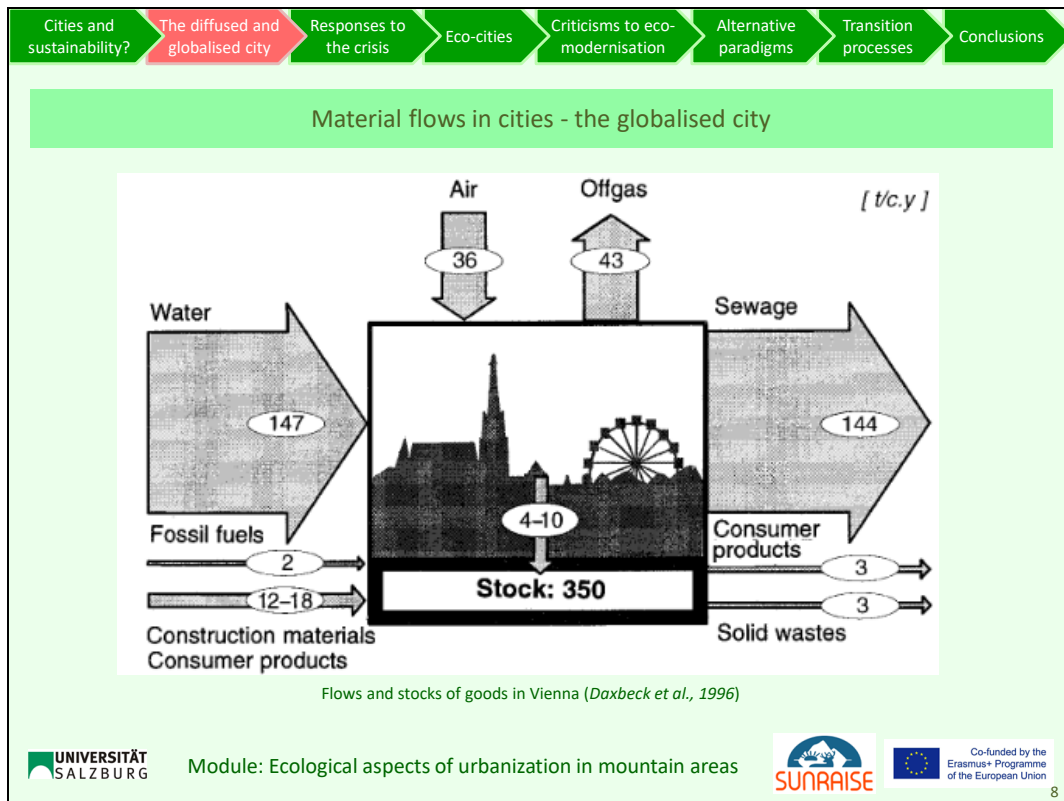
The diffused city model

Zoning of the space
↓
Development of the mobility network
↓
Social problems Environmental strains

