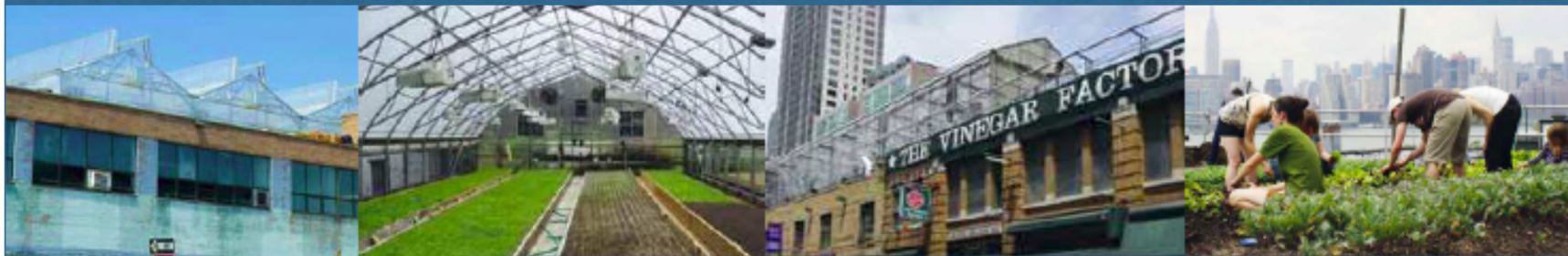


”Zero-acreage farming (ZFarming)”

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

Dipl. Ing. Kathrin Specht



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 CO₂ emissions
- Urban growth dynamics have posed questions towards sustainable food production, processing, transport and consumption



Credit: <http://en.mercopress.com>; Russ Kinne (Comstock); Peter Michael Beierl

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...

*Definition from: Specht, K. et al. (2014) **Urban agriculture of the future: an overview of sustainability aspects of food production in and on buildings.** Agriculture and Human Values 31, 1, 33-51.*

