



## SmartFood: Engaging citizens in food diversity in cities

### D1.1. Co-design of hydroponic solutions

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## Executive Summary

A significant part of the food consumed in cities today is:

- ⇒ produced outside cities
- ⇒ grown with the use of pesticides and fossil fuel energy
- ⇒ processed and filled with ingredients that negatively affect human health
- ⇒ packed in plastic, which creates environmental problems in landfills and in the oceans
- ⇒ transported over long distances, which emits large amounts of greenhouse gases
- ⇒ wasted, which negatively affects the pockets of households.

The Polish-Norwegian research and innovation project SmartFood was created to show that this situation can be changed. SmartFood consortium proposed the following vision: *Grow your own food in the corridor of your building, reduce greenhouse gas emissions, waste of food as well as energy and transportation costs! Improve your physical health by changing your eating habits and engage with your neighbours!*

This report presents the results of the co-design of novel hydroponic solutions, which will enable the implementation of the SmartFood vision. The report introduces SmartFood Cabins, i.e. hydroponic systems allowing residents of urban apartment blocks to self-produce significant quantities of plant-based biofortified foods in shared spaces (corridors) in a way meeting fire-safety regulations. The report describes the following three stages of the co-design of SmartFood Cabins that took place in SmartFood Work Package 1 (*Co-design of environmental innovation*):

- ⇒ First, the report provides the preliminary conceptual design of SmartFood Cabins. Findings of the following activities are presented:
  - specification of overall technical requirements for SmartFood Cabins from the perspective of fire safety, sustainability, productivity, user-friendliness, and promoting Europe as a global leader in green technologies
  - identification of sub-systems of SmartFood Cabins and specification of technical requirements for each sub-system: construction, air conditioning, lighting, growing trays, water and nutrient provision, sensing and control
  - a market research study to assess whether there are any commercially available existing solutions that meet the requirements set for SmartFood Cabins and their sub-systems in the SmartFood project
  - preliminary visuals of SmartFood Cabins for an online co-design workshop with end-users, i.e., residents of urban blocks of flats.
- ⇒ Second, the report specifies the scope of initial co-design options that were proposed by the SmartFood research team as key features of this innovation that can and should be decided directly by residents of urban blocks of flats, to ensure that SmartFood Cabins meet the needs of their end-users. Therefore, the SmartFood research team postponed design decisions until after gathering feedback from households on: the species of plants to be grown, mechanisms to be used for doors, colors of external surfaces, locking mechanisms, and location of germination trays inside or outside SmartFood Cabins.
- ⇒ Third, the report summarises the results of an online interactive co-design workshop that was organised with 8 Polish households living in urban blocks of flats. As a result of the integration of recommendations of end-users provided during the workshop, the report presents decisions concerning key features of SmartFood Cabins that were taken directly by SmartFood Cabins' potential end-users.

As a result, the report constitutes a knowledge base for prototyping and testing of novel urban agriculture solutions in SmartFood Work Package 4 (*Development and lab-scale tests of SmartFood solutions for environmental innovation*) and Work Package 6 (*Urban Living Labs implementation of Smart Food innovation*).