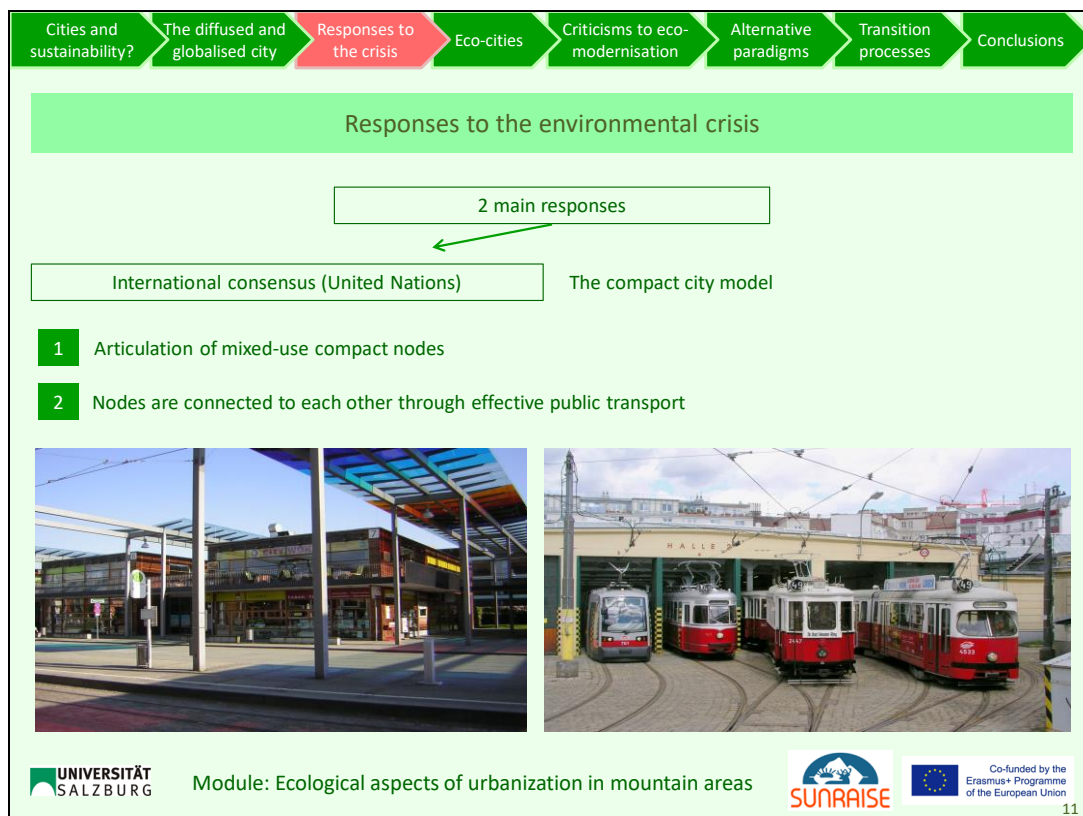




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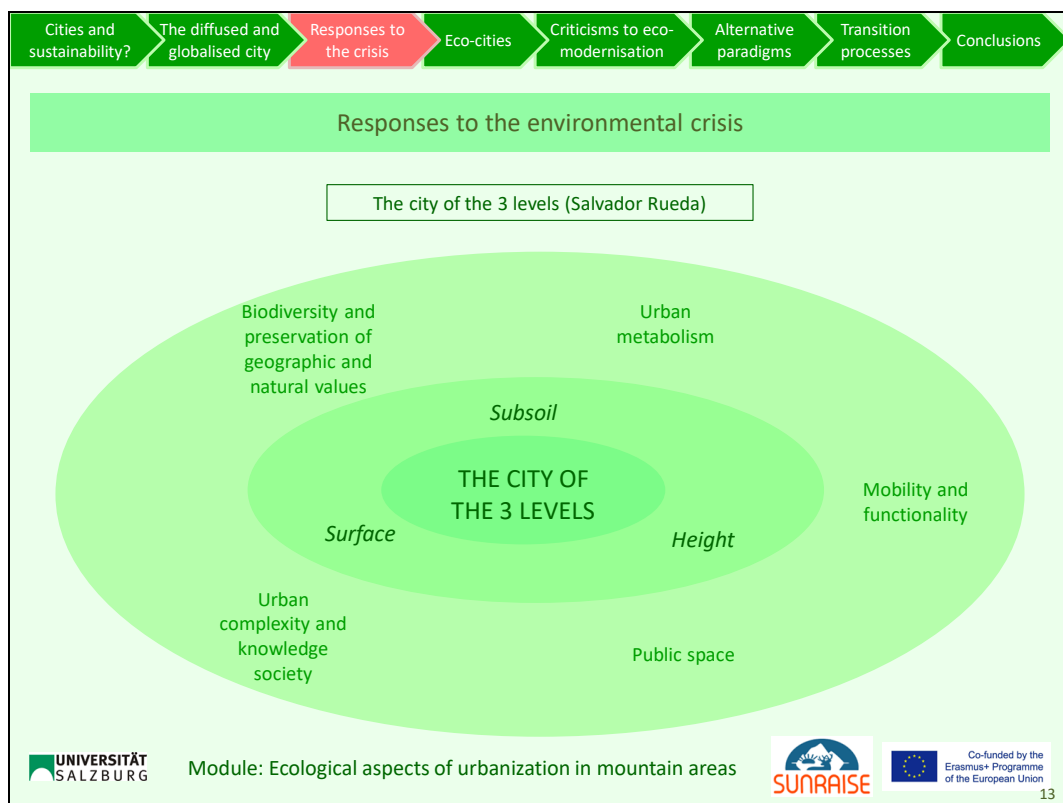
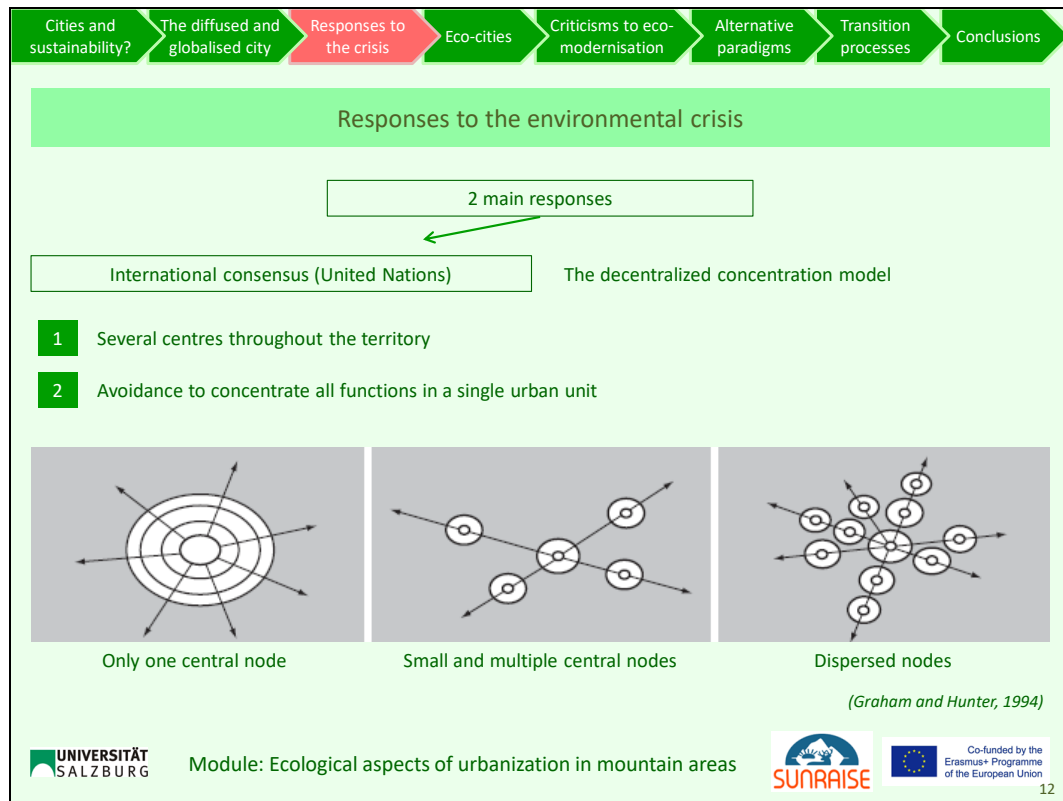
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Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

