Potential of rooftops for building-integrated agriculture – An opportunity for Berlin

An online map that shows suitable rooftop surfaces for commercial, building-integrated agriculture (ZFarming) has been developed at the Institute of Urban and Regional Planning at the Technical University of Berlin. According to this map, 7.3 % of all flat roofs and 2 % of all roof surfaces are suitable for commercially oriented urban agriculture in Berlin.

What is being researched?

The "ZFarm – Urban agriculture of the future (Städtische Landwirtschaft der Zukunft)" project team is researching the potential for implementing ZFarming, taking Berlin's urban area as a case study. The question of which roof surfaces in Berlin could be used for commercial ZFarming is being investigated here. The result of this research work is the online map that shows such potential areas. To determine the potential surfaces, data from the Berlin solar atlas and the environmental atlas was used and selected criteria for choosing surfaces were applied. The online map represents an important research result.

What does the map contain?

The map has various items of information for every roof surface that fulfils the fundamental criteria:

- Roof pitch (roofs with a pitch of less than 8 degrees)
- Surface area (500 m² was selected as a minimum size for analysis)
- Approximate building height
- Building use
- Land use (such as residential, commercial or industry)
- Suitability of the surface (increases with surface area and homogeneity of the area)
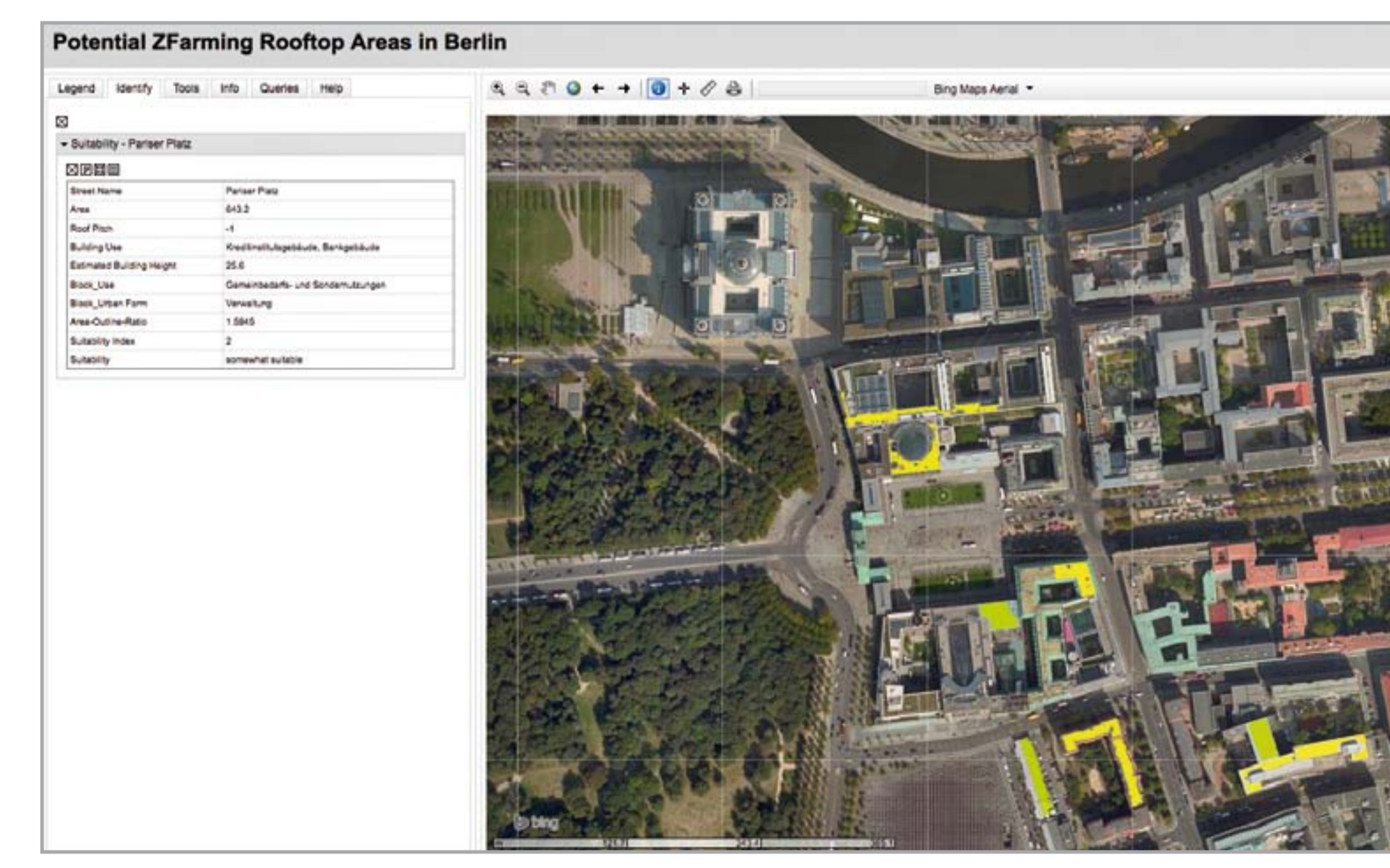
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1 Screenshot of the online map with roof surface potentials for commercial rooftop ZFarming (www.zfarm.de)

