

# Hydrogen acceptance in the transition phase (HYACINTH)

The Hyacinth Project, funded by the Fuel Cells and Hydrogen Joint Undertaking (FCH-JU), has worked to increase the understanding of cross-country differences and similarities in public and stakeholder awareness and attitudes in relation to Hydrogen fuel cell (HFC) applications. The primary aim of Hyacinth has been to assess levels of awareness, understanding and acceptance of FCH technologies in the general public and the stakeholder groups in various EU countries with different levels of market penetration and government support. Specifically, the project has aimed at examining public attitudes towards residential fuel cell units and hydrogen fuel cell electric vehicles in Belgium, France, Germany, Norway, Spain, Slovenia, and United Kingdom.



A specific multi country questionnaire-survey was designed and implemented during 2015 and 2016 to assess the levels of public awareness, understanding and acceptance of hydrogen and fuel cell technologies and applications. The design of the questionnaire also aimed at building a predictive model for the acceptance of FCH technologies based on segmented responses to FCH technologies, including factors known to be relevant in this context. Given that hydrogen and fuel cell technologies are generally unknown to the general public, special attention was given to the type of information provided to respondents about the technology prior to answering the questionnaire. Participants received neutral information regarding: a) hydrogen and fuel cells in general and; b) fuel cells for residential use (half of the sample in each country) or hydrogen fuel cell vehicles (the other half of the sample), depending on the type of application the respondent was evaluating. Participants also received information regarding the potential consequences of the implementation of the two HFC applications. The main objective of this exercise was to allow for an informed evaluation of the application by the participants. The exercise was based on the Information Choice Questionnaire (Best-Waldhober and Daamen, 2006).

Nationally-representative samples of approximately 1000 adults from each country took part in the online survey. The sample consisted of panel members who had agreed to participate in online market and social research. The samples were representative for the age and gender groups in each country and had an approximate distribution regarding region and education. Invitations to take part in the survey were sent to participants through the access panel system. Data was collected during April and May 2016.

A mix-methods study, based on a questionnaire-survey and qualitative semi-structured interviews, was also designed and implemented to collect data on stakeholders' acceptance, expectations and views of FCH applications. In total, 800 stakeholders were contacted by the project team, resulting in a sample of 333 participants. Invitations to take part in the survey were sent to participants by the project partners in each country. The respondents came from university and state research organisations, particularly from Spain and France; local governments, principally from France, Germany and to a lesser extent the UK; multi-sector partnerships (mixed affiliations), particularly from the UK and France; gas suppliers, particularly from Germany; and general commercial organisations, particularly from France.

<http://hyacinthproject.eu/>

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Coordinator: CNH2

CISOT-CIEMAT representatives: [christian.oltra@ciemat.es](mailto:christian.oltra@ciemat.es)  
[roser.sala@ciemat.es](mailto:roser.sala@ciemat.es)

## Publications

Upham, P., Dütschke, E., Schneider, U., Oltra, C., Sala, R., Lores, M. & Bögel, P. (2018). Agency and structure in a sociotechnical transition: Hydrogen fuel cells, conjunctural knowledge and structuration in Europe. *Energy Research & Social Science*, 37, 163-174.

Bögel, P., Oltra, C., Sala, R., Lores, M., Upham, P., Dütschke, E. & Wiemann, P. (2018). The role of attitudes in technology acceptance management: reflections on the case of hydrogen fuel cells in Europe. *Journal of Cleaner Production*, 188, 125-135.

Oltra, C., Dütschke, E., Sala, R., Schneider, U., & Upham, P. (2017). The public acceptance of Hydrogen Fuel Cell applications in Europe. *Revista internacional de sociología*, 75(4), 5.