European Commission

1st April 2020
Issue 539

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Source:
Sjöö, K. and Frishammar, J. (2019). Demonstration projects in sustainable technology: The road to fulfillment of project goals. Journal of Cleaner Production, 228: 331-340. https://doi.org/10.1016/j.jclepro.2019.04.302

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To cite this article/service:
"Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

Science for Environment Policy

Exploring the secrets to success in sustainable-technology demonstration projects

Demonstration projects can represent a critical intermediate step between research and development (R&D) and large-scale commercialisation; yet many involving new sustainable technologies fail. In order to map the internal and external factors that enable or prohibit demonstration projects from reaching their goals, a case study of 21 projects was conducted. Qualitative data collected from funding applications and interviews were analysed to identify key themes. Based on these findings, the study proposes a process model outlining the key activities for setting up a new demonstration project.

If the EU is to meet its ambitious long-term carbon neutrality target announced in the European Green Deal[1], new sustainable technologies are needed. Demonstration projects are intended to act as a bridge between small-scale basic R&D and large-scale industrial application and commercialisation, serving to accelerate development of a new technology by addressing technical and non-technical factors. However, it is not uncommon for demonstration projects to fail or stall.

To establish the reasons why some demonstration projects succeed, while others fail, the researchers conducted a multiple case study to identify the key factors. They selected 21 demonstration projects involving new sustainable technologies, all of which had received public funding through the Swedish Governmental Agency for Innovation Systems (Vinnova) prior to 2016. The portfolio of projects was diverse in terms of the type of coordinating organisation, institutional context, number of external project participants, pre-existence of technological infrastructure and technology being tested.

Qualitative data were collected from interviews with programme managers at Vinnova, funding applications and interviews with project managers of demonstration projects. Inductive coding (involving the conversion of raw data into informative pieces of information) was used to analyse data and map the key internal and external factors that allow or prevent demonstration projects from achieving success. Based on these findings, the researchers propose a process model for fulfilling demonstration project goals which organises the actions/activities required for success across a project's three development phases (initiation, planning and execution).

By establishing the factors that influence the success of sustainable technology demonstration projects, this research provides insights that can be used to guide their future development and commercialisation. As well as providing recommendations for project managers, the study suggests implications for policymakers involved in the design and management of programmes that fund demonstration projects.

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Exploring the secrets to success in sustainable-technology demonstration projects *(continued)*

According to the researchers, key takeaways for policymakers include:

i). The type, structure, and support offered by the coordinating organisation often plays a role in a project's success. While no one type of organisation is necessarily more efficient or effective than another, different types of organisation operate according to their own motives, incentives and goals, and different organisational structures can present different challenges and opportunities. Institutional context, which relates to factors beyond the control of the demonstration project and coordinating organisation (e.g. legislation, public budgetary factors and other external resource constraints), also often plays a role. Policymakers should therefore consider how the organisational and institutional contexts of fund recipients may impact on fulfilment of project goals, and design funding calls with these factors in mind.[2]

ii). Successful demonstration projects require skills such as marketing and outreach, coordination of networks and mobilisation of resources. Funding bodies should put financial resources aside for these activities and require that they are addressed in applications and evaluations.

iii). Demonstration projects are inherently uncertain (especially those involving technology that is less developed). Funding bodies should emphasise that demonstration projects are experiments and complement effect evaluations with process and formative assessments to enable learning and reduce pressure on those working on unsuccessful projects.

iv). Funding bodies could stimulate demand for demonstration services by issuing R&D vouchers which can only be used for the funded projects. This may provide a particular incentive for SMEs[3].

1. European Green Deal: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

2. In-depth information on the various ways in which organisational and institutional context were shown to impact project fulfilment can be found on p. 336 of the source article.

3. Valbonesi P.; Biagi F. (2016). Incentivising Innovation and Adoption of ICT: ICT Innovation Voucher Programmes. JRC Science for Policy Report: https://core.ac.uk/download/pdf/81685321.pdf