Responses to the environmental crisis

The city of the 3 levels (Salvador Rueda)





Biodiversity and preservation of geographic and natural values

Urban metabolism

Subsoil

THE CITY OF THE 3 LEVELS

Surface

Height

Urban complexity and knowledge society

Public space

Mobility and functionality

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Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

Responses to the environmental crisis

The city of the 3 levels (Salvador Rueda)

REUSE
REDUCE
RECYCLE




Biodiversity and preservation of geographic and natural values

Urban metabolism

Subsoil

THE CITY OF THE 3 LEVELS

Surface

Height

Urban complexity and knowledge society

Public space

Mobility and functionality

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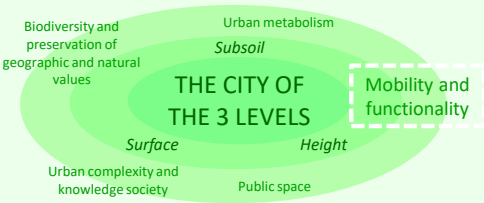
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Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

Responses to the environmental crisis

The city of the 3 levels (Salvador Rueda)

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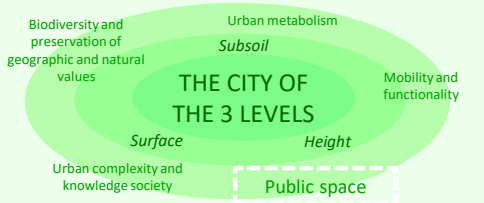
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Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

Responses to the environmental crisis

The city of the 3 levels (Salvador Rueda)

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Responses to the environmental crisis

The city of the 3 levels (Salvador Rueda)




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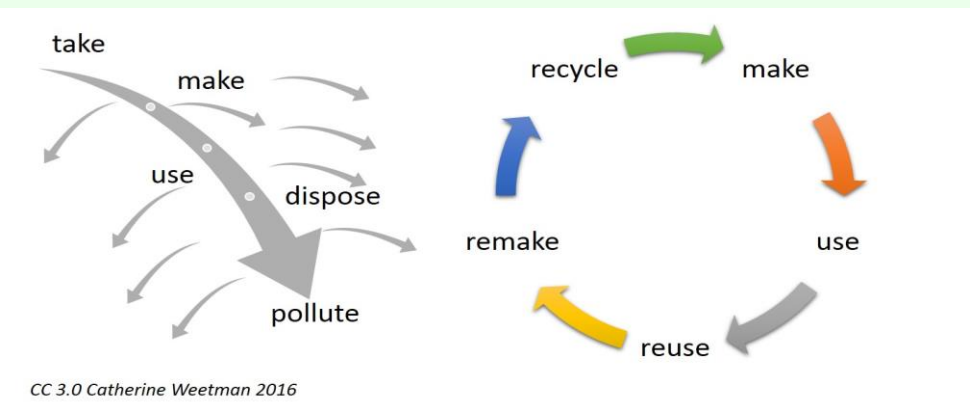
Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

Responses to the environmental crisis

Other concepts: the example of the circular economy

<https://www.ellenmacarthurfoundation.org/circular-economy/concept>

Linear model Circular model



CC 3.0 Catherine Weetman 2016

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Responses to the environmental crisis

2 main responses

Ecological modernisation → Private sector

- 1 Emergence during the 1980s and 1990s → Multinational corporations wield more power than national governments
- 2 Market-based system of consumption and production is not incompatible with environmental reforms
- 3 Business language and concepts are used

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Eco-cities

What is an eco-city?

Requirements to be met by an eco-city (Eco-city World Summit, 2008):

- 1 Ecological security
- 2 Ecological sanitation
- 3 Ecological industrial metabolism
- 4 Eco-scape
- 5 Ecological awareness



Eco-city of Dongtan, China

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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → **Eco-cities** → Criticisms to eco-modernisation → Alternative paradigms → Transition processes → Conclusions

Eco-cities

What is an eco-city?

