



**INTELLIGENT INFRASTRUCTURE
FOR EUROPE'S REGIONS**

Blockchain interactive power systems for
cooperative community development



LISD LIECHTENSTEIN INSTITUTE FOR
STRATEGIC DEVELOPMENT

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MISSION

LISD LIECHTENSTEIN INSTITUTE FOR
STRATEGIC DEVELOPMENT

We pursue **Rapid Regenerative Infrastructure Deployment (RRID)** by integrating science, engineering, economics and finance with city, regional and infrastructure design, community planning and development.

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FOR WHOM **LISD** LIECHTENSTEIN INSTITUTE FOR STRATEGIC DEVELOPMENT

We work for **cities, towns, regional organisations, international aid bodies and private companies** focused on the business of sustainable urban and regional development.

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ACTIVITIES **LISD** LIECHTENSTEIN INSTITUTE FOR STRATEGIC DEVELOPMENT

CONSULTING
Delivers sustainable design & development based on renewable energy sources, & regenerative infrastructure strategies for cities, agglomerations and regions.

RESEARCH
Is a competent & experienced research partner for EU & global research alliances.

ACADEMY
Programs promoting & organising events, master classes & training.

FINANCE
A community & action oriented financial advisory & engagement arm.

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WHAT WE OFFER **LISD** LIECHTENSTEIN INSTITUTE FOR STRATEGIC DEVELOPMENT

We focus on the global delivery of:

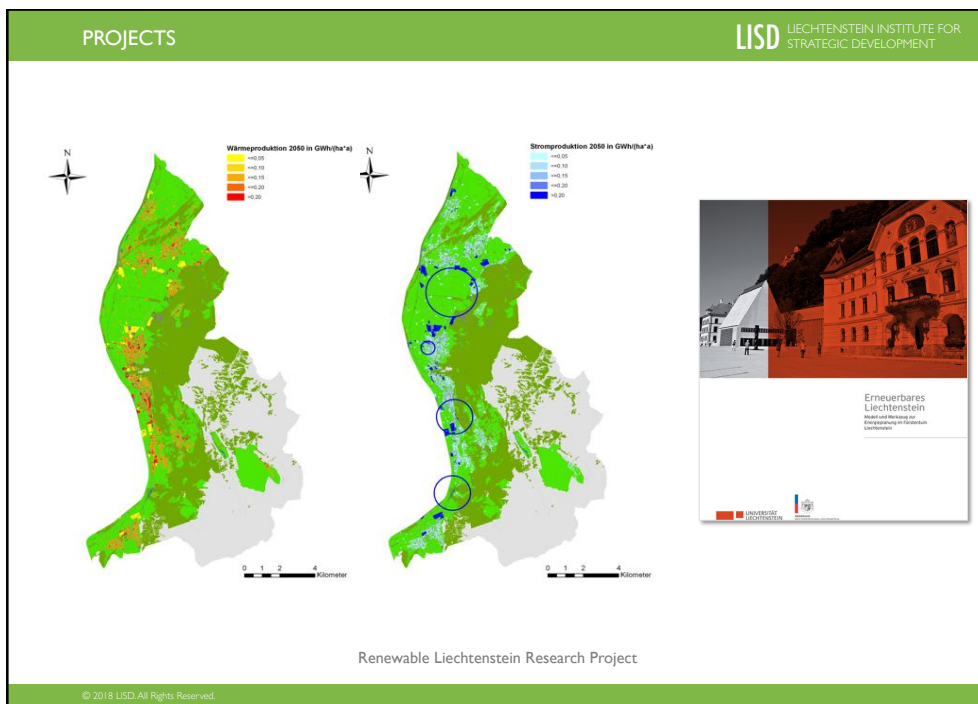
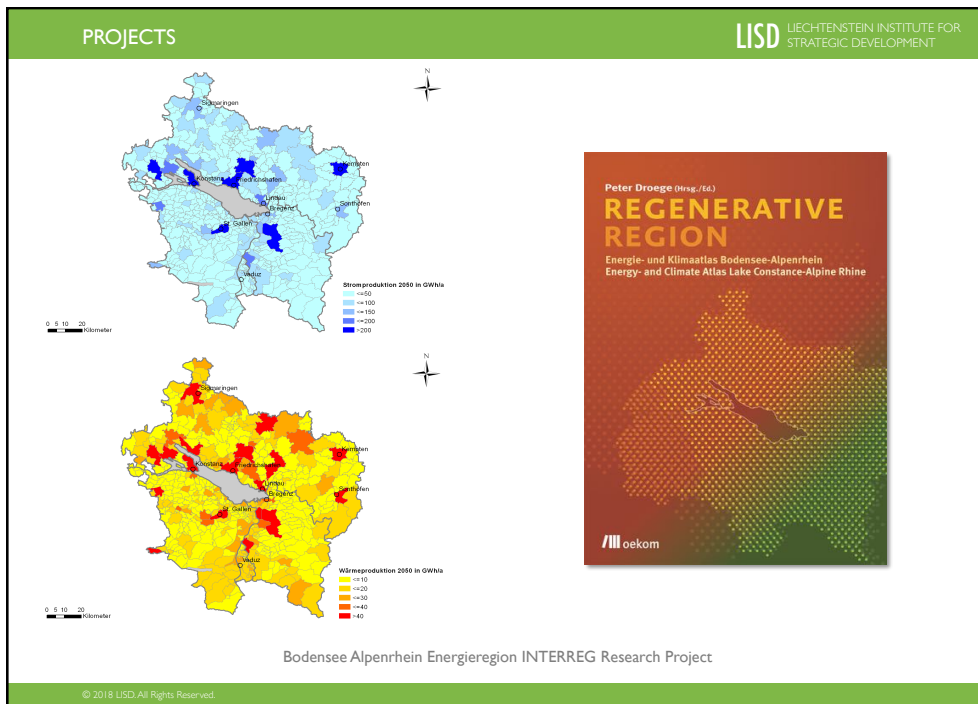
- RENEWABLE ENERGY PLANNING
- ZERO-CARBON URBAN DESIGN
- WATER SENSITIVE URBAN DESIGN#
- SUSTAINABLE INVESTMENT FACILITATION

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OUR NETWORK TEAM **LISD** LIECHTENSTEIN INSTITUTE FOR STRATEGIC DEVELOPMENT

 <p>Prof. Peter Droege Director, LISD pdroege@eurisd.org</p>	 <p>Prof. Tony Wong Director, Cooperative Research Centre for Water Sensitive Cities</p>	 <p>Allan Jones MBE Director, Allan Jones Energy and Climate Change</p>	 <p>Uli Hellweg Managing Partner, Hellweg Urban Concept</p>
	 <p>Prof. Bernd Hirschl Research manager, IÖW Institute for Ecological Economy Research</p>	 <p>Prof. Carmen de Jong Faculty of Geography & Management, University of Strasbourg</p>	 <p>Eduard Balcells Director, Eduard Balcells Architecture+Urbanism+Landscap e</p>

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PROJECTS

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IBA Hamburg Energy Atlas

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The slide features a green header with the text 'PROJECTS' on the left and 'LISD LIECHTENSTEIN INSTITUTE FOR STRATEGIC DEVELOPMENT' on the right. The main content area contains two images: on the left, an aerial photograph of a cityscape with a prominent stadium and several wind turbines; on the right, the cover of a report titled 'ENERGY ATLAS Future Concept Renewable Wilhelmsburg'. The cover has a blue background with a network diagram and the IBA Hamburg logo at the bottom left. Below the images is the caption 'IBA Hamburg Energy Atlas' and a small copyright notice '© 2018 LISD-All Rights Reserved.' at the bottom left of the slide.

PROJECTS

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Jänschwalde Power Station Masterplan, Studio Lusatia 2016

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The slide features a green header with the text 'PROJECTS' on the left and 'LISD LIECHTENSTEIN INSTITUTE FOR STRATEGIC DEVELOPMENT' on the right. The main content area contains a wide image split into two parts: the left part shows a river with a wooden walkway and people, and the right part shows a modern building complex with a train. Below the image is the caption 'Jänschwalde Power Station Masterplan, Studio Lusatia 2016' and a small copyright notice '© 2018 LISD-All Rights Reserved.' at the bottom left of the slide.

PUBLICATIONS

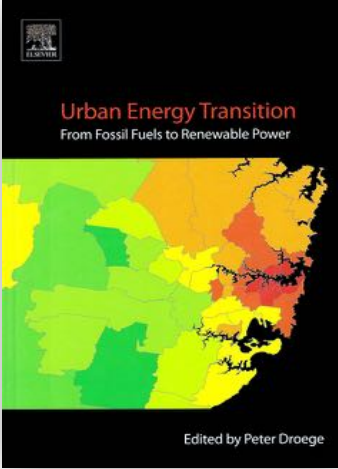
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Books by Prof. Peter Droege, Director LISD

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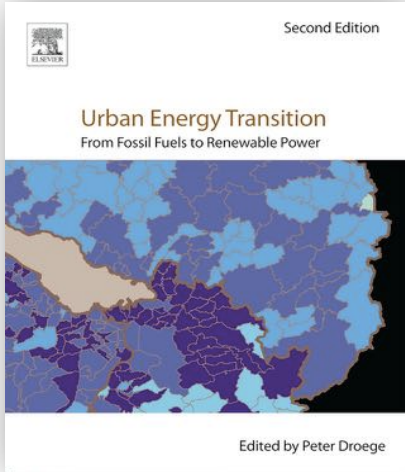
Urban Energy Transition
From Fossil Fuels to Renewable Power

Edited by Peter Droege

2008 Urban Energy Transition 1st Edition:
From Fossil Fuel to Renewable Power

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Second Edition

Urban Energy Transition
From Fossil Fuels to Renewable Power

Edited by Peter Droege

2018 Urban Energy Transition 2nd Edition:
Renewable Systems for Cities and Regions

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LISD IEI Blockchain Germany
with Power Ledger (Australia), EURAC Italy,
other candidates:: Austria, Slovakia, Sweden, Turkey



