

3.1 Publishable summary

The Servicing Policy for Resource Efficient Economy (SPREE) three-year research project was launched in July 2012 under the European Commission's Seventh Framework Programme (FP7). Its overarching goal is to bring the European community closer to achieving a truly sustainable and prosperous economy characterized by decoupling of economic growth and social prosperity from inefficient use of resources. Servicizing systems, which facilitate the transition from selling products to providing services, can potentially face this challenge and therefore comprise the core of SPREE research. Experts in environmental and social sciences, industrial ecology, complex system engineering, innovation, business management and public policy are working together in SPREE in order to identify specific servicing opportunities that advance sustainable performances and to enhance the systems' creation and evolution in practice.

The current discourse on resource efficiency already acknowledges the fact that mere technological improvements and moderate changes in consumers' behaviours are insufficient in terms of living within safe planetary boundaries. Green growth policies, improving resource productivity through supply side measures such as supporting eco-innovation or facilitating sustainable use of raw materials, have achieved only relative decoupling since they have inevitably led to rebound effects through the increased scale of consumption. It is widely agreed that additional efforts beyond existing paradigms are required.

Servicizing is defined by SPREE project a transaction where value is provided through combination of products and services and where satisfaction of customer needs is achieved by selling function of the product rather than product *per se* and/or by increasing the service component of the offer. Servicizing, therefore, has the potential to bring us closer to absolute decoupling since its realization in practice influences production as well as consumption patterns, meaning both the supply and the demand sides.

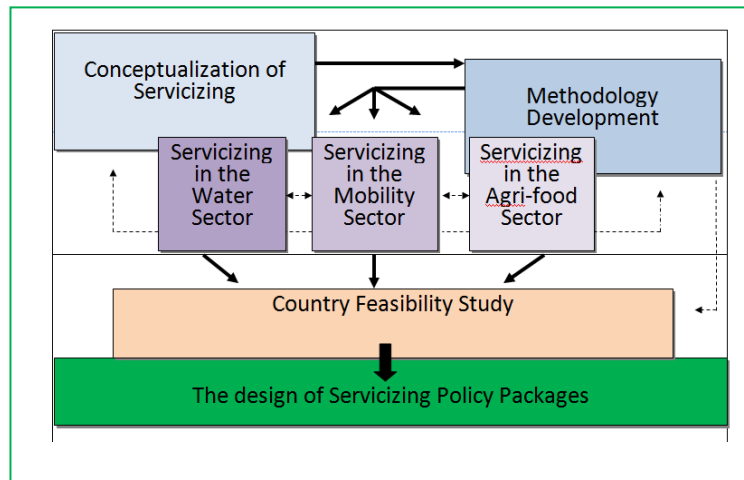
However, servicing can lead both to increased and decreased environmental, economic and social impacts. Hence it becomes necessary to study the conditions under which servicing can actually live up to its potential and establish profitable but resource efficient business activities, enhance consumer satisfaction and promote high quality of life. For this purpose, SPREE team applies Agent-Based Modelling (ABM), on the basis of evidence-based data derived from a variety of case studies, in order to evaluate the impact of servicing systems together with the effects of policies designed to support these systems. The identification of the conditions under

which servicizing realizes its economic, environmental and social objectives, will enable to promote servicizing schemes leading to radical, but at the same time practical, change in the way resources are being used. The modelling of these systems together with simulations of their potential economic, environmental and social effects will be supplemented by the composition of **Servicizing Policy for Resource Efficient Economy**, in the form of “Servicizing Policy Packages”, the key outcome of SPREE project.

The objectives of SPREE project are:

- (1) To investigate the key components of servicizing systems including, inter-alia, business models, consumers behaviours and choices, types of contracts, infrastructure, ICT and innovation;
- (2) To further evaluate these aspects with a particular focus on servicizing opportunities in the Water, Mobility and Agri-food sectors;
- (3) To develop methods to explore the economic, environmental and social impact of moving towards servicizing solutions;
- (4) To evaluate specific servicizing systems, using three sector-specific Agent Based Models, based on empirical conditions in SPREE consortium’s countries;
- (5) To integrate societal objectives into the environmental agenda based on a social comprehensive framework;
- (6) To test the influence of servicizing policy measures and the combination between them on the facilitation of servicizing systems together with their ability to achieve absolute decoupling and social advantages;
- (7) To provide a set of methods to evaluate decoupling policies;
- (8) To translate the knowledge gained throughout the project to tangible resources: “Servicizing Policy Packages”.