Actions needed for the development of eco-cities (Łobejko et al., 2015):



- 1 Provide safe water, sanitation, etc.
- 2 Build cities for people
- 3 Identify ecological sensitive areas, etc.
- 4 Design cities for energy conservation, renewable energy uses and the reduction, re-use and recycling of materials
- 5 Build cities for safe pedestrian and non-motorized transport use



Masdar City, United Arab Emirates



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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → **Eco-cities** → Criticisms to eco-modernisation → Alternative paradigms → Transition processes → Conclusions

Eco-cities

What is an eco-city?

Actions needed for the development of eco-cities (Łobejko et al., 2015):

- 6 Encourage investment in eco-city building
- 7 Provide education and training programs
- 8 Create a government agency at each level
- 9 Address global heating, etc. in the plans and actions of all institutions
- 10 Share experiences, lessons and resources



BedZED, UK



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Eco-cities

Current trends

Joss (2009) identified:

- 79 eco-city initiatives around the globe (autumn 2009)
- In Europe, most eco-cities in Scandinavian countries, the UK and Germany
- Over ¼ of the eco-city initiatives have been implemented

Number of eco-quarters identified by Joss (2009) per geographical region

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Eco-cities

Current trends

Lauréats 2013

- 1 - Mairie (Wall-les-Écluses)
- 2 - HEC-Biosphère (Les Courbais)
- 3 - Parc (Fribourg, Suisse)
- 4 - Parc (ZAC Claude Bernart)
- 5 - Soudage-Éclairage (Le Trappet)
- 6 - Soudage-Éclairage (Le Trappet)
- 7 - Lull (Les Rives de la Haute-Loire)
- 8 - La Chapelle (Saint-Genès-de-Magnac)
- 9 - Forcalquier (Ecoquartier historique)
- 10 - Grenelle (ZAC de Bourg)
- 11 - Grenelle (Boulevard Valet)
- 12 - La Roche (Cœur de Bourg)
- 13 - Lyon (La Duchère)

Lauréats 2014

- 1 - Sainte Croix aux Mines (Les Coudrennes)
- 2 - Mairie (Lyon)
- 3 - Bortaux, Communauté urbaine du Bortaux (Savoie - Bagnes du Lac)
- 4 - L'ancien des Rives de la Loire
- 5 - Parc (Ecoquartier de Moncey)
- 6 - Rives (Ecoquartier Cœur Rouge Pays de France)
- 7 - Rives (Ecoquartier Cœur Rouge Pays de France)
- 8 - Parc (Boulevard)
- 9 - Les Mureaux (Programme de Réhabilitation Urbaine des Mureaux)
- 10 - Nordens, Établissement public d'aménagement La Défense Seine-Aval (Hoch)
- 11 - Prades (Les Pignes Maritimes, Côte d'Azur)
- 12 - Les Forges (Le terrain forgeron)
- 13 - Saint-Genès, Communauté urbaine de Toulouse Métropole (Villalba)
- 14 - Saignes, Communauté urbaine de Toulouse Métropole (Villalba)
- 15 - Gournay (Ecoquartier des Résidences de Paris)
- 16 - Mairie (Saint-Genès-de-Magnac)
- 17 - Angers (ZAC Dargès)
- 18 - Grenelle (Sainte-Mairie)

Lauréats 2015

- 1 - Saint-Etienne (Chambre de Commerce)
- 2 - Les Rives (ZAC de l'Europe)
- 3 - Les Rives (ZAC de l'Europe)
- 4 - Mairie (ZAC de l'Europe)
- 5 - Mairie (ZAC de l'Europe)
- 6 - Mairie (ZAC de l'Europe)
- 7 - Mairie (ZAC de l'Europe)

Districts awarded as eco-quarters in France between 2013 and 2015 (Ministry of Housing, Territorial Equality and Rurality of the French Republic, 2015)

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Eco-cities

The example of Freiburg im Breisgau



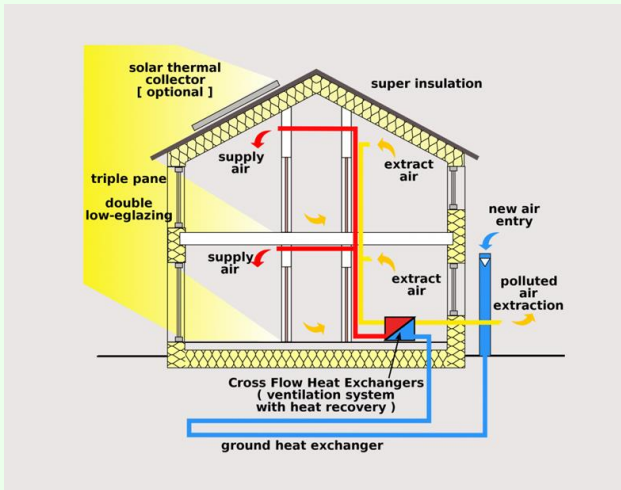


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Eco-cities

The example of Freiburg im Breisgau Energy saving

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Eco-cities

The example of Freiburg im Breisgau




Football stadium of Freiburg
(Management Marketing FWTM
Freiburg, 2018)

Solar city hall (City of Freiburg,
2008)

Renewable energy sources




Solar facade of the residential complex at
Wilmsdorfer Street (City of Freiburg, 2008)

The Heliotrope



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Eco-cities


The example of Freiburg im Breisgau





Renewable energy sources

Green industry park
(Management Marketing FWTM Freiburg,
2016)