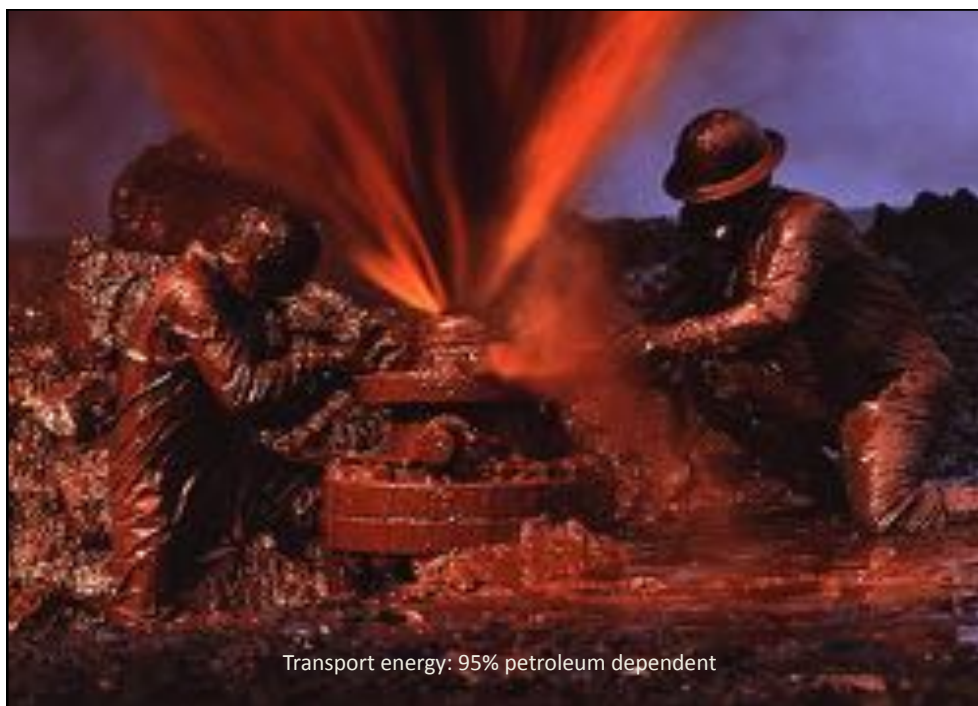
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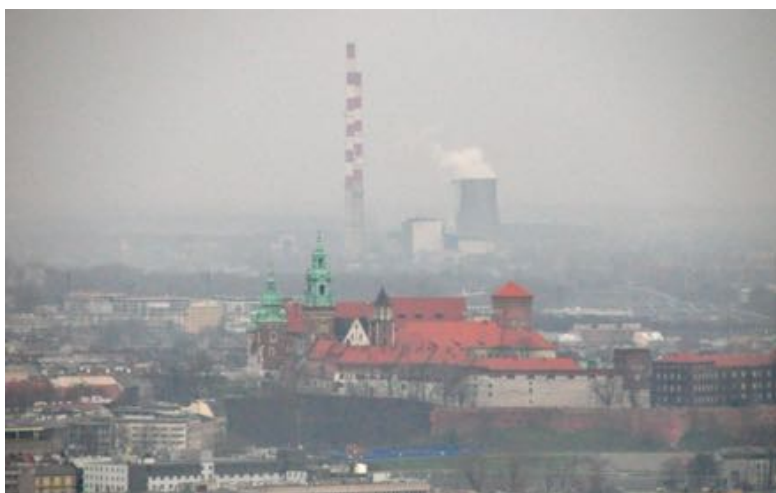
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CONTEXT



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Fossil fuel air pollution:
annual health costs in Europe: 100 billion Euro



Dependence on non-renewable resources:
massive and mounting military risks and costs

Burning oil fields of Abadan in 1980-88 Iran-Iraq war

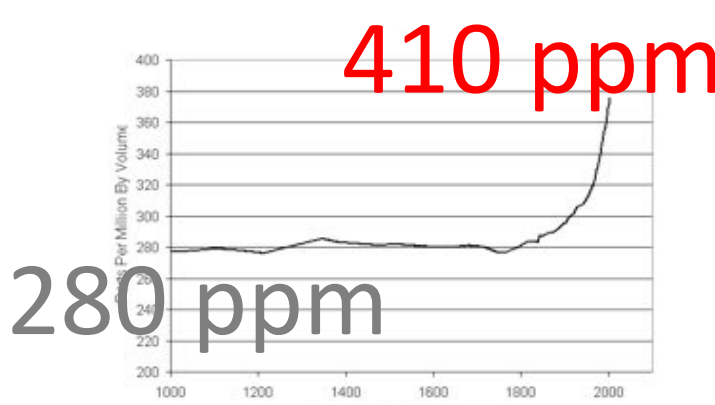
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Annual fossil fuel consumption increased by 500% since 1950

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410 ppm

280 ppm

Carbon dioxide concentrations in the atmosphere, 1000-2018 A.D.
Quelle: Scripps, ORNL und IPCC.

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280 ppm
target

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2020
action horizon

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>150%
emissions reduction:
renewables+C-seq

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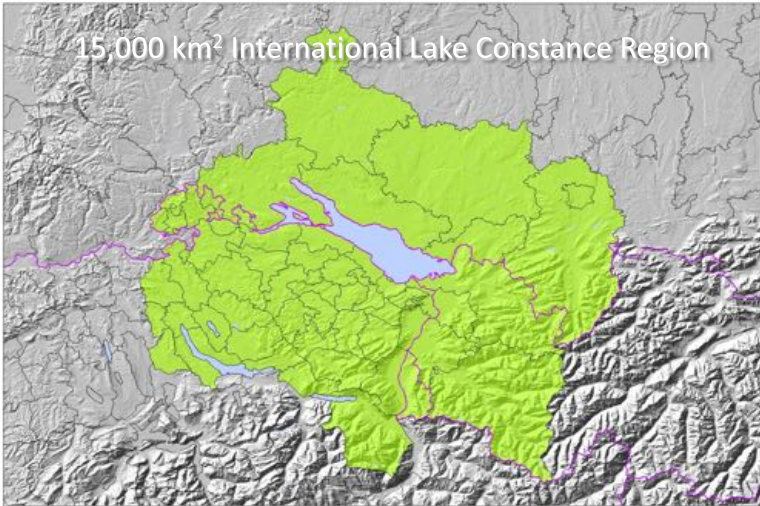
100%
renewable

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15,000 km² International Lake Constance Region



baernet.org
University of Liechtenstein

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Detailed description: This slide features a topographic map of the Lake Constance region. The map shows the lake and surrounding mountainous terrain in shades of grey. A large area, primarily to the west and south of the lake, is highlighted in a bright green color. The text '15,000 km² International Lake Constance Region' is overlaid on the top left of the map. Below the map, the website 'baernet.org' and 'University of Liechtenstein' are listed. The slide is framed by a green header and footer containing the LISD logo and copyright information.