SPREE research is based on the following stages: conceptualization of servicizing; methodology development; application of servicizing in the Water, Mobility and Agri-food sectors; country feasibility study in which empirical data is collected in the consortium’s countries; and the development of Policy Packages to promote servicizing.



The conceptualization of servicing phase was designed and executed with the aim of achieving a common understanding of the concept based on a review of empirical cases together with evaluation of various definitions and related concepts (such as ‘Product Service System’ and ‘functional economy’). The agreed definition was followed by a study of the key components of servicing, such as business models features, consumer decision-making processes, ICT and infrastructure, and their role in facilitating servicing in practice. This allowed the servicing definition to be further developed into a detailed “Servicizing Ontology” serving as the basis for future modelling work. In addition, on the policy research side, interfaces between supply and demand side policies were studied together with an analysis of a variety of EU and national policies, directives and initiatives explicitly or implicitly addressing servicing. The notion of “Policy Packages” was further evaluated in connection to its applicability to servicing.

SPREE methodologies were developed in order to evaluate the economic, environmental and social effects of servicing along the value chain as well as the impact of policies designed to facilitate these systems. The methodology development phase included review and assessment of decoupling indicators and tools to measure economic and environmental effects of servicing (such as Life Cycle Assessment, Input-output Analysis and hybrid I/O-LCA), development of tools to assess social effects and policy impacts and development of sector-specific "behavioural methodologies", i.e. consumers surveys and business' decision making processes. On the basis of SPREE ontology, generic Agent Based Model (ABM) was carried out to test the impact of servicing and to evaluate the outcomes of proposed policies and their effect on achieving absolute decoupling. Moreover, data collection methods were selected and comprehensive

methodology for developing policy packages was designed with the objective of allowing ex-ante identification of possible contradictions among proposed policy measures and synergies between such measures.

In parallel and on the basis of the generic conceptualization, the research focused on the **application of servicizing in SPREE three sectors: Water, Mobility and Agri-food**. The study of servicizing in these three sectors included the following elements, with mutual learning processes and exchange of knowledge and best practices: review of existing servicizing cases and potential opportunities based on literature and desk review; evaluation of the generic key components' application in the sectors; development of sector-specific methodologies based on and complementary to the generic ones; creation of conceptual framework to evaluate social aspects of servicizing and; analysis of sector-specific policies targeting sustainability in general and decoupling in particular.

Following the review of servicizing cases in each of the sectors, a continued evaluation process was carried out in consultation with SPREE Advisory Board towards the selection of one servicizing system in each of the sectors. The cases were evaluated against a set of criteria, including data availability, potential impact, feasibility and innovation together with a macro analysis of the inter-connections of the three systems and their unique role in the research. Based on the generic Servicizing Ontology, the three chosen systems were defined and configured into three sector-specific Agent-Based Models: Household Water Management, Car and Bike Sharing, and Crop Protection Management Solutions. Moreover, in each sector, inventory of policy measures to promote servicizing was developed as the first step towards the composition of the Servicizing Policy Packages. The above-mentioned activities were all incorporated into three comprehensive reports in the Water, Mobility and Agri-food sectors. In addition, data collection in the consortium countries has already begun and will provide the input for the Agent-Based Models' calibration and sensitivity analysis according to different country setting.

SPREE scientific research was accompanied by **extensive dissemination and exploitation work**, including the launch of SPREE website and blog; production of "The Concept of Servicizing" movie; promotion of SPREE in social networks (Facebook, Twitter and LinkedIn); presentations in conferences worldwide; organization of a unique servicizing workshop in Delft based on the

“Triple Task” participatory method; composition of a “Servicizing Page” in Wikipedia; and dissemination of newsletters to a broad range of stakeholders.

The key outcome of SPREE project will be the “Servicizing Policy Packages” in the Water, Mobility and Agri-food sectors to achieve a sustainable EU economy and assess the contribution of policies to absolute decoupling and social desired outcomes. In addition, SPREE project will provide:

- (1) A thorough understanding of the transition dynamics towards servicing systems;
- (2) A quantitative tool (ABM) for testing policies directed at promoting the transition to servicing systems in the Water, Mobility and Agri-food sectors;
- (3) Development and use of new ways to measuring and visualizing absolute decoupling success through the modelling simulation outcomes;
- (4) A comprehensive framework for understanding and assessing the social implications of servicing systems, including well-being, quality of life, gender aspects, access to resources and social equity;
- (5) A better understanding of the existing differences within the European Union and the extended region countries with regards to customer approach, production standards, overall advancement on environmental issues and available infrastructure and;
- (6) Contribution to methodology and research development coupled with support to actual policymaking.

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