- 1 Solar power plant, micro gas plant
Eichelbuck
ASF Solar/badenova AG & Co. KG
- 2 Biogas plant
RETERRA Freiburg GmbH
- 3 CHP for heat supply of Landwasser
badenova AG
- 4 Wood pellet steamer & Energie
Management System
Pflzer Manufacturing Deutschland GmbH
- 5 E-Mobility
IKEA Deutschland GmbH & Co. KG
- 6 Hydrogen station
Fraunhofer ISE
- 7 Smart2Grid (CHPs)
Fraunhofer ISE
- 8 Elektrolyseur – Power to Gas
Fraunhofer ISE
- 9 Technology and Competence Centre
for Renewable Energy
Solar Info Center
- 10 Solar power plant Messe Freiburg
FVTM GmbH & Co. KG
- 11 Solar power plant St. Gabriel
ASF Solar
- 12 Gas and steam turbine plant
Wärmeverbundkraftwerk Freiburg GmbH
- 13 Power generation out of waste water
(planned)
INTER/Solvay Acetow GmbH
- 14 Expansion „Technische Fakultät“
(planned)
Albert-Ludwigs-Universität Freiburg
- 15 CHP
Micronas GmbH



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Eco-cities



The example of Freiburg im Breisgau

Transport

Management Marketing FWTM Freiburg, 2016


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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → **Eco-cities** → Criticisms to eco-modernisation → Alternative paradigms → Transition processes → Conclusions

Eco-cities

The example of Freiburg im Breisgau

Public involvement



Management Marketing FWTM Freiburg, 2016


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Eco-cities

The example of Freiburg im Breisgau

International reputation/ eco-tourism




Fraunhofer Institute for Solar Energy Systems

Eco-tourism in Freiburg (Management Marketing FWTM Freiburg, 2016)



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Eco-cities

The example of Freiburg im Breisgau

Eco-district of Vauban – energy






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Cities and sustainability? The diffused and globalised city Responses to the crisis **Eco-cities** Criticisms to eco-modernisation Alternative paradigms Transition processes Conclusions

Eco-cities

The example of Freiburg im Breisgau Eco-district of Vauban – transport



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Eco-cities

The example of Freiburg im Breisgau Eco-district of Vauban – transport

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The example of Linz





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The example of Linz

The SolarCity – energy






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The example of Linz

The SolarCity – water





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The example of Linz

The SolarCity – transport




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The example of Linz

The SolarCity – landscape and urban planning









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Cities and sustainability?
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Eco-cities

Exercise 1 (SE 1)


Please gather in groups and prepare yourself for an exciting quiz on strategies for the sustainability of cities.


We will have three group, 1 hour and lots of points to deliver. And the most important thing: one winner. Who will be the winner? You decide!



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2. Transitioning towards a more sustainable urban paradigm

TOWARDS A NEW URBAN PARADIGM? - Conceiving the city of the future Lecture 2: transitioning towards a more sustainable urban paradigm



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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → Eco-cities → **Criticisms to eco-modernisation** → Alternative paradigms → Transition processes → Conclusions

Criticisms to eco-modernisation

In-class discussion 1

Now, it is time to discuss! Please gather in groups and discuss on your conclusions. Afterwards, discuss your ideas with the rest of your classmates.

1. Do you think that the eco-city approach suffices for the attainment of a more sustainable urban paradigm? Think on the strengths and weaknesses of the eco-city concept.

Time: 30 minutes




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Criticisms to eco-modernisation

Eco-cities – really ecological?

- Number of not fulfilled ecological demands
- Technological focus, social issues generally disregarded
- No change on residents' behaviour
- Ideal city model → problematic
- Eco-modernisation has reached its limits
 - Positive outcomes, but questionable when compared to the effects of economic growth



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Criticisms to eco-modernisation

Need for radical change?

Current approaches:

- Inability to respond to the underlying problems
- Exclusion of alternative visions
 - Is a drastic and systemic transformation necessary?



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Alternative paradigms

Regenerative sustainability paradigm

A new understanding of sustainability

- Development approach based on how nature works
- World as an ever-changing set of processes
- Humans and nature are partners in the processes of co-creation



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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → Eco-cities → Criticisms to eco-modernisation → **Alternative paradigms** → Transition processes → Conclusions

Alternative paradigms

Regenerative sustainability paradigm

Main ideas

- Humans are part of nature
- There is no set of ideal 'sustainability' conditions that should be maintained
- It is sought to create cities and building that function as ecosystems
- It is sought to generate positive impacts on the remaining environment
- Place is at the core of human life
- All stakeholders, including citizens are involved in the design of place



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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → Eco-cities → Criticisms to eco-modernisation → **Alternative paradigms** → Transition processes → Conclusions

Alternative paradigms

Regenerative sustainability paradigm

The compact city model and the reconciliation between the city and nature – incompatible?



