

Sustainable LivingLabs – European Research Infrastructure for the User-integrated Development of Sustainable Product and Service Innovation

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Domestic sustainability innovations are considered to play a key role for pathways to sustainable consumption. However, many product- and service-innovations, which were expected to show a high sustainability potential, fail due to low consumer acceptance or they cause negative rebound effects due to unexpected user behaviour or wrong application. The design of interactive value chains – meaning to integrate users and other stakeholders along value chains into product-service—development – offers starting points for new strategies and possible scenarios regarding concrete and realizable sustainability-innovations. The presentation will show how innovation processes can lead to sustainable innovations, by means of an experimental and interactive infrastructure. It will be presented how – based on results of the European LivingLab project (Lead TU Delft) – currently an extended Sustainable LivingLab approach is developed and applied in the European joint research project „SusLabNWE“ – Creation of a networked infrastructure for innovation on sustainability in the home environment”. We define Sustainable LivingLab as an infrastructure designed to enable innovation processes, in which users and other value chain actors, relevant for the context, actively participate in development, testing and marketing, respectively of new products, services and system solutions. The interactive innovation process is situated in real life surroundings (living space, work environment, mobility, and urban space). It is led by sustainability criteria and aims to contribute to global and universally applicable patterns of production and consumption. To conceptualise this approach, we refer to recent proceedings in innovation and sustainability research, i.e. practice theory to analyse sustainable product design. Focusing on technical solutions and individual behaviour while assuming people’s needs as fixed entities, disregards the dynamics of everyday practices in which technologies themselves create needs. Therefore, the consumer’s position should be strengthened through user- driven innovation. Within the presentation, we will introduce the research agenda as well as the Three Phases 2 Model of research of Sustainable LivingLabs: Insight-research, Prototyping, and Field-testing. During the development process a phase- and interstage-specific validation of resource efficiency and sustainability potentials of the new prototype is performed. By these means, sustainability assessment along value chains is embedded throughout the Sustainable LivingLab approach. By doing so, necessary re-adjustments can be done at any stage of the open innovation process. We hypothesise that at the end of this user-integrated innovation process developed products have a higher chance of successful diffusion. To illustrate this, we show how the Sustainable LivingLab infrastructure is employed within the German InnovationCity Bottrop and how it can promote the development of user—centred sustainable consumption strategies. Companies, researchers and policymakers will be able to collaborate in these multi--disciplinary, user-centred testing facilities in order to increase household’s sustainability. Within InnovationCity Bottrop a pilot application in the field of heating and space heating will be set up. Different studies show that approximately 80% of all heating systems in Germany work inefficiently and consume too much energy. Combined with optimising user behaviour, savings of 10-30% of heating energy are possible the presentation will show the research methodology and first results of insight—research in the pilot of heating and space heating.