Technological innovation and visions of food production - Rooftop greenhouses



Credit: www.gothamgreens.com, A. Dierich



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

Rooftop gardens



Credits: Regine Berges, Axel Dierich



Eagle Street rooftop farm

Vertical greenhouses



Credit: Knafo Klimor Architects and Town Planners



AgroHouse Concept, Knafo Klimor
Architects and Town Planners

Indoor urban factory



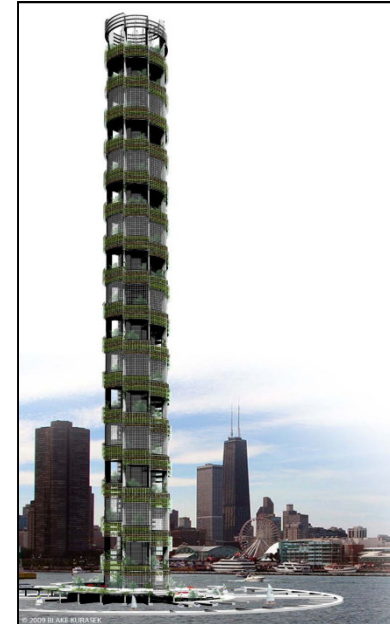
Credit: www.plantchicago.com



„The plant“, Chicago

zalf. Facade/ Balkony





Living Skyscraper
Blake Kurasek

Living Tower
SOA Architects

Circular Vertical Farm
Chris Jacobs

Bildnachweis: <http://www.nytimes.com/2008/07/15/science/15farm.html>

Bildnachweis: <http://blakekurasek.com/thelivingskyscraper.html>



Co- Creation of innovation



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

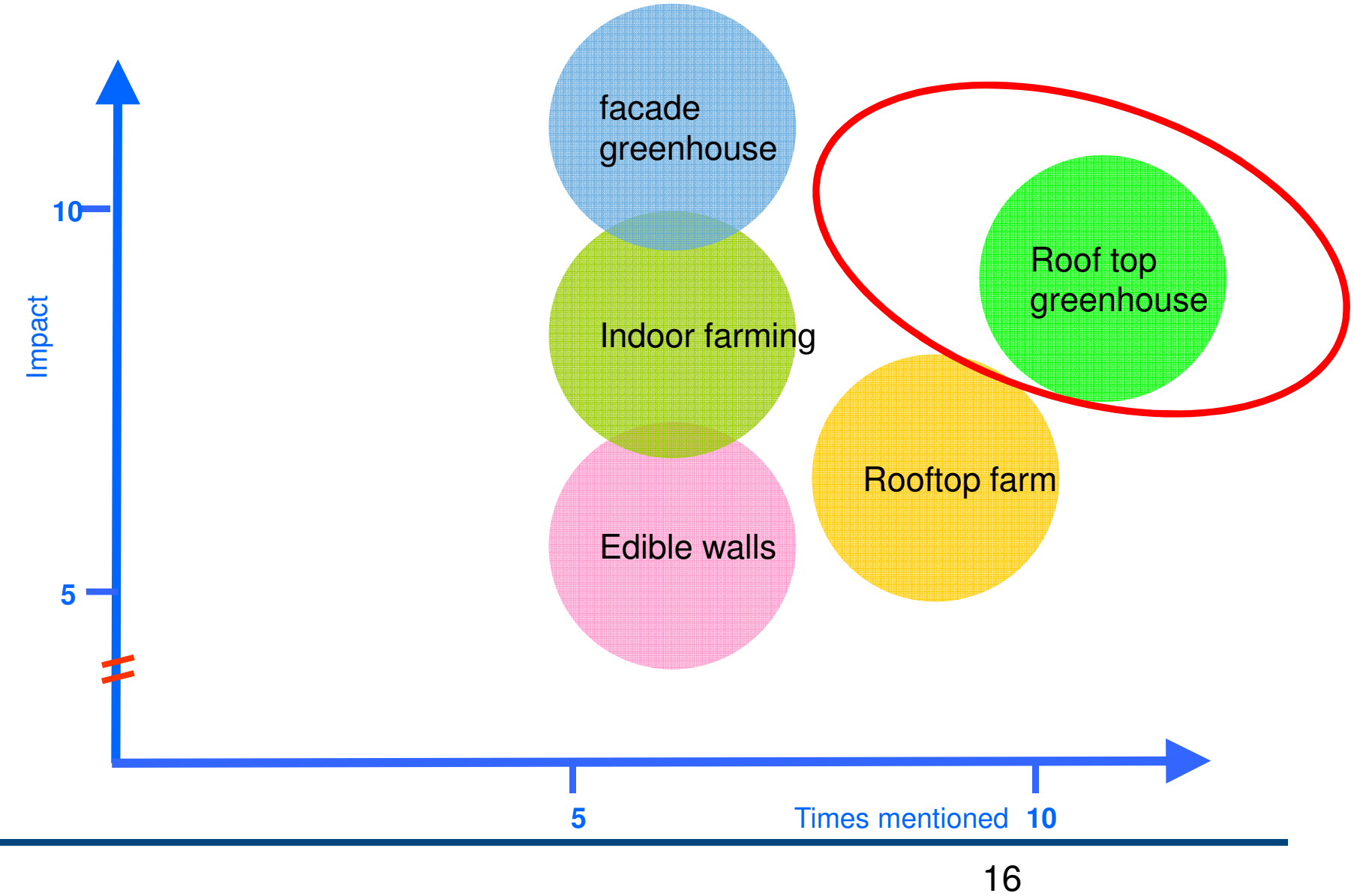
Research

Sale & distribution

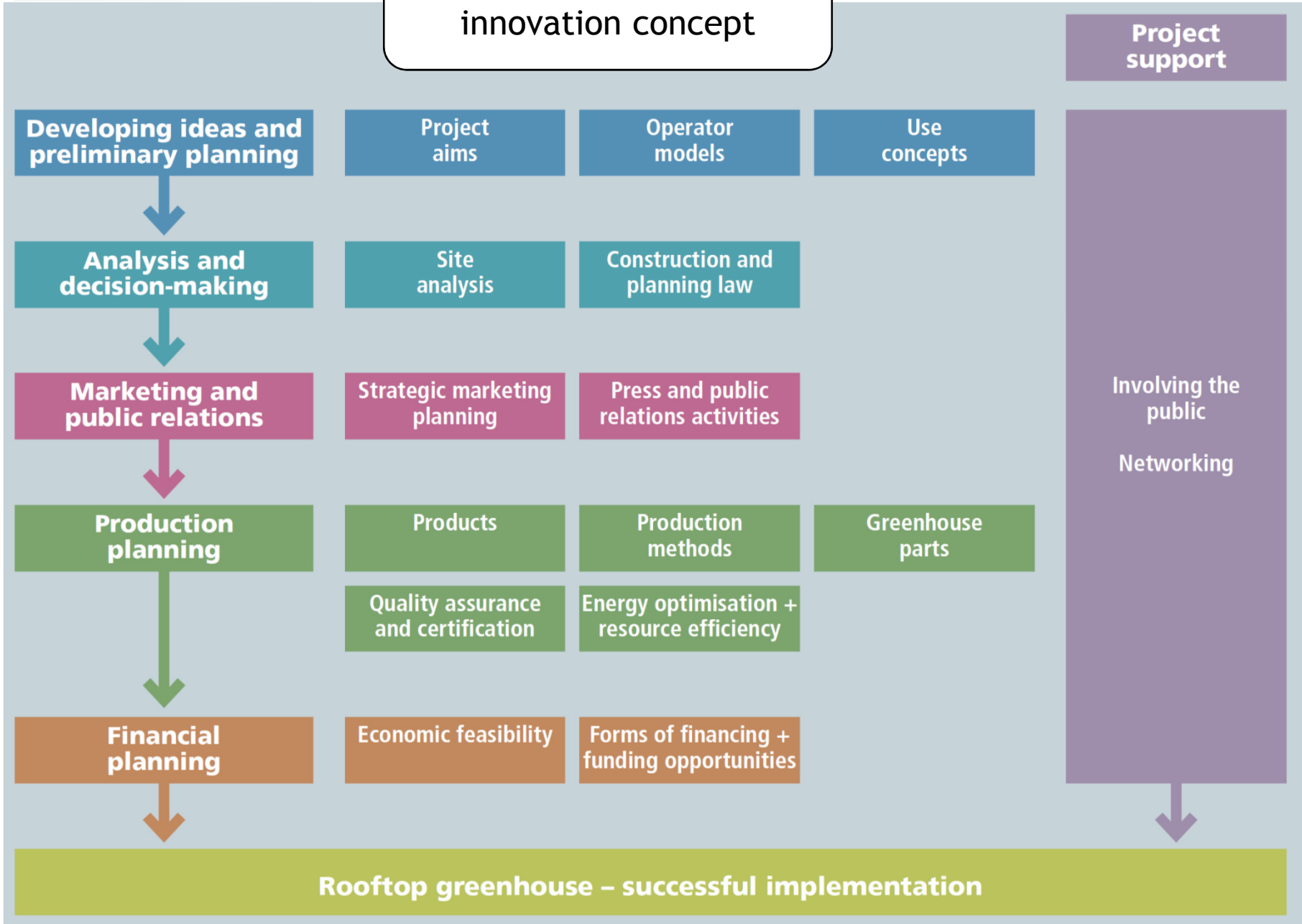
Urban agriculture of the future - Berlin



II. Selection of the specific innovation



III. Development of the innovation concept



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**

Specht, K. et al. (2014) Urban agriculture of the future: an overview of sustainability aspects of food production in and on buildings. Agriculture and Human Values 31, 1, 33-51.

- On the **PARTICIPATORY PROCESS**

Specht, K., Zoll, F. & Siebert, R. (2016) Application and evaluation of a participatory “open innovation” approach (ROIR): the case of introducing zero-acreage farming in Berlin. Landscape and Urban Planning 151, 45-54.

- On **PERCEIVED RISKS AND PERCEPTIONS**

Specht, K. & Sanyé-Mengual, E. (2017) Risks in urban rooftop agriculture: Assessing stakeholders' perceptions to ensure efficient policy-making. Environmental Science & Policy 69, 13-21.

Specht, K. et al. (2016) Socially acceptable urban agriculture businesses. Agronomy for Sustainable Development 36, 1, Article: 17.

Thank You for Your Attention!

www.zfarm.de

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Bild- und Quellennachweise:

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

S.3: R. Berges

S. 18: Titelblatt Freisinger et al. (2015) There's something growing on the roof. Bild: Copyright Laboratoire d'urbanisme Agricole, www.lua-paris.com