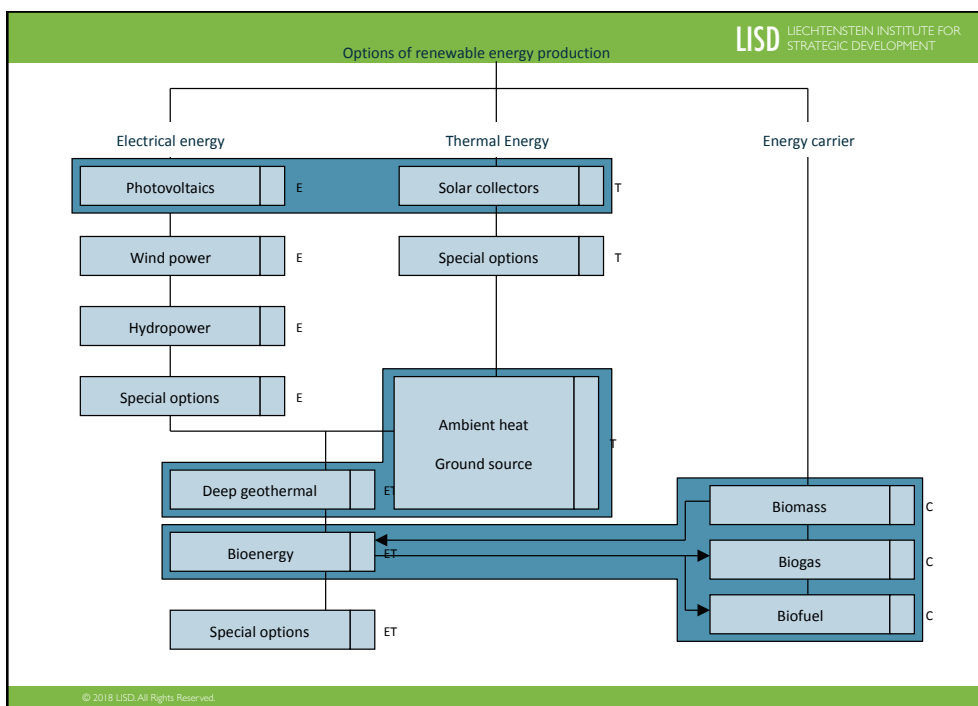
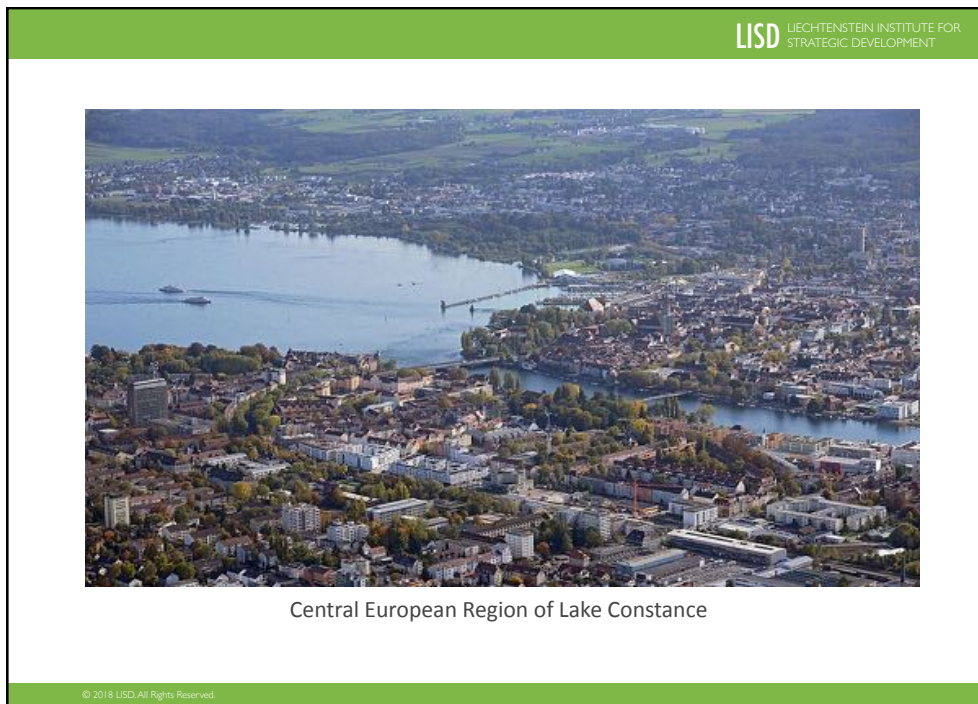
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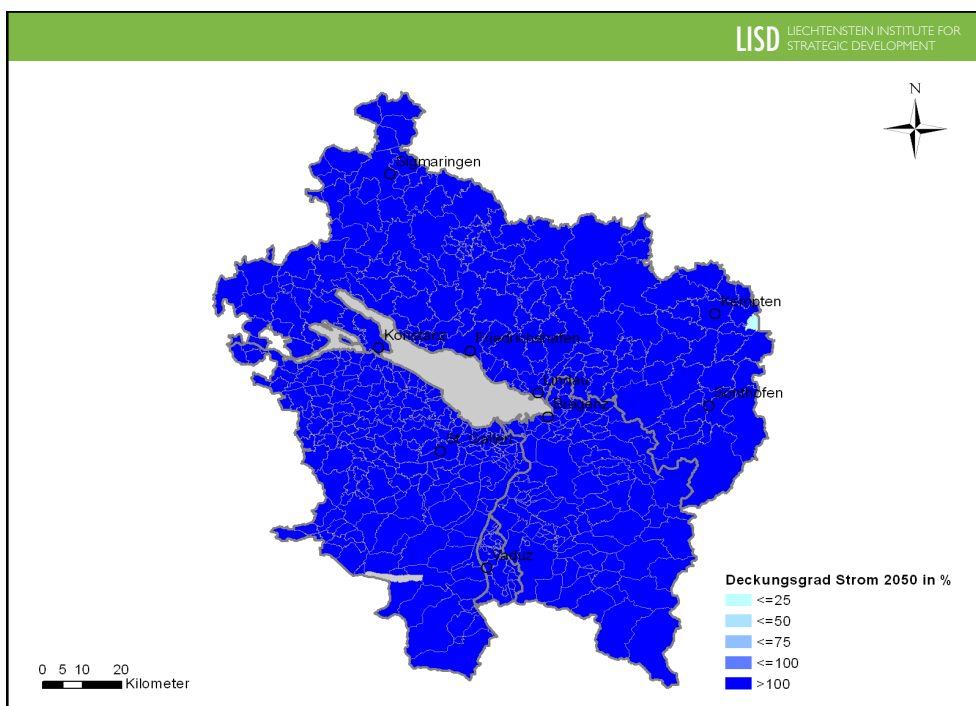
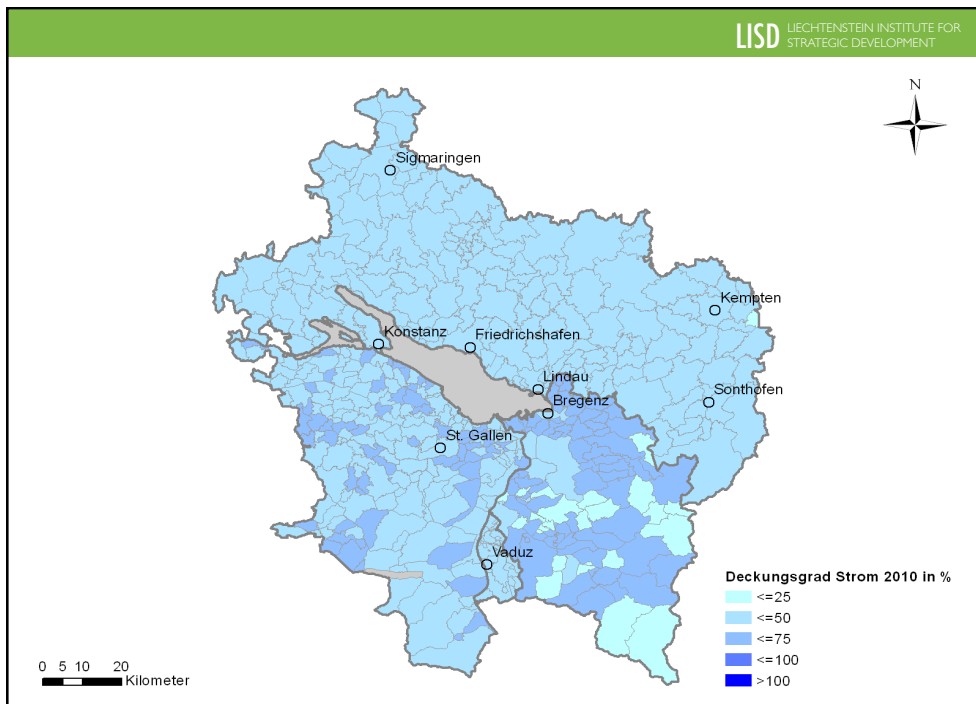
Barock-Kirche Birnau

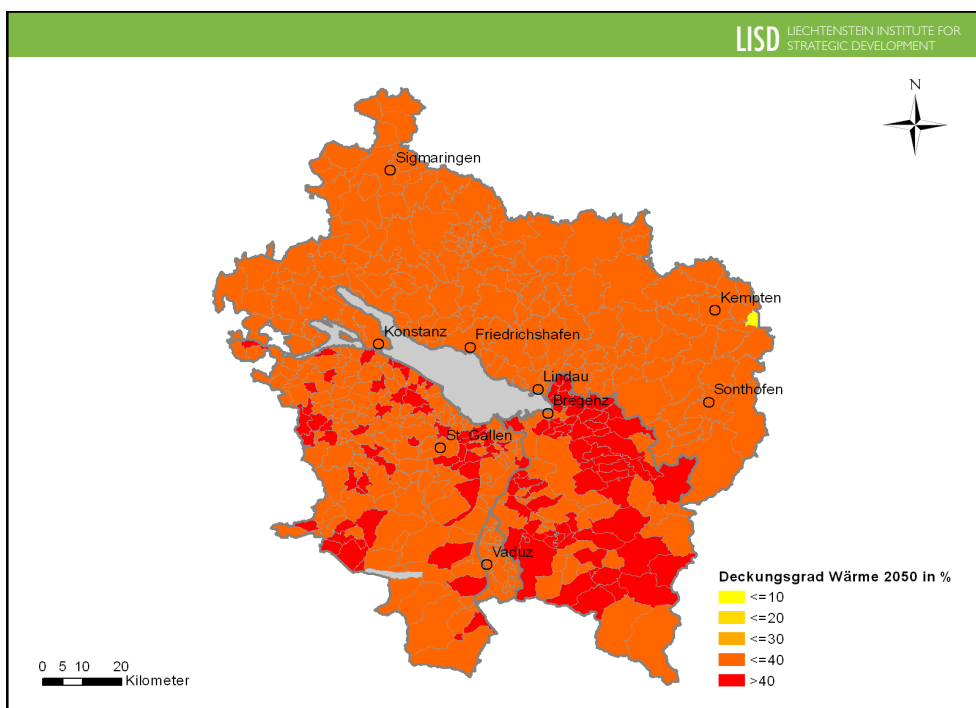
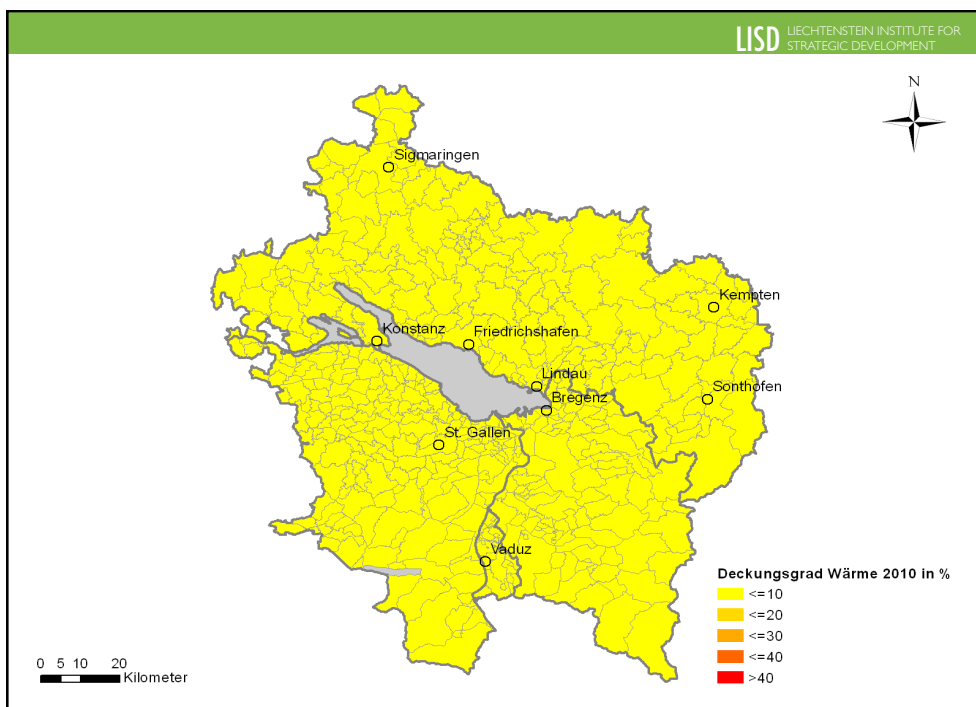