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Alternative paradigms

Regenerative sustainability paradigm

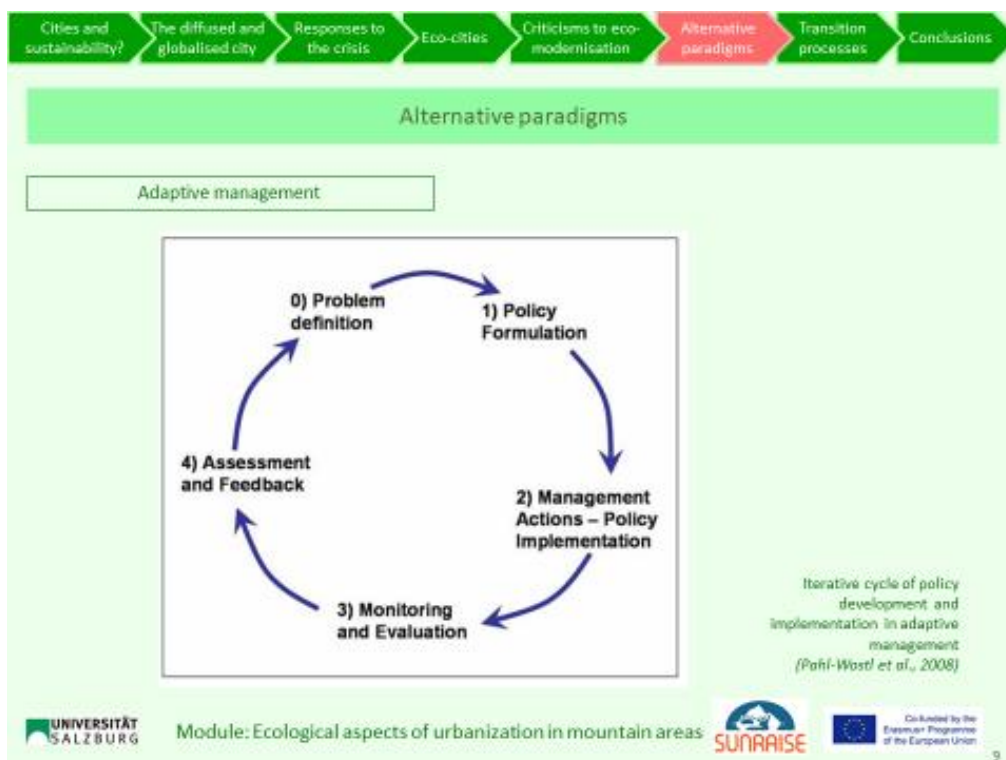
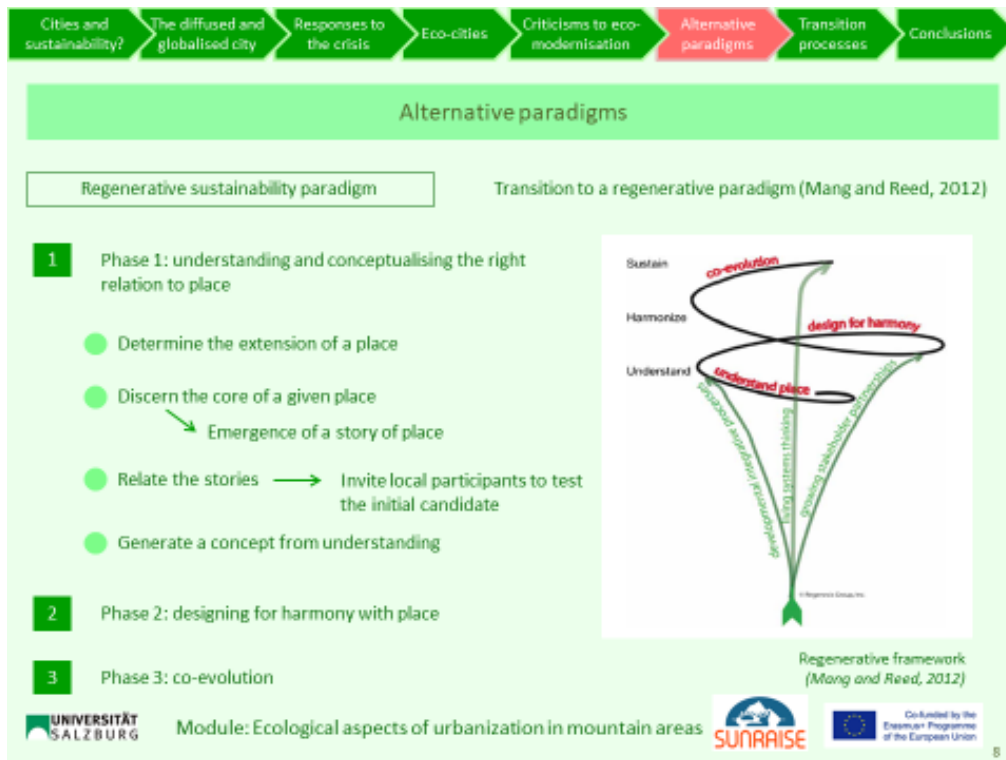
Transition to a regenerative paradigm (Mang and Reed, 2012)



