

## INTRODUCTION

Transportation is still responsible for 24% of direct CO<sub>2</sub> emissions from fuel combustion. Road vehicles account for nearly 3/4 of transport CO<sub>2</sub> emissions. In this context, the EU claims to reduce the greenhouse gases (GHG) emissions caused by transport by 60% till 2050. This implies the need for novel, alternative fuels with drastically lower GHG and pollutants (in particular NO<sub>x</sub> and soot) emissions. Fuel production from renewable resources has received attention during the recent years. Moving away from the gasoline or diesel-powered internal combustion engines for road vehicles to other technologies may help to overcome climate change and city pollution. The **To-Syn-Fuel project addresses these challenges, by building-up, operating and demonstrating the production of synthetic fuels (210,000 l/year) and green hydrogen (up to 30,000 kg) from organic waste biomass, mainly dried sewage sludge, for transport, through a new integrated process (TCR/PSA/HDO) in a Pilot Plant located in Hohenburg (Germany).**

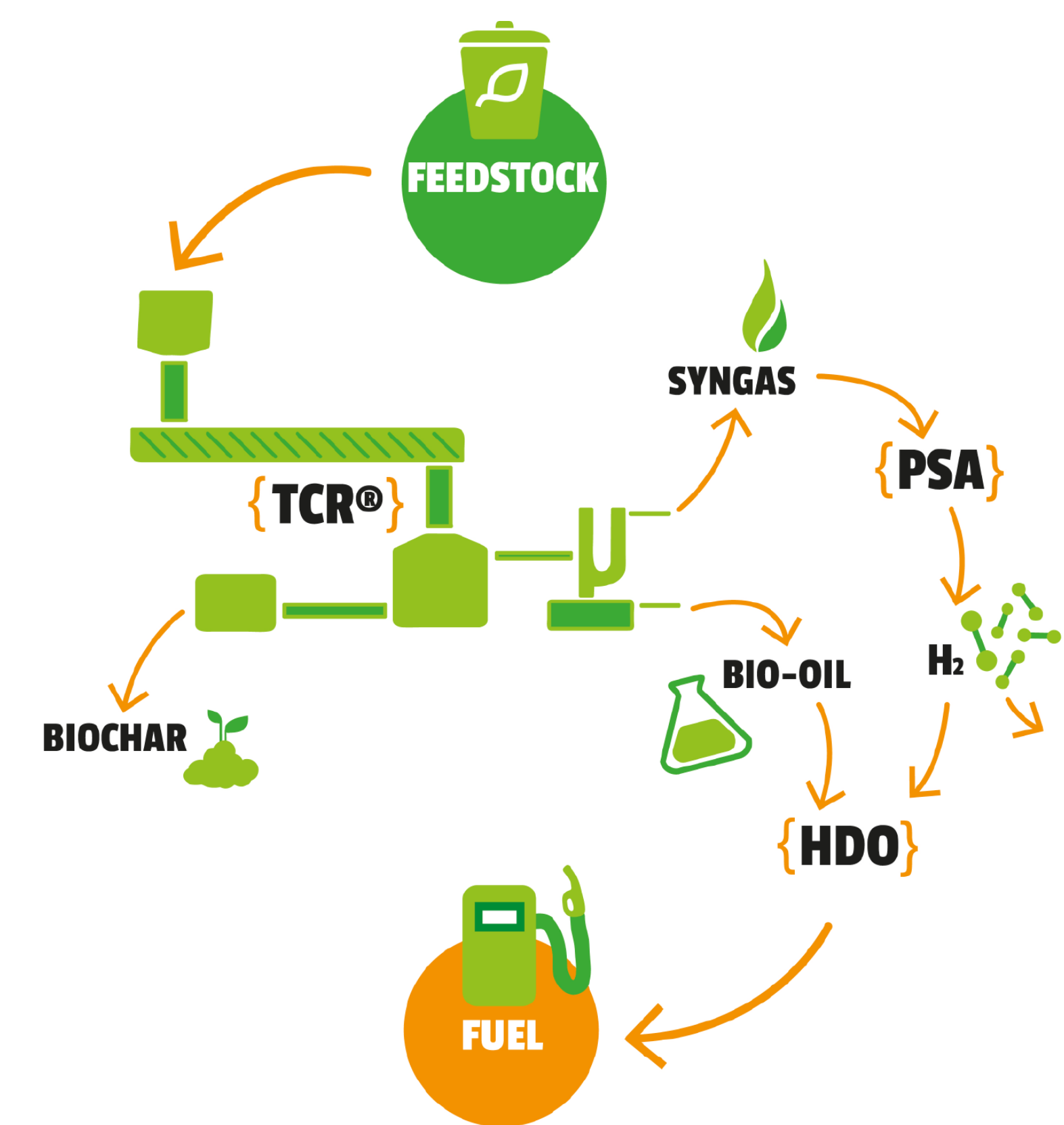


Figure 1. Integrated TCR/PSA/HDO technology

## OBJECTIVES

- To determine the main **stakeholders** involved and/or affected for the project.
- To **describe** the **consumer perceptions** and preferences **concerning the production and use of** alternative fuels, such as **synthetic fuels**.
- To **evaluate the social impacts and benefits** of the demonstrated technology and products, on the stakeholders identified.

## MATERIAL AND METHODS

2SynFuel technology and products are being analysed from a social perspective, **by applying the Social Life Cycle Assessment (S-LCA) methodology** and the **Guidelines for S-LCA** of products and organizations 2020 (UNEP-SETAC). The **same principles and framework as for the environmental LCA** (ISO 14040:2006 and ISO 14044:2006) are being followed.

### 1. Stakeholders identification

S-LCA is based on a stakeholder approach, therefore, stakeholders identification is the first step required. Figure 2 represents the stakeholders considered in this study.

