

# Green Hydrogen: The champagne of German energy transition?

Residents' acceptance of local production of Green Hydrogen

Johannes Buchner, M.Sc.

## Introduction and research questions

- Production of Green Hydrogen is currently still very expensive → Use of Green Hydrogen is economically not viable
- Future political goal: Substitution of fossil energy with Green Hydrogen in significant areas of German industry
- However: Acceptance of local production of Green Hydrogen plays an important role in the successful establishment of the technology

### Research questions:

- Which factors influence the residents' acceptance of local production of Green Hydrogen?
- What are the differences between general acceptance and local acceptance of Green Hydrogen in Germany?



(Image source: Mediaparts - stock.adobe.com)

## Literature Review

Existing acceptance factors (**positive / negative**) of renewable energy systems (examples):

### Wind energy:<sup>1</sup>

- + Procedural and distributive justice
- + Participation
- Perceived infrasound
- Impact on landscape or birds

### Biogas plants:<sup>2</sup>

- + Heat-delivery
- + Attitudes towards renewable energies
- Odor, dust and noise emissions
- Increased traffic volume

### Solar energy:<sup>3</sup>

- + Perceived self-effectiveness
- + Environmental concern
- + Awareness of solar energy
- Cost of solar energy

### Hydrogen technologies:<sup>4</sup>

→ first, non valid factors; little researched field

- + Prior knowledge
- + Environmental knowledge
- Perceived cost
- Risks and benefits

## Planned Research Design

### Germany-wide online survey in September/October 2022

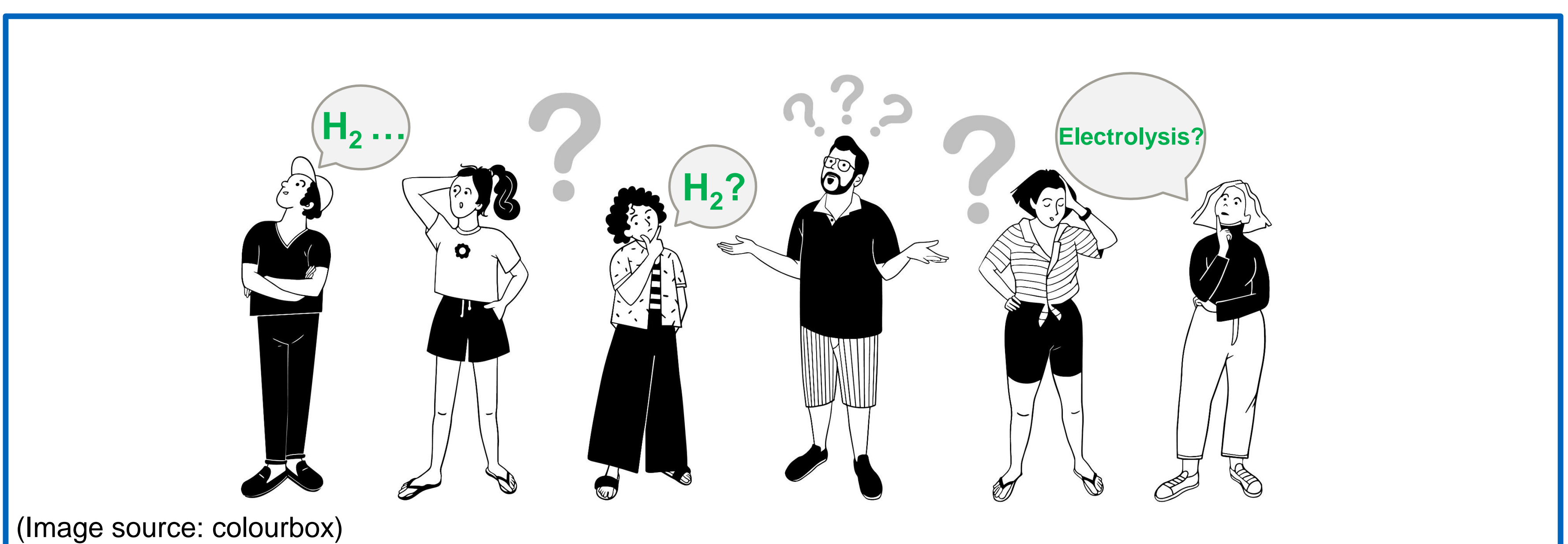
Comparison of the assessments of more than 350 residents of Green Hydrogen production plants with the assessments of more than 350 unaffected citizens. Dissemination of the survey via various social media channels

### Content:

- General questions about Green Hydrogen and questions about a hypothetical, planned or already built Green Hydrogen production facility in the vicinity of the respondents
- Willingness to accept (WTA)
- Acceptance groups and categories
- Green consumer values

Participate in my survey (duration: 15 min):

(Note: only available in German language)



(Image source: colourbox)

### References:

<sup>1</sup> Langer, Katharina; Decker, Thomas; Roosen, Jutta; Menrad, Klaus (2018): Factors influencing citizens' acceptance and non-acceptance of wind energy in Germany. In: Journal of Cleaner Production 175, S. 133–144. DOI: 10.1016/j.jclepro.2017.11.221.

<sup>2</sup> Stiehler, Willie; Decker, Thomas; Menrad, Klaus (2011): PUBLIC ACCEPTANCE OF BIOMASS COGENERATION HEAT (AND POWER) PLANTS (BCH(P)'S) IN BAVARIA.

<sup>3</sup> Irfan, Muhammad; Elavarasan, Rajvikram Madurai; Hao, Yu; Feng, Mingjia; Sailan, Dai (2021): An assessment of consumers' willingness to utilize solar energy in China: End-users' perspective. In: Journal of Cleaner Production 292, S. 126008. DOI: 10.1016/j.jclepro.2021.126008.

<sup>4</sup> Emodi, Nnaemeka Vincent; Lovell, Heather; Levitt, Clinton; Franklin, Evan (2021): A systematic literature review of societal acceptance and stakeholders' perception of hydrogen technologies. In: International Journal of Hydrogen Energy 46 (60), S. 30669–30697. DOI: 10.1016/j.ijhydene.2021.06.212.

