"Zero-acreage farming (ZFarming)"

Potentials of roofs, facades and set-aside buildings for urban food production

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Outline

- Introduction
  - Definition
  - Background
- Application of a participatory approach (ROIR)
- Social acceptance and potential conflicts
Urban agriculture - Background
Challenges of the present agricultural food production

- By 2030, the majority of the rising world population will live in cities (United Nations 2004)

- Cities account for more than 70 % of global CO$_2$ emissions

- Urban growth dynamics have posed questions towards sustainable food production, processing, transport and consumption
Zero acreage farming (ZFarming)

- Densely build up areas: space confined growing
- ZFarming =“Zero acreage farming” describes the non-use of farmland
- Includes all possible types of urban agriculture in and on buildings
- Such production might include the installation of rooftop gardens, rooftop greenhouses and vertical farms, as well as further innovative forms such as edible green walls or indoor factories.
- Differentiates the building-integrated forms of urban agriculture from those in parks, gardens, urban wastelands...

Technological innovation and visions of food production - Rooftop greenhouses

Credit: www.gothamgreens.com, A. Dierich

Gotham Greens, N.Y. (USA), Eli Zabar
Examples

Rooftop gardens

Eagle Street rooftop farm

Credits: Regine Berges, Axel Dierich
Vertical greenhouses

AgroHouse Concept, Knafo Klimor Architects and Town Planners

Credit: Knafo Klimor Architects and Town Planners
Indoor urban factory

„The plant“, Chicago

Credit: www.plantchicago.com
Facade/ Balkony
Vertical Farm

Living Skyscraper
Blake Kurasek

Living Tower
SOA Architects

Circular Vertical Farm
Chris Jacobs

Bildnachweis: http://blakekurasek.com/thelivingskyscraper.html
Participatory process (ROIR)

Co- Creation of innovation
Participatory process (ROIR)

I. Selection of regional experts

II. Selection of the specific innovation

III. Development of the innovation concept

IV. Roadmap for implementation
I. Selection of regional experts

Activists & projects
Associations & unions
Planning & construction
ZFarming
Policy & administration
Research
Sale & distribution
Urban agriculture of the future - Berlin
II. Selection of the specific innovation

- Facade greenhouse
- Indoor farming
- Edible walls
- Rooftop farm

Impact vs. Times mentioned graph:
- Roof top greenhouse
- Facade greenhouse
- Indoor farming
- Edible walls
- Rooftop farm
III. Development of the innovation concept

- Developing ideas and preliminary planning
  - Project aims
  - Operator models
  - Use concepts
- Analysis and decision-making
  - Site analysis
  - Construction and planning law
- Marketing and public relations
  - Strategic marketing planning
  - Press and public relations activities
- Production planning
  - Products
  - Production methods
  - Greenhouse parts
  - Quality assurance and certification
  - Energy optimisation + resource efficiency
- Financial planning
  - Economic feasibility
  - Forms of financing + funding opportunities

Rooftop greenhouse – successful implementation
IV. Roadmap for implementation

There's something growing on the roof

ROOFTOP GREENHOUSES ▲ Idea ▲ Planning ▲ Implementation
Social acceptance

- 2 major research studies on perception and acceptance
- First: Key stakeholders
- Second: General public (Berlin & Bologna)

Perceived benefits (e.g. improved consumer awareness, education, opportunities for resource savings, new business models, repurposing of abandoned buildings etc.)

Perceived risks (e.g. growing techniques are considered “unnatural”, health risks (due to urban pollutants), conflicts with images of traditional agriculture, rejection of animal production, projects being too expensive)
**On POTENTIAL BENEFITS AND LIMITATIONS**


**On the PARTICIPATORY PROCESS**


**On PERCEIVED RISKS AND PERCEPTIONS**


Thank You for Your Attention!

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Bild- und Quellennachweise:  
S. 1, 22 (von li nach re): S. Thomaier, A. Dierich, A. Dierich, R. Berges)  
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