



SmartFood: Engaging citizens in food diversity in cities

D4.5 Technical projects with specifications for photovoltaic system

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SmartFood has received funding from the Norway Grants 2014-2021 and the state budget of Poland via the National Centre for Research and Development within "Applied Research" Programme. The project benefits from a grant of € 1,364,249.99 from Norway as well as a grant of € 240,750.00 from the state budget of Poland. The total project value is € 1,604,999.99. The aim of the project is to provide a novel evidence-based socio-technological framework of sustainable food production and consumption towards the sustainable smart city of the future.



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Executive Summary

The SmartFood project aims to provide a novel evidence-based socio-technological framework of sustainable food production and consumption towards the sustainable smart city of the future by engaging micro-local communities through novel in-house food self-production and households' behavioural change of diet. To facilitate this process, an innovative hydroponic food self-reproduction system was developed for corridors of Kaspjiska 1 Housing Community in Warsaw, to provide sustainable food for citizens within the SmartFood Urban Living Lab (ULL).

This report provides the technical executive design of a solar energy system for food production dedicated to the roof of the building of the Kaspjiska 1 Housing Community, the ULL Host Institution, to provide a renewable energy source that significantly reduces the carbon footprint associated with food production.

The document describes the executive design, installation, safety measures, compliance standards, and maintenance procedures for a 20 kWp photovoltaic (PV) installation, connected to the building's electrical system, and composed of the following subsystems:

- adhesive support structure,
- photovoltaic modules on a support structure,
- cabling of the photovoltaic installation,
- inverter to connect the photovoltaic installation to the building's electrical system,
- surge and shock protection equipment,
- communication and performance monitoring equipment.

Thanks to the designed PV system, by harnessing solar energy, the SmartFood Cabins can be less dependent on fossil fuels, making them more environmentally friendly and cost-effective. This alignment with renewable energy not only supports the project's goals of sustainable food production but also demonstrates a practical application of clean energy technologies within urban agriculture settings. The 20 kWp photovoltaic installation on the roof of the Kaspjiska 1 building ensures that the energy demands of the hydroponic cabins are met sustainably, promoting a model of urban agriculture that is both innovative and resilient. This integration underscores the project's commitment to developing sustainable smart cities, where local food production is powered by clean, renewable energy, thereby enhancing the overall ecological footprint of food systems and contributing to long-term environmental and economic benefits for the community.