2 Selection of potentially usable roof surfaces and suitable project examples

2

Surface characteristics
- Area: Approx. 590 m²
- Suitability: Conditional
- Surface type: Commercial and industrial area, large retail premises
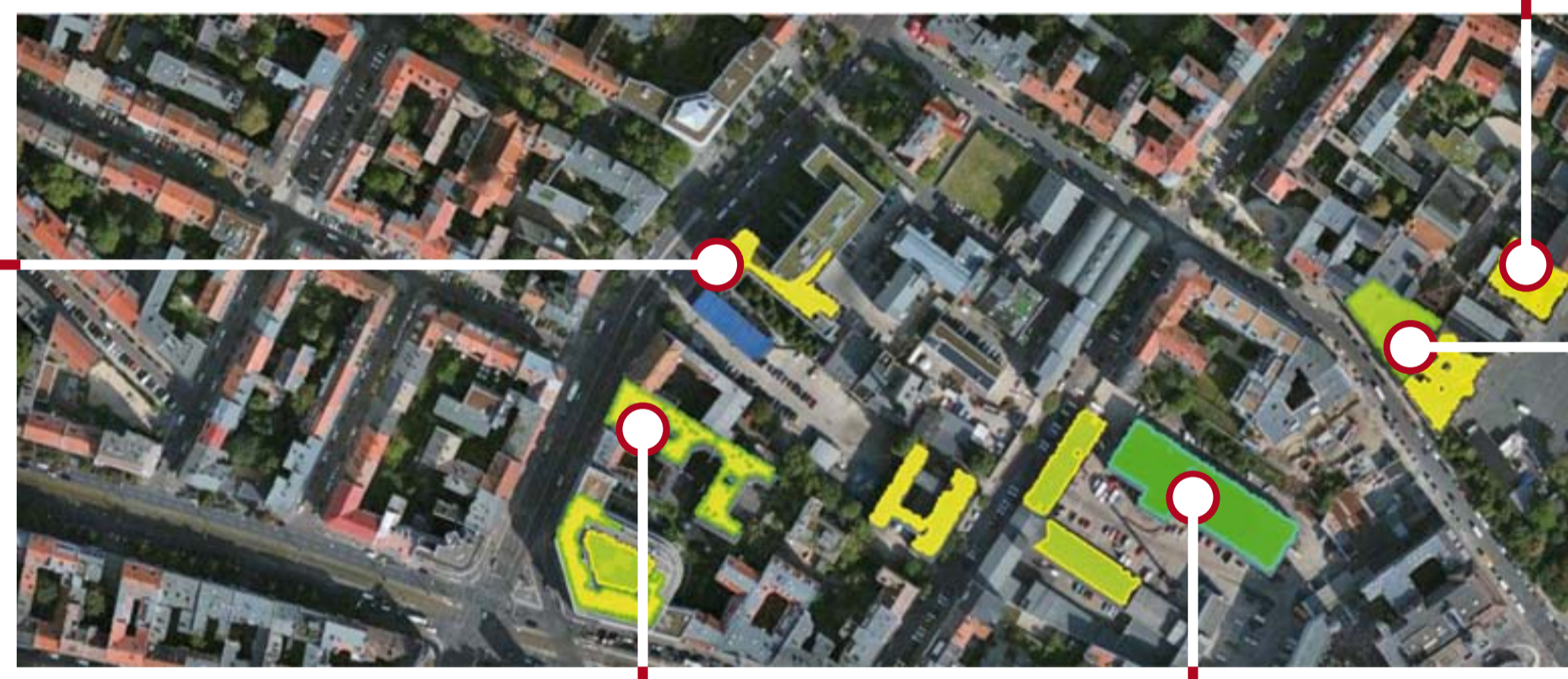- Building use: Factory building

Implementation case study
- Vinegar Factory, New York
- Rooftop greenhouse on grocery store; waste heat utilisation (ZFarm type: Commercial)