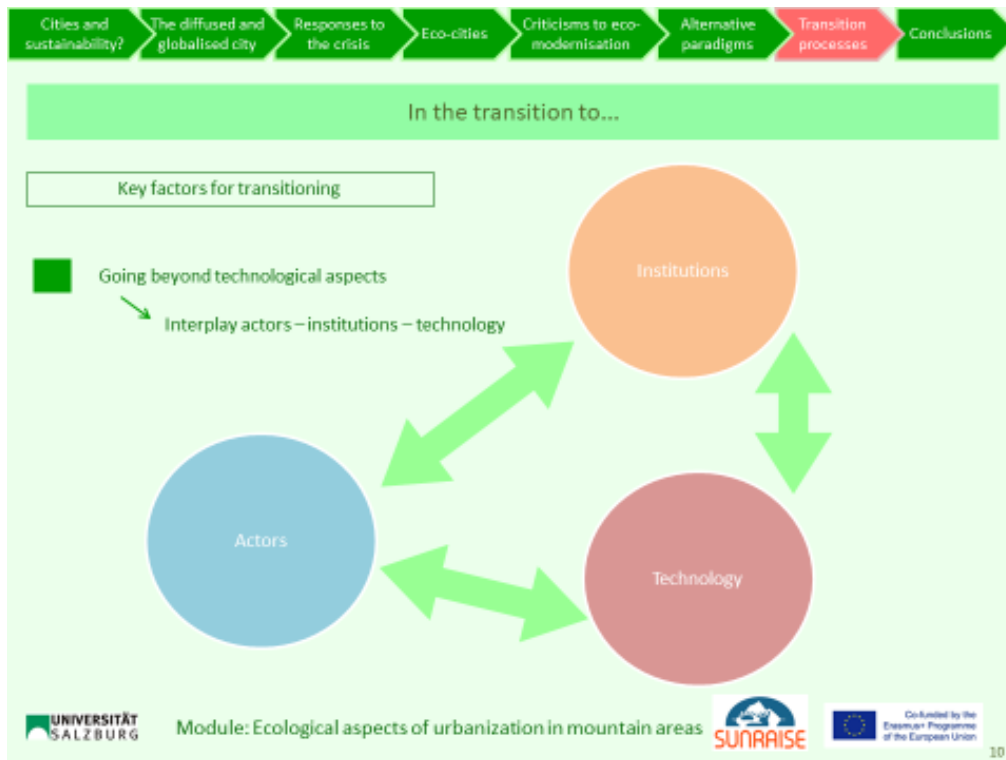
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In the transition to...

Key factors for transitioning

- Knowledge
http://www.ted.com/talks/tim_jackson_s_economic_reality_check (Minute 8:22 to 9:51)
- Vested interests




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Cities and sustainability? → The diffused and globalised city → Responses to the crisis → Eco-cities → Criticisms to eco-modernisation → Alternative paradigms → **Transition processes** → Conclusions

In the transition to...

Key factors for transitioning

- Changes are not to be enforced
- Involving a broad range of actors




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In the transition to...

Key factors for transitioning

■ Frontrunners/ leadership ■ Selection of actors?




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In the transition to...

Key factors for transitioning

■ Place ■ Protected spaces




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In the transition to...

Action for transitioning Institutional work

"The purposive action of individuals and organisations aimed at creating, maintaining and disrupting institutions"
(Lawrence and Suddaby, 2006)

Three categories:

- ☒ Creating work
- ☒ Maintaining work
- ☒ Disrupting work



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In the transition to...

Action for transitioning Transitioning steps (Rogers et al., 2015)

For radical change:

- 1** First step: generating understanding, collating evidence, etc.
- 2** Second step: carrying on with the latter, and constructing values, generating policy shifts, etc.



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Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms **Transition processes** Conclusions

In the transition to...

A panacea?

Transition processes have to be adapted in every context!



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Cities and sustainability? The diffused and globalised city Responses to the crisis Eco-cities Criticisms to eco-modernisation Alternative paradigms **Transition processes** Conclusions

In the transition to...

A utopia? It is not the first time...