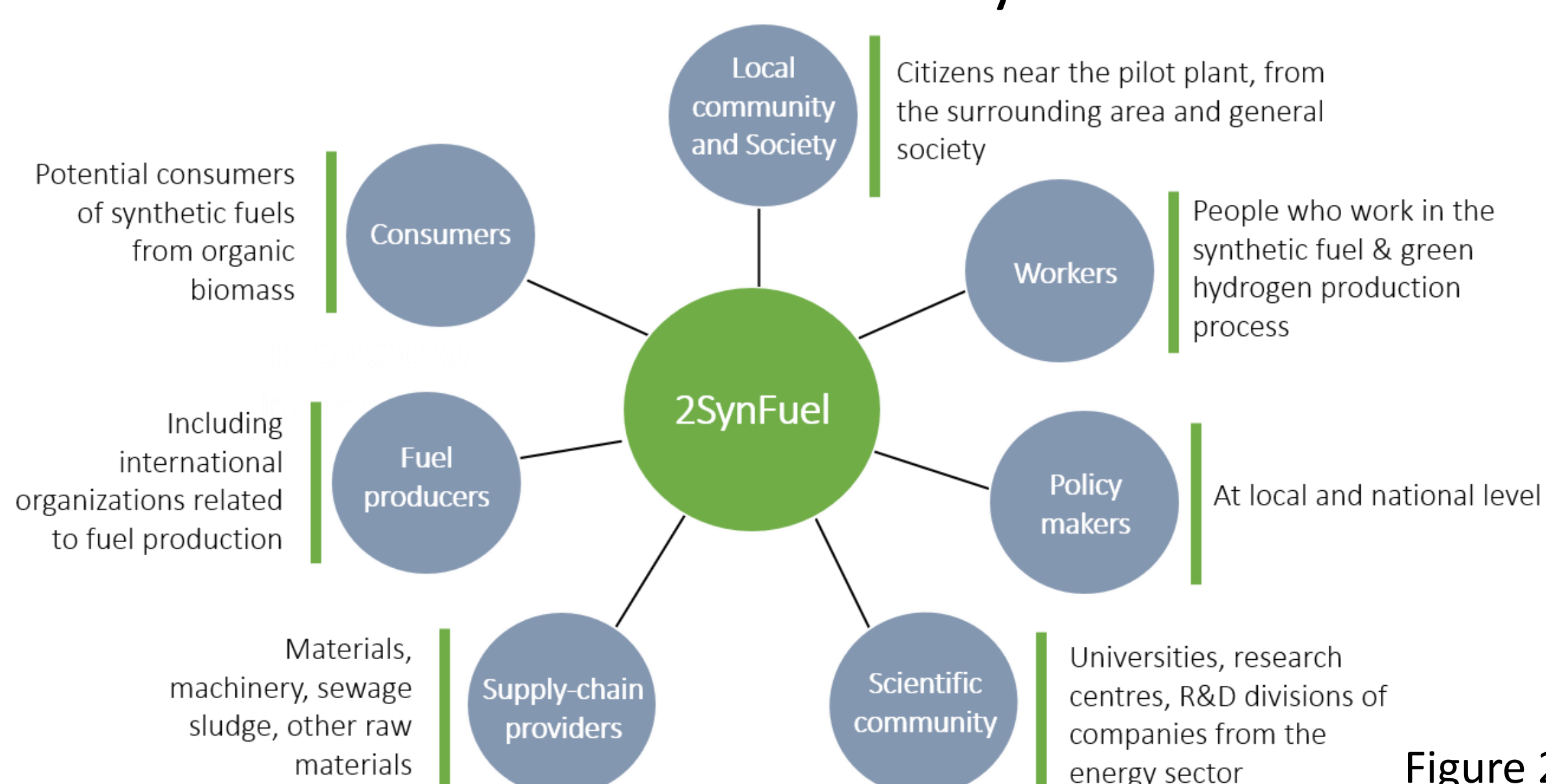


Figure 2

### 2. Study on consumer perceptions of synthetic fuels

The working methodology to obtain data for the study of consumer perceptions was based on the performance of a public consultation to potential consumers of synthetic fuels, together with a literature research. For the **public consultation**, a **public survey** was elaborated. It was based on 18 end-closed questions and was available online in three different languages (English, Italian and Catalan) from 26th August to 1st October 2020. The survey was disseminated through different webpages, social media accounts, professional groups, etc. Concerning the **literature research**, six articles from 2012 to 2019, that analyse case studies in Europe and USA have been analysed, to know the current state of the art about consumer perception of synthetic fuels and related.

## RESULTS AND CONCLUSIONS

The **survey** addressed to the potential consumers of synthetic fuels has been **well received**, with **241 surveys completed**. All the data have been analysed and different figures and diagrams have been elaborated. Based on this data, the following statements could be done:

- Potential consumers felt that **waste from biomass** are the **most sustainable raw materials** to be used in the production of synthetic fuels.
- From the point of view of the potential consumers, the **substitution of conventional fuels by synthetic fuels derived from waste from biomass** bring **environmental and socio-economic benefits**.
- Potential consumers are **willing to use synthetic fuels in its vehicle** and are **willing to pay a premium for a more environmentally and socially sustainable fuel**.
- Based on the results of the surveys, it seems that **2SynFuel technology and 2SynFuel products would be well accepted** by potential consumers. Potential consumers **identify the advantages** of sustainable synthetic fuels in front of conventional fuels.
- Potential consumers opined that synthetic fuels could **replace conventional fuels in the future**, not now. The main problems of **synthetic fuels** to reach the market implementation is the **lack of policy adequacy to solve the current barriers to fully implement the use of sustainable synthetic fuels**.
- On the other hand, potential consumers thought **distrust of consumers in quality aspects or safety aspects when consuming synthetic fuels are not determinants**.

The **next steps** that will be performed in this S-LCA will be the identification and evaluation of the social impact categories and the social impact indicators.