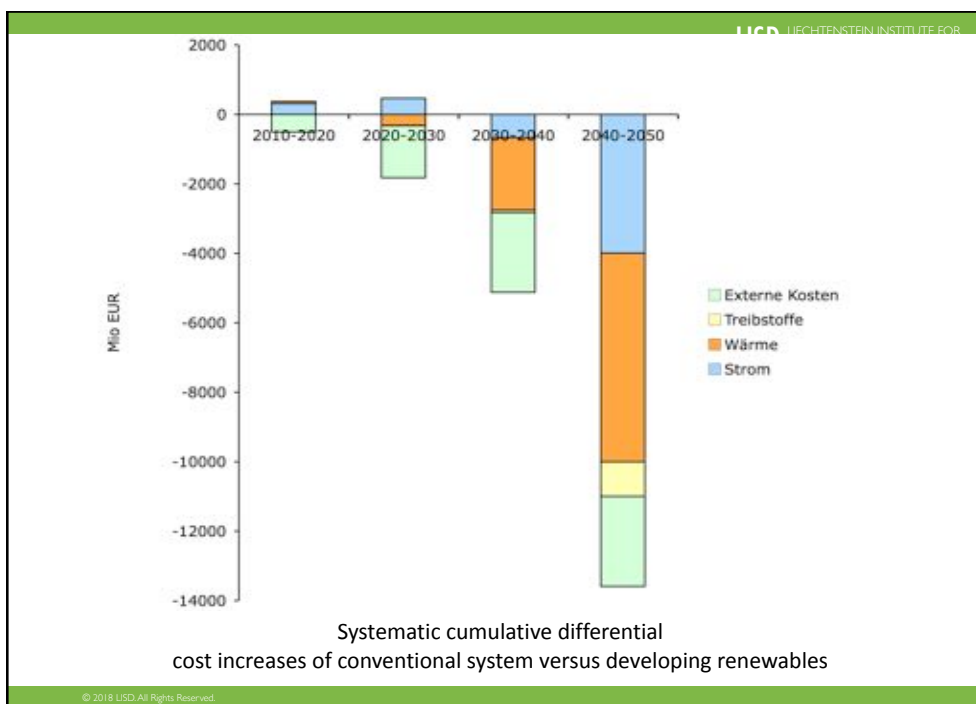
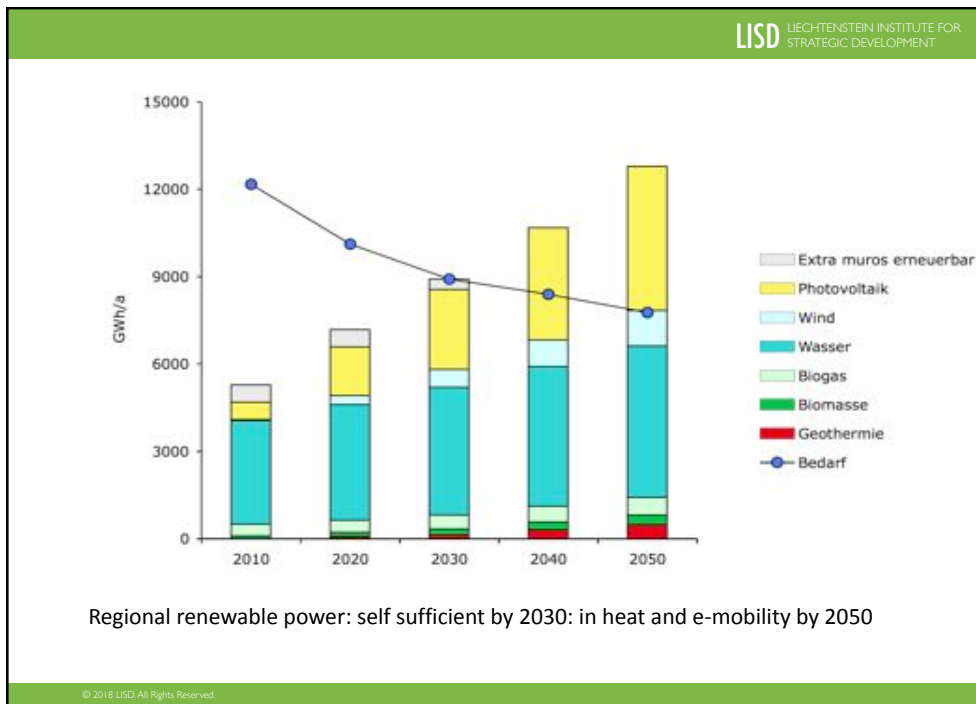
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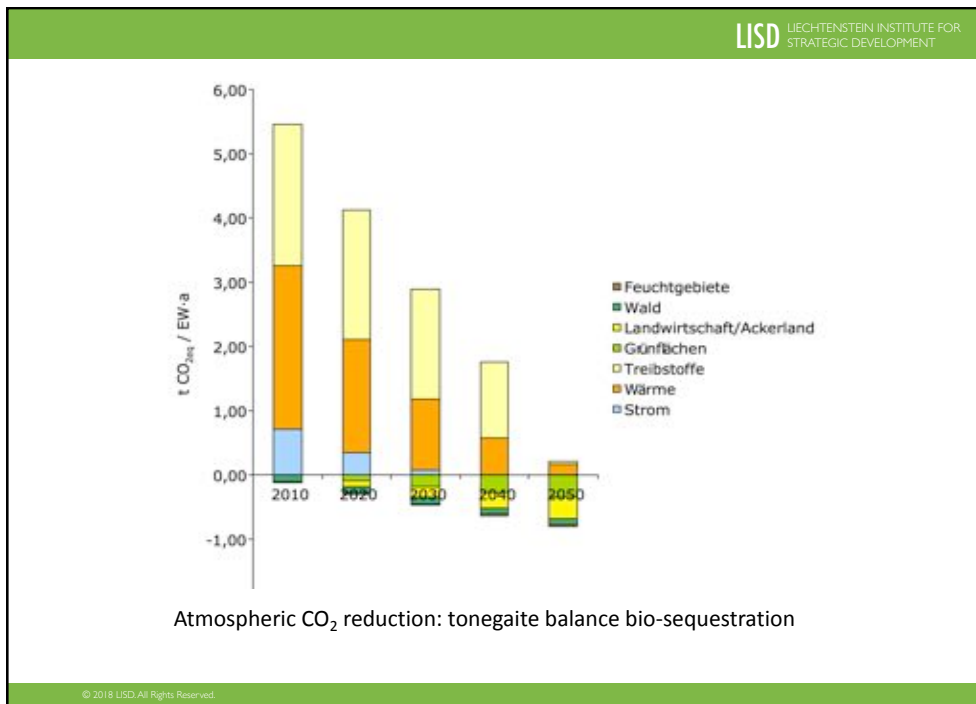
Detailed description: This slide features a photograph of the Baroque Church in Birnau, Switzerland. The church, with its prominent white steeple and red-tiled roof, is situated on a hillside overlooking the blue waters of Lake Constance. In the background, the distant mountains are visible under a clear blue sky. The text 'Barock-Kirche Birnau' is written in a white, cursive font across the top left of the image. The slide is framed by a green header and footer containing the LISD logo and copyright information.

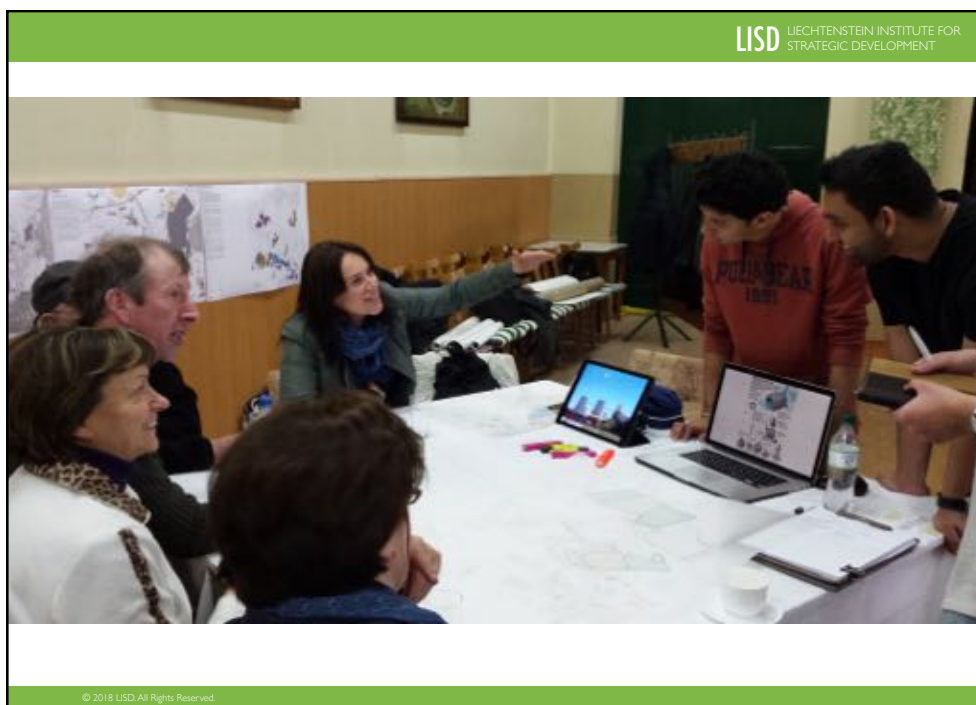












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Energy and grid transformation