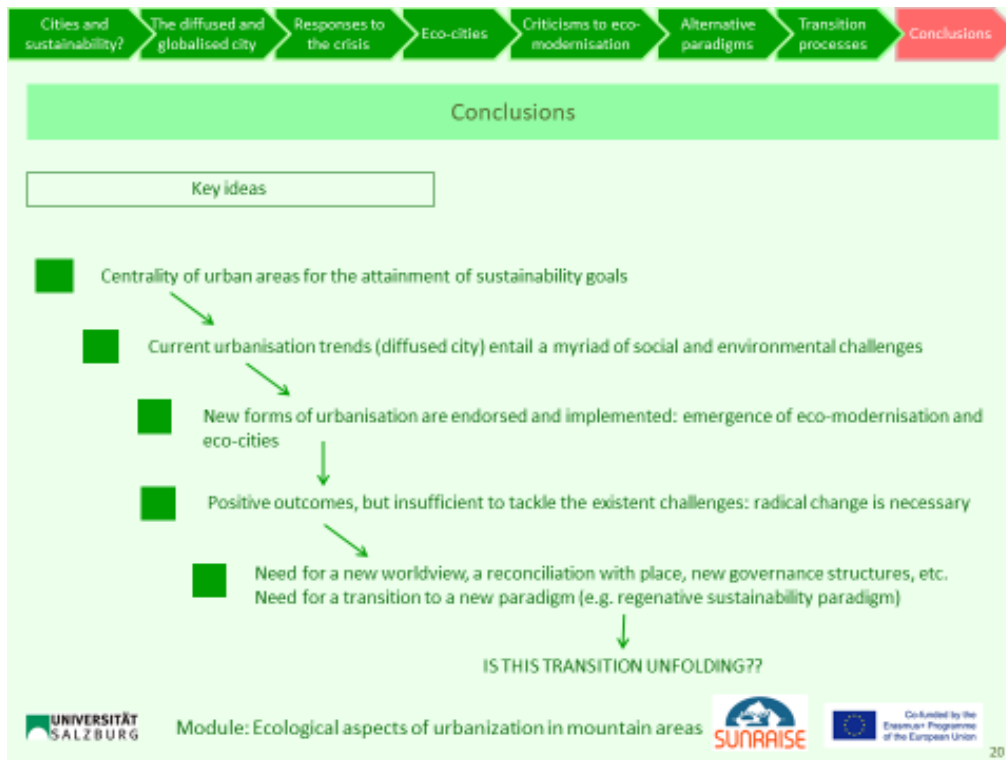
Renaissance



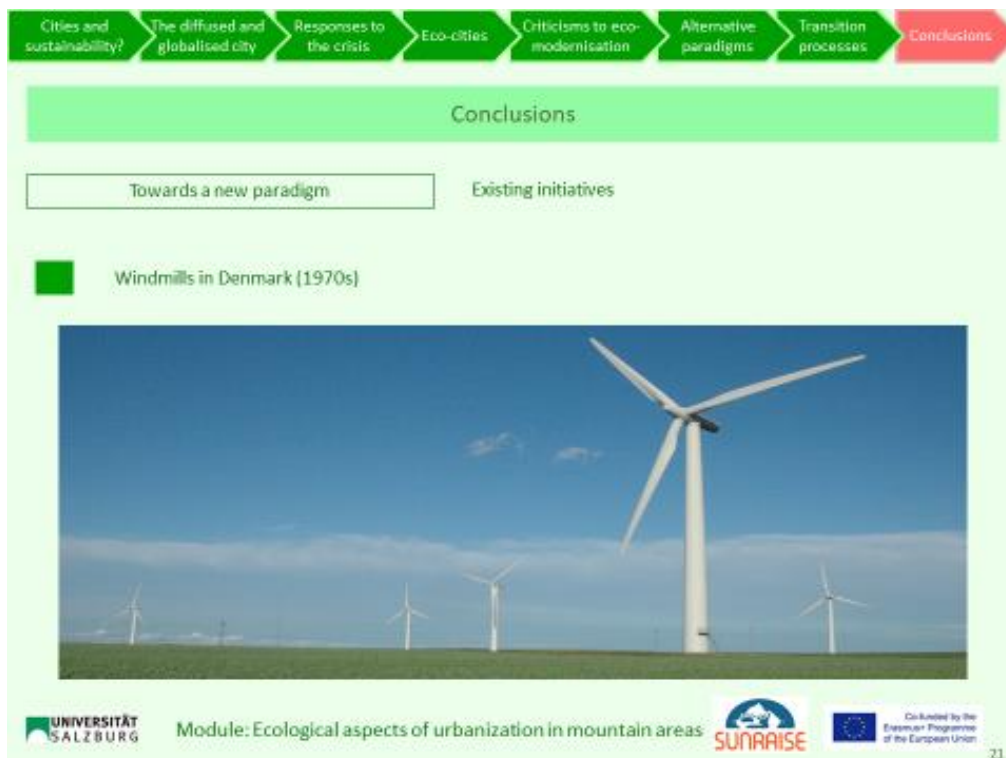
French revolution

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Cities and sustainability?
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Conclusions

Towards a new paradigm

Existing initiatives

Solar energy in Austria (1970s)





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Cities and sustainability?
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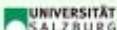
Conclusions

Towards a new paradigm



Existing initiatives

The transition towns movement <https://www.youtube.com/user/TransitionTowns>





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Conclusions


Exercise/ preparation at home 2

Please gather in groups and discuss on the following question. Develop your arguments on the basis of the knowledge gained through the video on the transition towns network that you have previously watched.



1. You are very environmentally engaged and want to start with a grassroots initiative for the transformation of the urban area where you live. Think of how you would start a grassroots initiative, for a more sustainable urban development. Not least, think of: 1) the topic which you would like to develop (energy, etc.); 2) how you would start with the grassroots process (gathering of people); 3) how you would arrange the decision process; 4) how you would keep people engaged, etc.

Time: 1 hour and 30 minutes



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Conclusions

Oral presentation 1

It is time to present your results! Please present your results to the class on the following question. Afterwards, discuss on the distinct ideas suggested.

1. You are very environmentally engaged and want to start with a grassroots initiative for the transformation of the urban area where you live. Think of how you would start a grassroots initiative, for a more sustainable urban development. Not least, think of: 1) the topic which you would like to develop (energy, etc.); 2) how you would start with the grassroots process (gathering of people); 3) how you would arrange the decision process; 4) how you would keep people engaged, etc.






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