Photo: Susanne Thomaier

Surface characteristics
- Area: Approx. 530 m²
- Suitability: Conditional
- Surface type: Mixed area without residential character
- Building use: Offices

Implementation case study
- Hell's Kitchen Farm Project, New York
- Roof garden with social function, raised mobile garden beds (ZFarm type: Educational and social products)

Photo: Jenny Sherouse Photography

Surface characteristics
- Area: Approx. 830 m²
- Suitability: good
- Surface type: Commercial and industrial area, large retail premises, not built-up
- Building use: Factory building

Implementation case study
- Brooklyn Grange, New York
- Roof farm, intensive roof greening (ZFarm type: Commercial)

Photo: Axel Dierich

Surface characteristics
- Area: Approx. 990 m²
- Suitability: Conditional
- Surface type: Mixed area without residential character
- Building use: Offices

Implementation case study
- Østergro, Copenhagen
- Community roof garden (ZFarm type: Quality of life)

Photo: henning thomsen, Stedsans on Østergro, flickr.com, CC-BY 2.0

Surface characteristics
- Area: Approx. 2.210 m²
- Suitability: very good
- Surface type: Commercial and industrial area, large retail premises
- Building use: Factory

Implementation case study
- Gotham Greens, New York & Chicago
- Rooftop greenhouse (ZFarm type: Commercial)

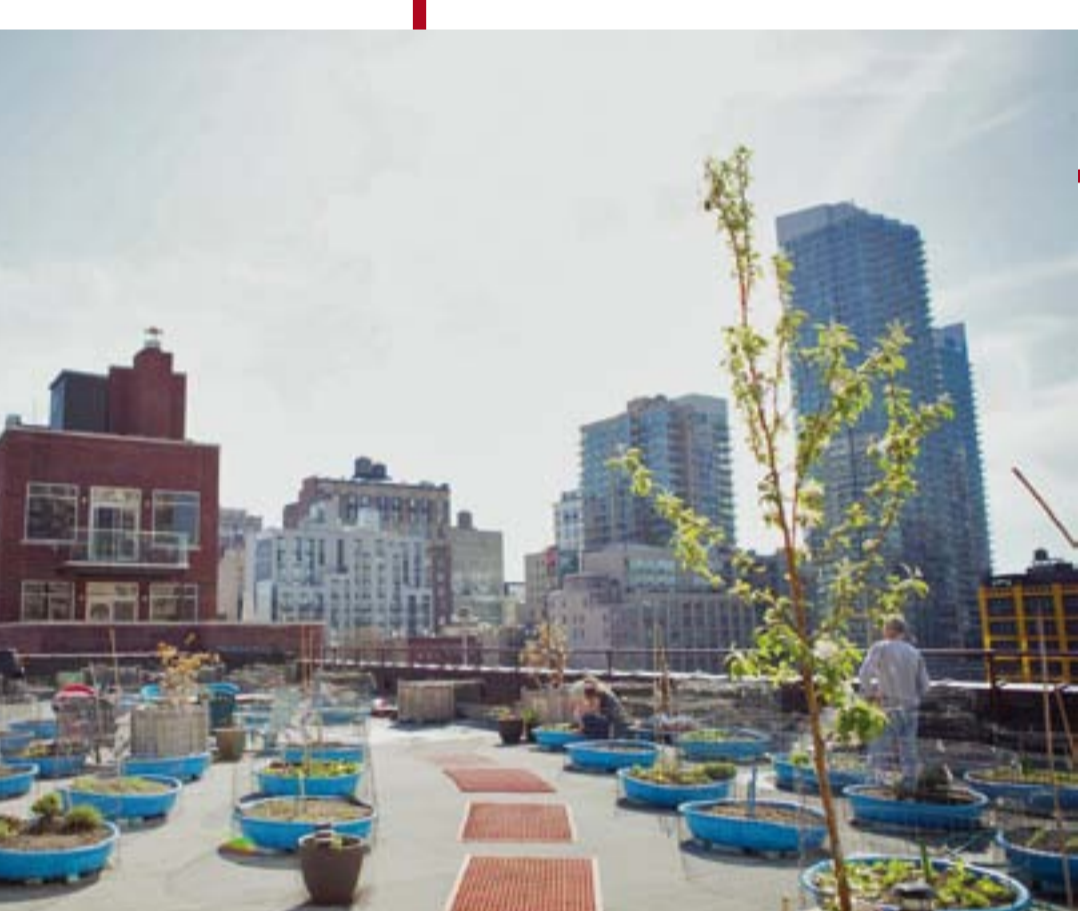Photo: Matt Green, rooftop greenhouse under construction, flickr.com, CC-NC-SA 2.0

> # Building-integrated agriculture