Transition from a centralized to a distributed grid

Traditional grid

New grid

New developments are accelerating the transition

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Energy and grid transformation

Evolving ecosystem due to growth in distributed capabilities

- Growth in DER
- Bi-directional power and information flows
- Grid operators need to respond to a complex & distributed network
- Consumers become "prosumers", want maximum value from their assets
- Utilities need new revenue opportunities

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Energy and grid transformation

New opportunities for digital solutions and services at the edge of the grid

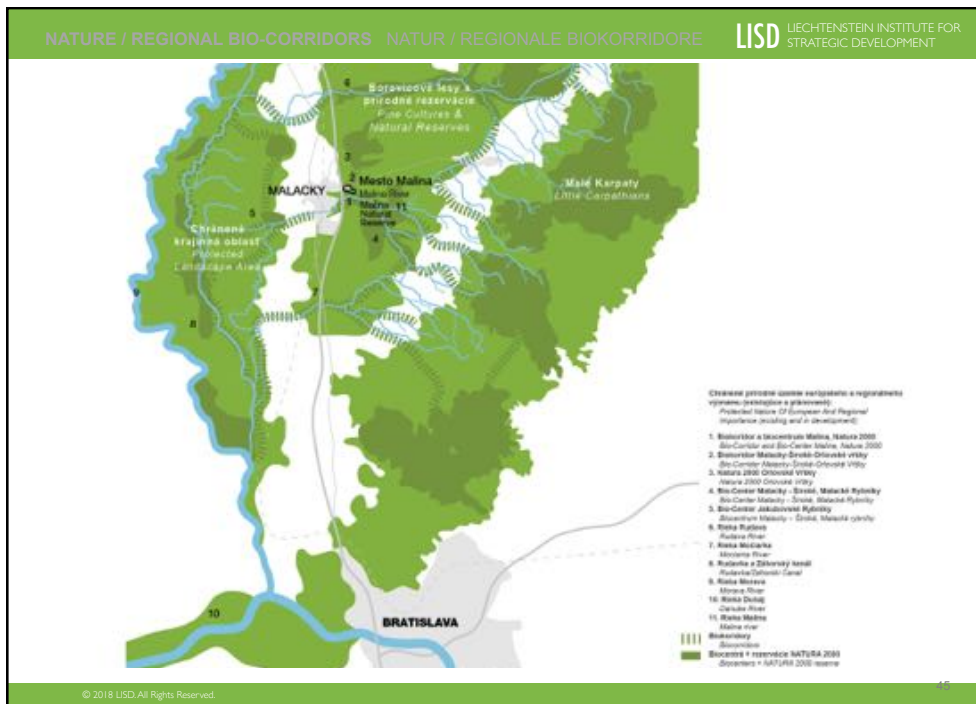
	Generation Transmission	Wholesale markets Retail	New digital solutions & services required to: <ul style="list-style-type: none"> - Optimize system performance - Ensure grid reliability - Create business opportunities for energy providers - Maximize customer value
Digital & Services	Advanced distribution network management Transactive energy		
Physical Assets	Asset Health Microgrid Energy Management Solution Aggregation	Generation Flexible Demand Energy Storage	
Consumers / prosumers	Residential Commercial Industrial Community		

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Smart Energy for districts and neighbourhoods: Mesto Malina

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Spišská Nová Ves Example of historic Slovak town center merging urban and green character

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PROJECTS

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Mesto Malina Eco Masterplan, Malacky, Slovakia

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PROJEKT BRATISLAVA – FOSSILENERGIEFREI

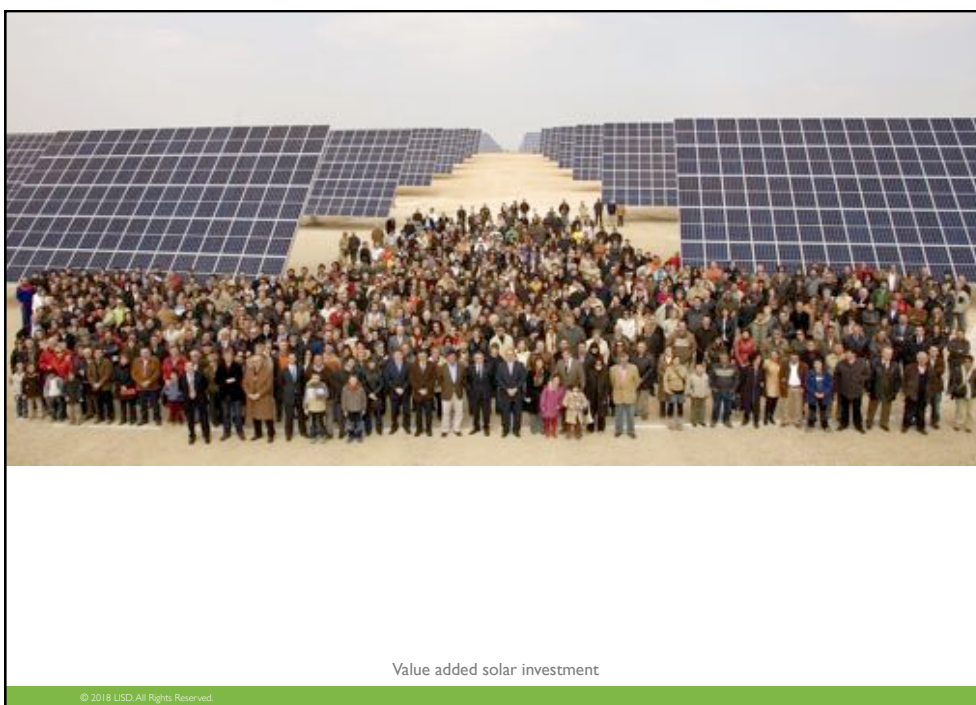
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What's wrong with this picture? Nuclear Power Plant at Bohunice, Slovakia

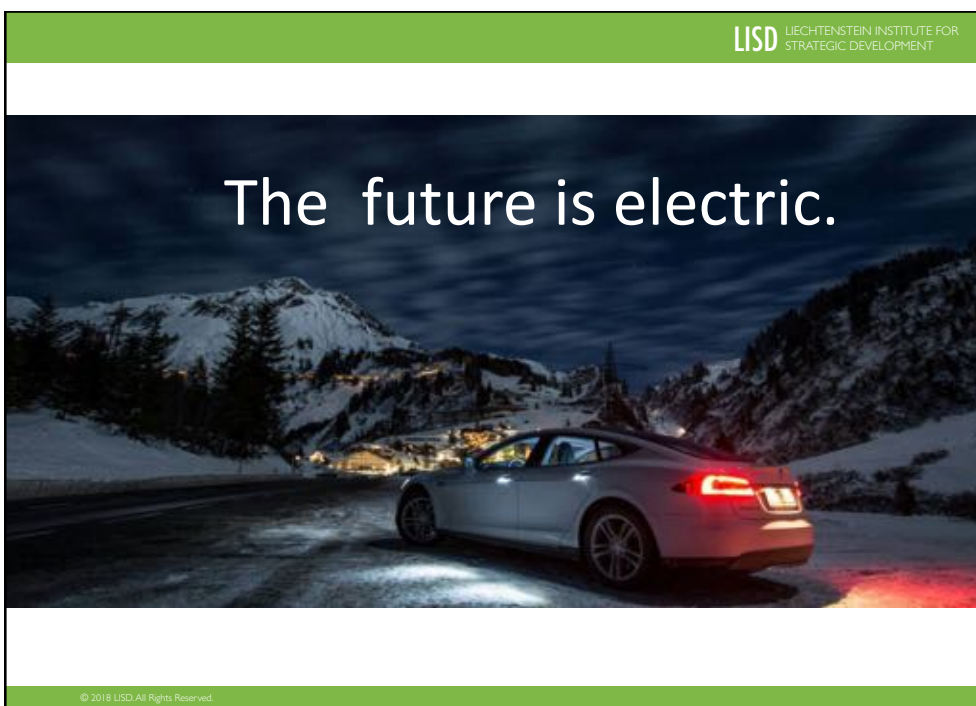
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50



Value added solar investment

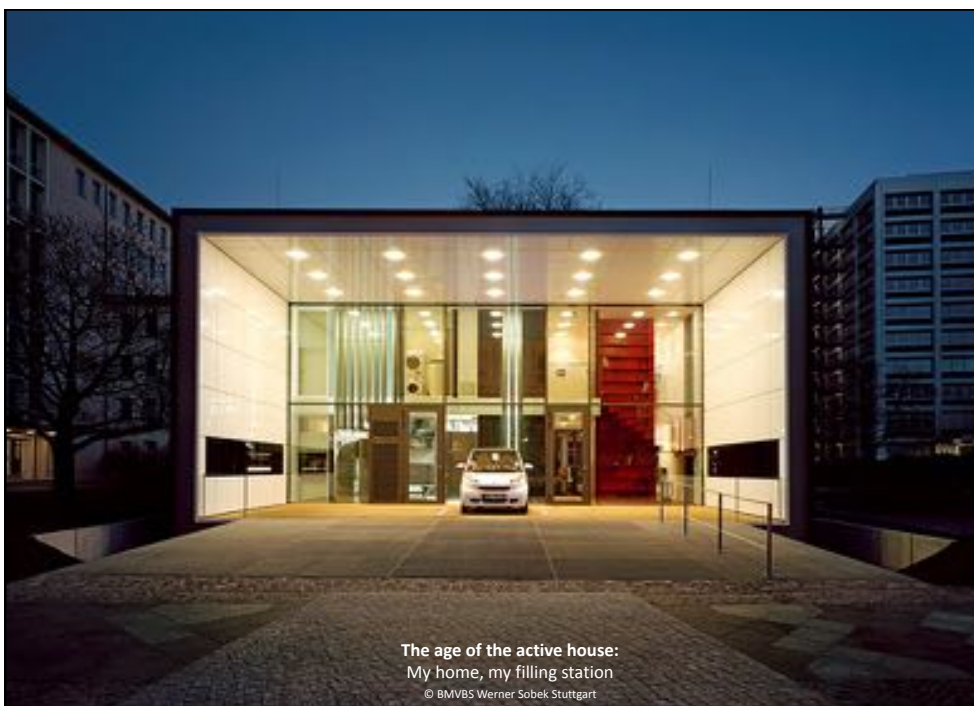
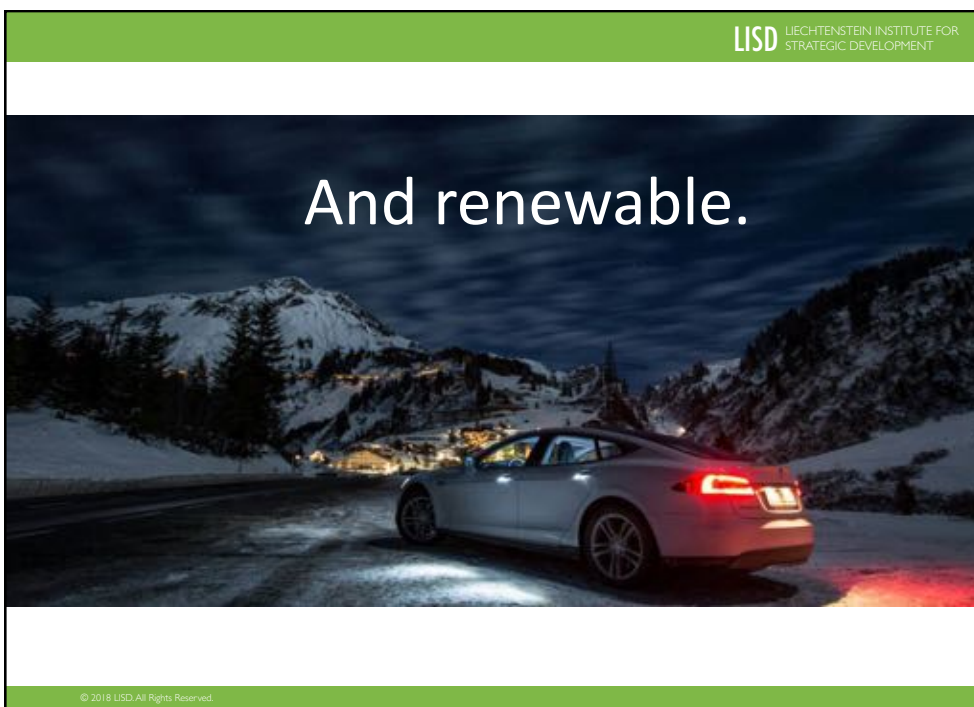
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The future is electric.

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It is easy to achieve surplus energy in houses
© Green Residence S.A.

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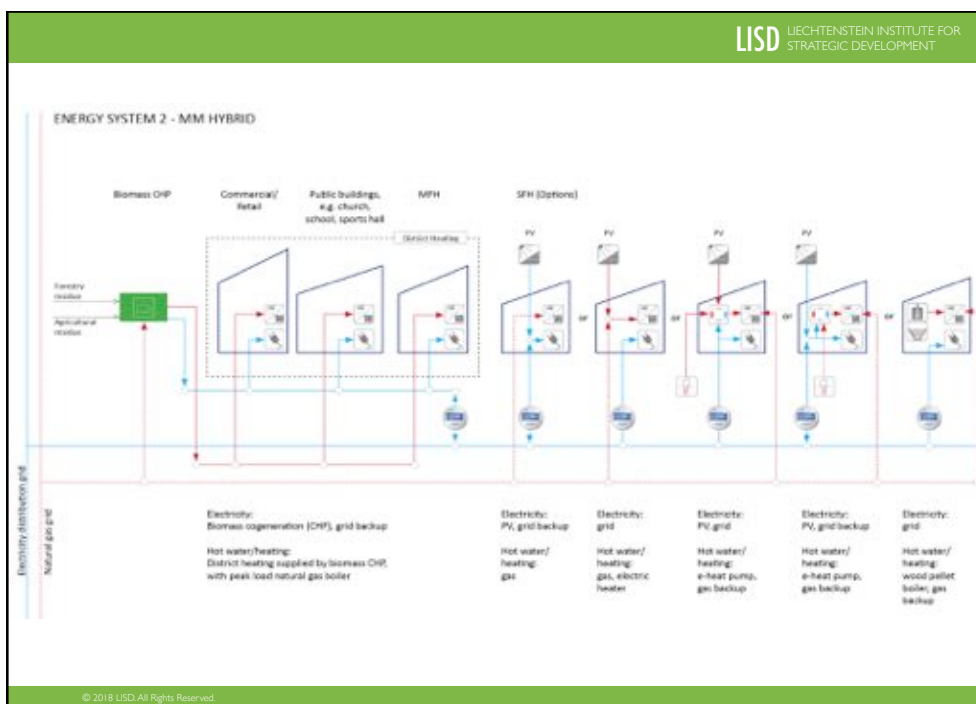
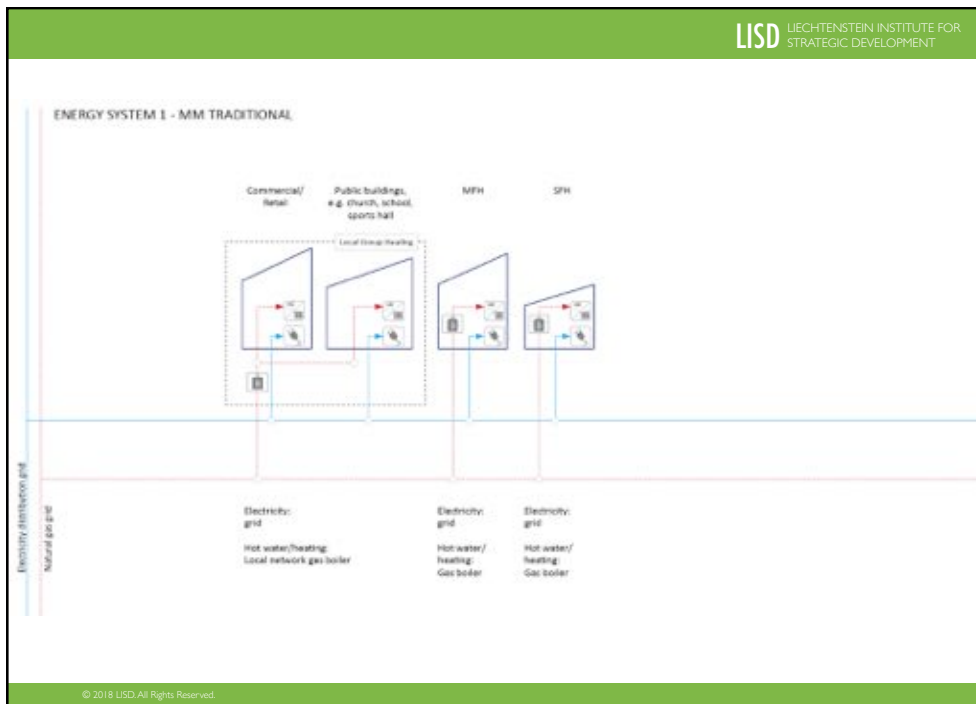
Weberhaus + Mitsubishi
package home and car

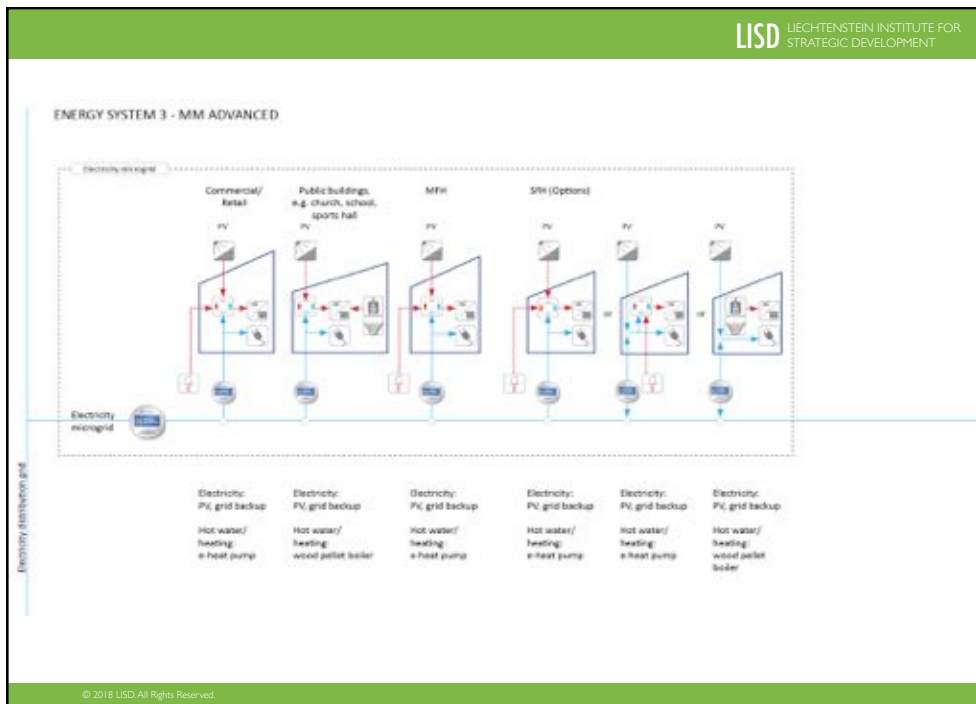
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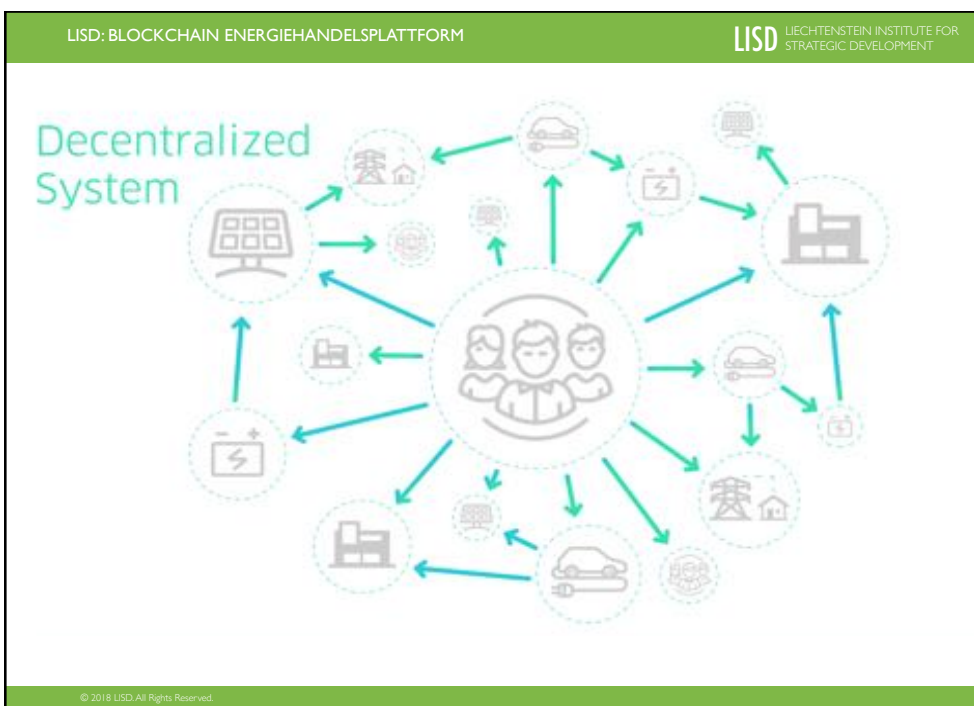
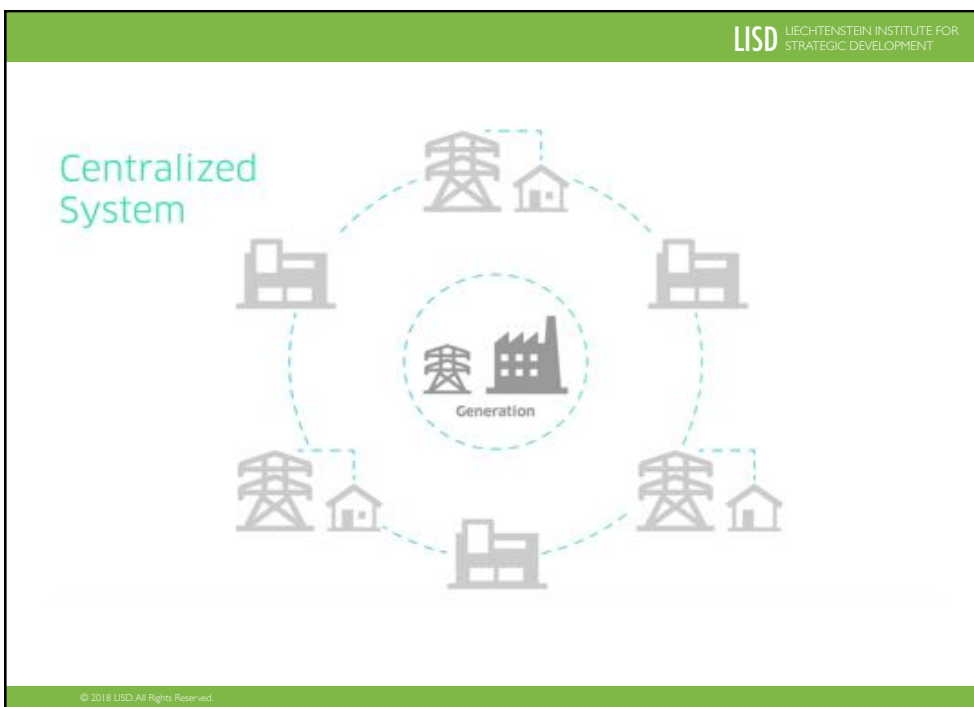


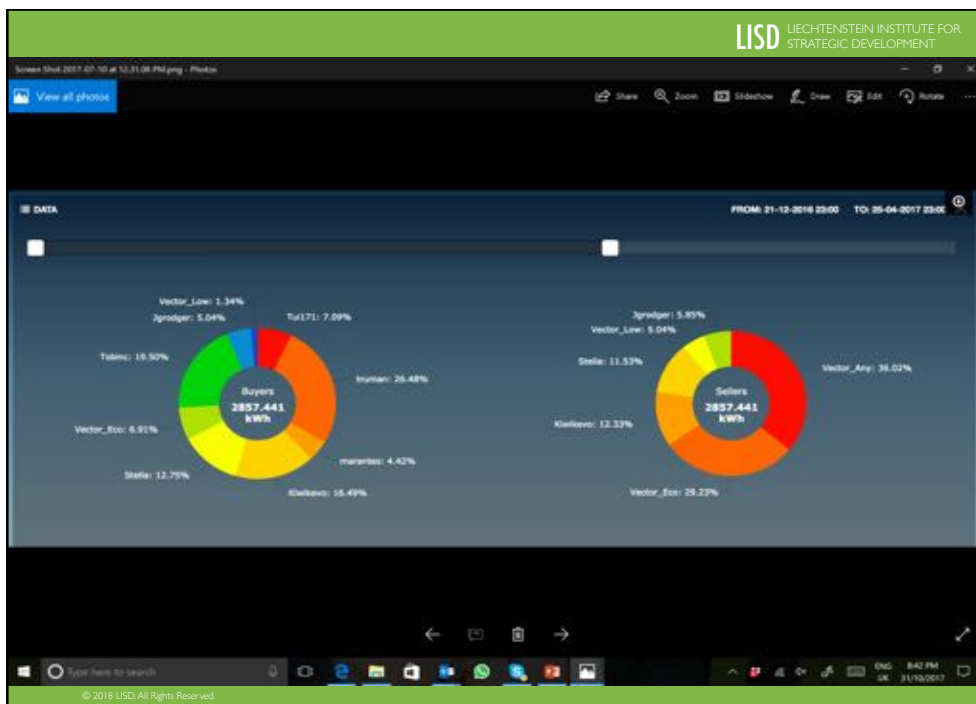
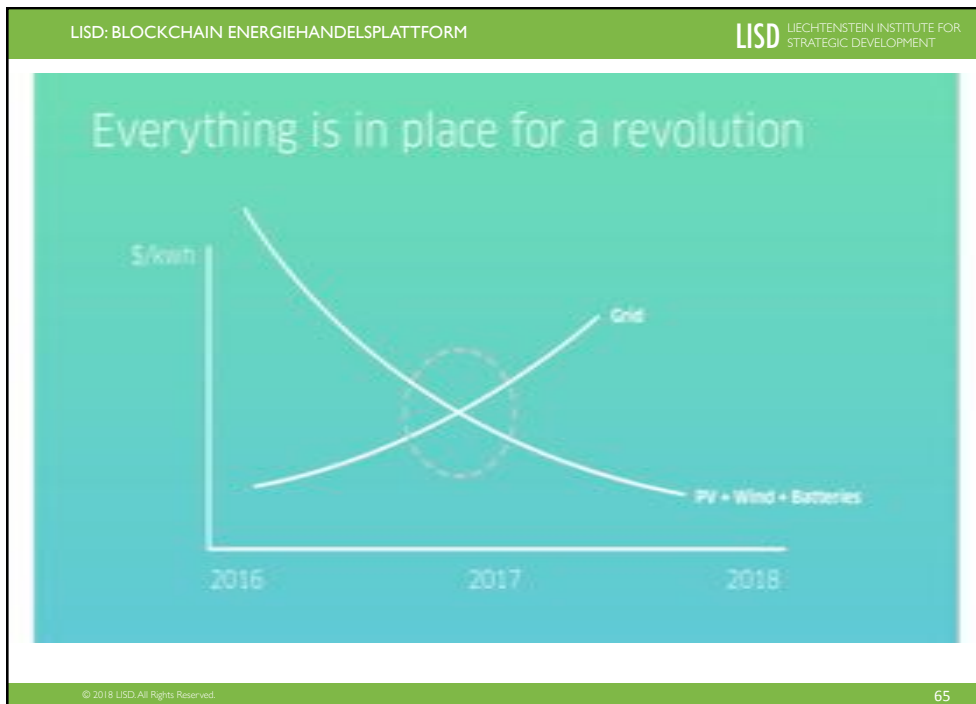
Energy options for Mesto Malina

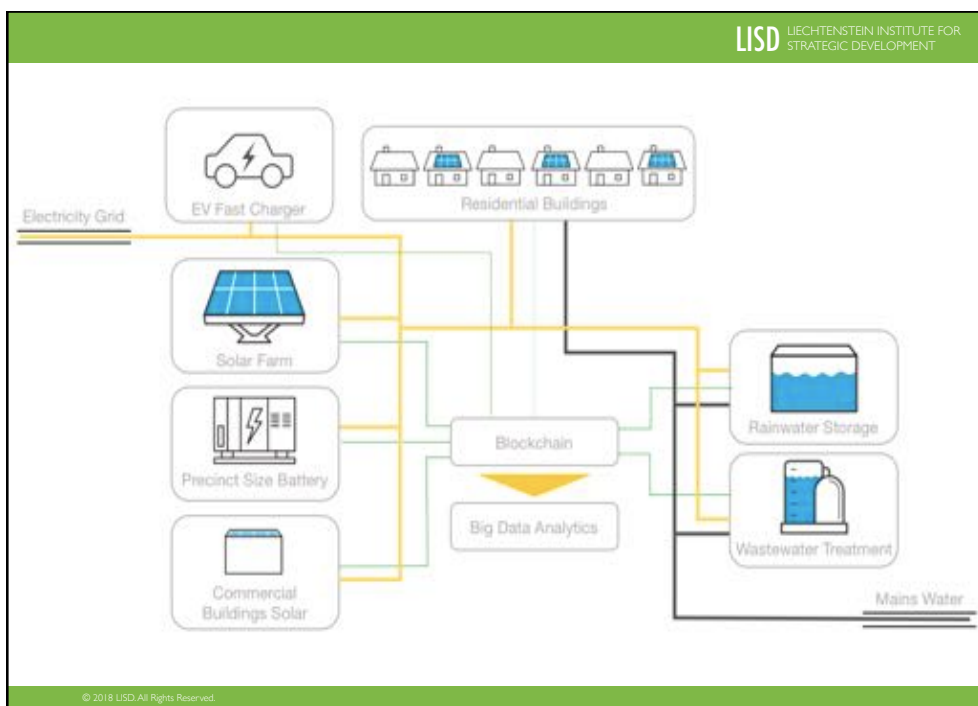
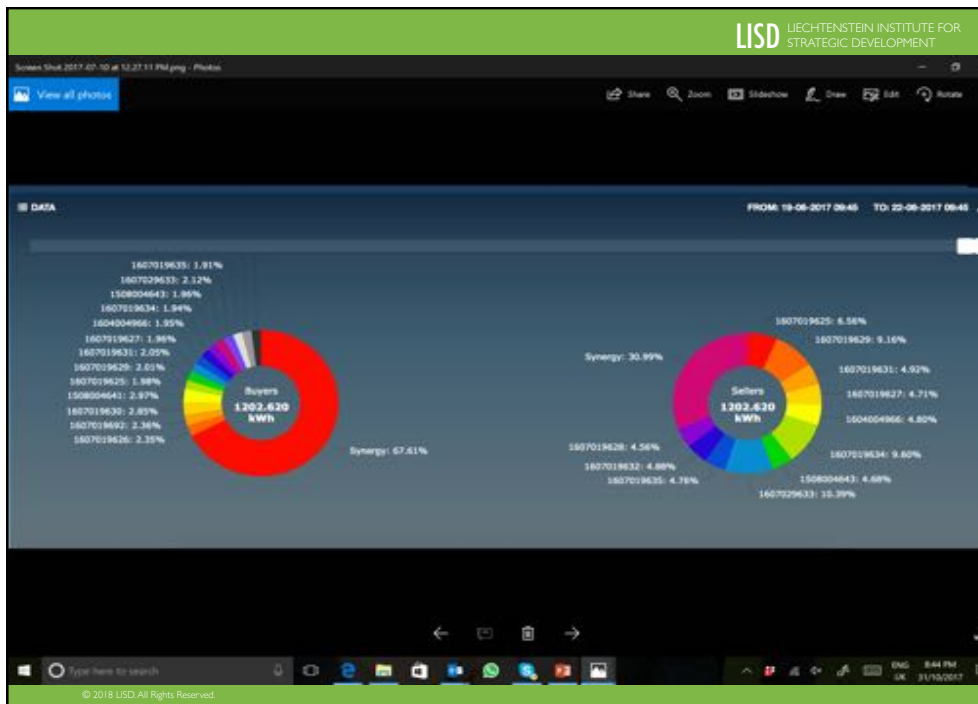
- 1 **Traditional:** natural gas and power grid
- 2 **Hybrid:** central power and heat; distributed options
- 3 **Advanced:** all-electric power and heating/cooling











Blockchain benefits

Fast, cheap, secure, transparent, permanently recorded settlements of multi-party transactions.

Fostering of trading ecosystems and markets.

A direct system without intervention by other parties.

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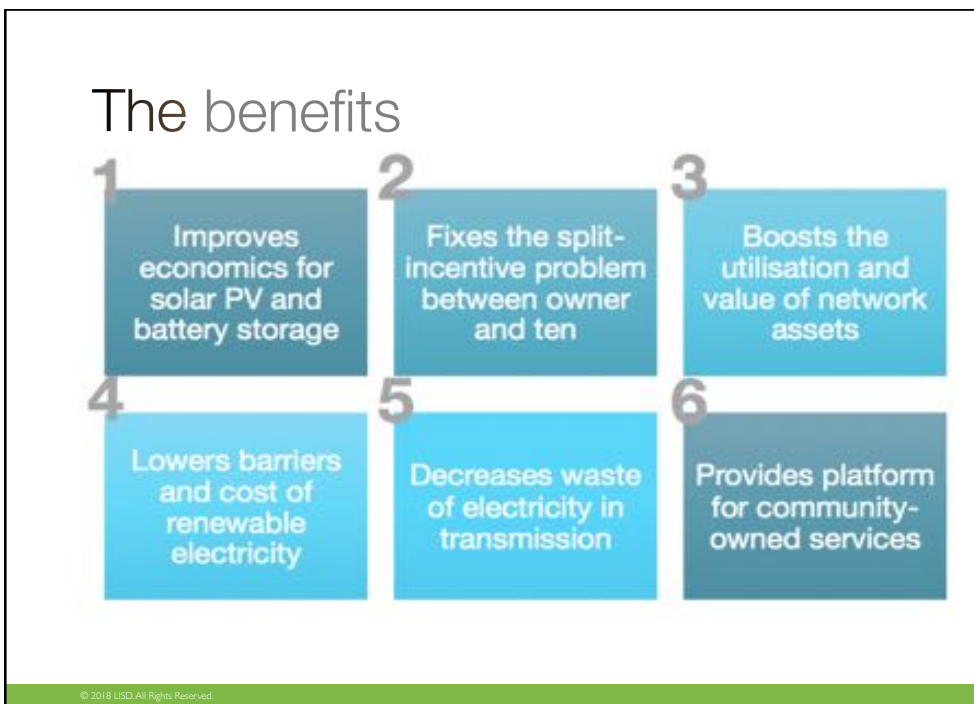
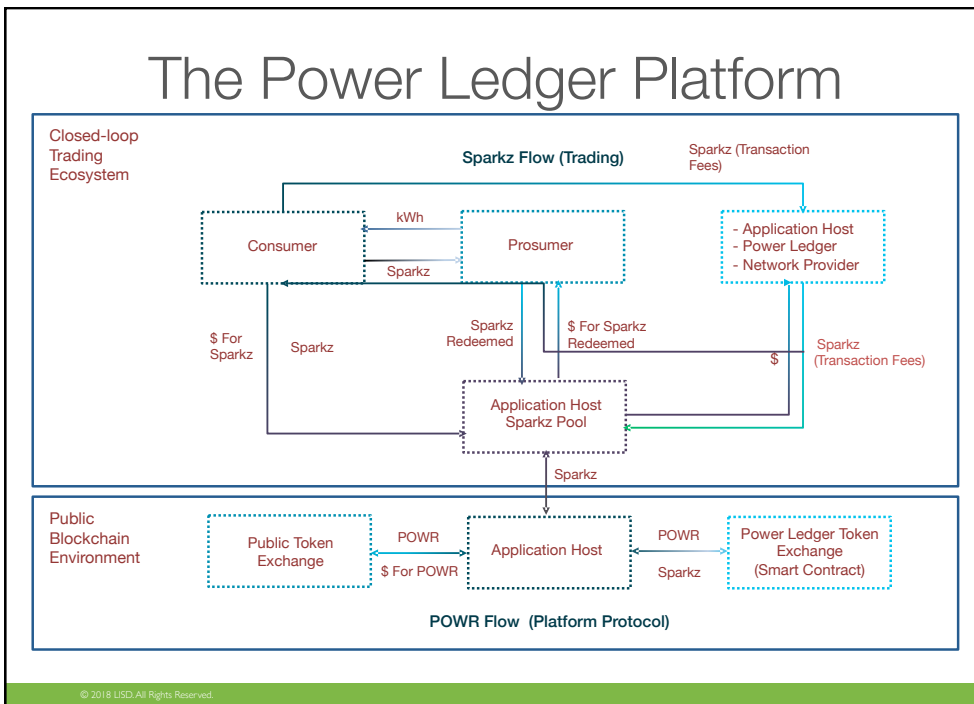
From trade to finance

The first years of the feed-in and reverse metering era: simple trades of supply and demand.

The Smart Energy Web emerges, enabling a multitude of service and supply transactions by all producers, consumers, storers and carriers.

Blockchain technology permits the instant execution of energy actions: dispatch, prosumption, trade and various models of development finance.

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BIG DATA & SENTIENT ALGORITHMS



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Many thanks!

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regsys@eurisd.de



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