

SOTES

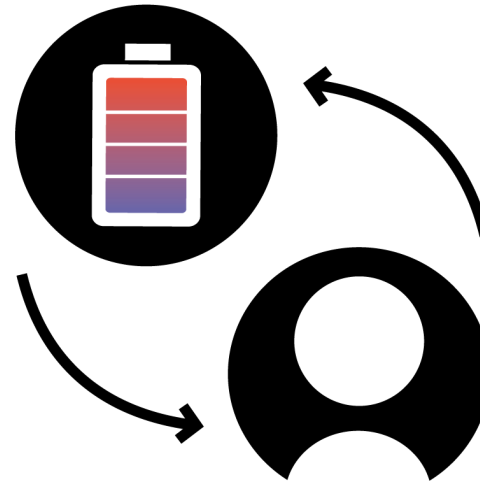
Socio-Technological Breakthrough of Thermal Energy Storage



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Schaft Wissen | Au service de savoir



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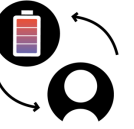
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The social acceptance of STES – insights from the SOTES project

Thermal Energy Storage Symposium, Horw 26.1.2024

Isabelle Stadelmann-Steffen

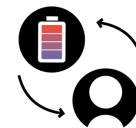


What is STES?

- Seasonal thermal energy storage (STES)
- Store and transfer thermal energy
 - from summer to winter for heating purposes
 - from winter to summer for cooling purposes

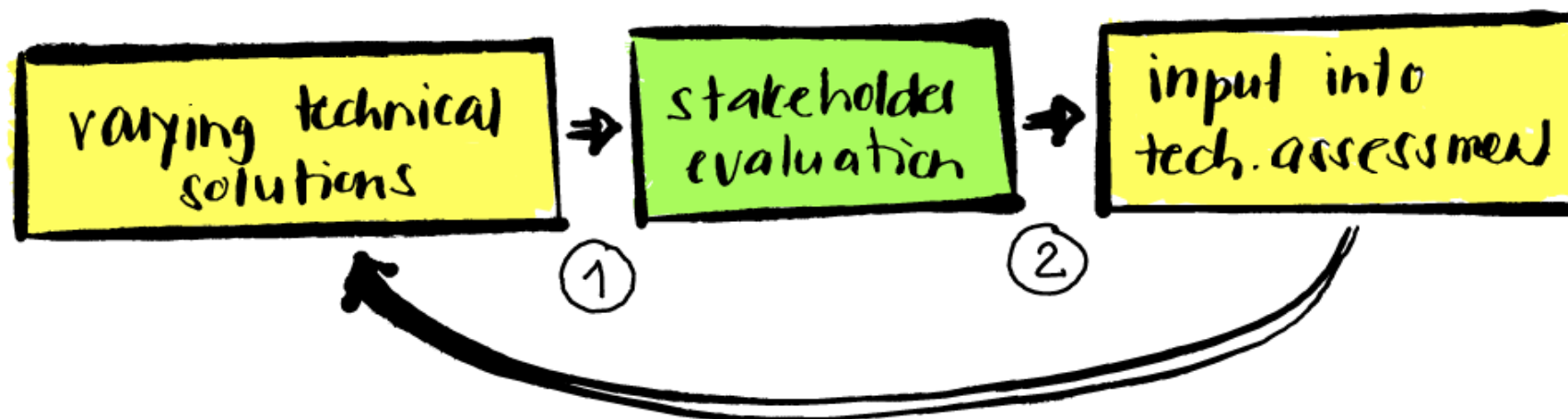


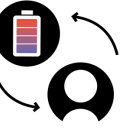
Source: Acron-Sunmark,
<https://www.springerprofessional.de/energiespeicher/solarthermie/erdspeicher-koennen-solarthermie-defizite-beheben/13328596>



Starting Point

- Gap between the (potential) availability of STES and their diffusion
- Technology acceptance
 - Technical innovation and development alone is not sufficient for a product to be successful in the marketplace
 - Need to include social aspects (Dermont et al. 2017, Devine-Wright et al. 2017, Wüstenhagen et al. 2007)
 - Consider the specific context and the specific object of acceptance (Dermont et al. 2017)





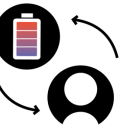
Analysing the social acceptance of STES

What do actor groups in Switzerland know and think about energy storage in general and STES in particular, as well as about its importance in the energy system?

Our approach:

- Three-wave, large-scale survey
- Experiments
- Population and Stakeholders

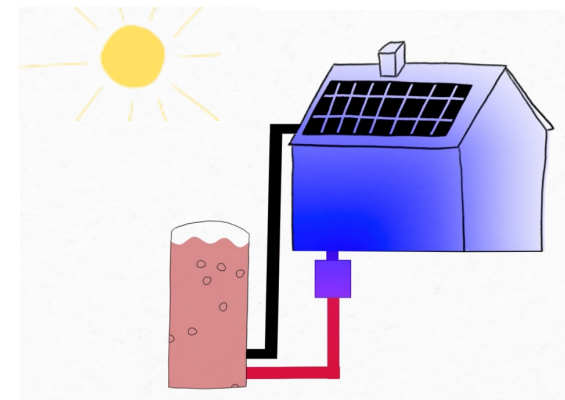
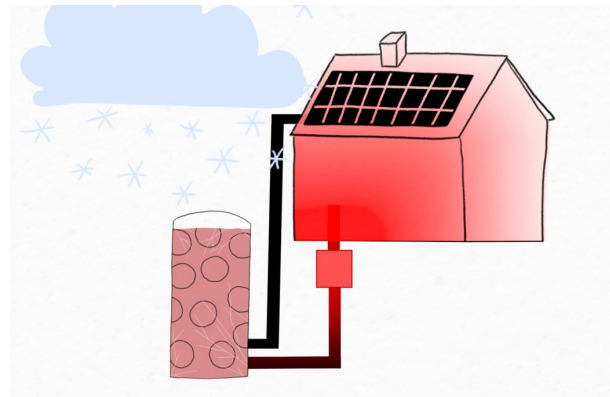
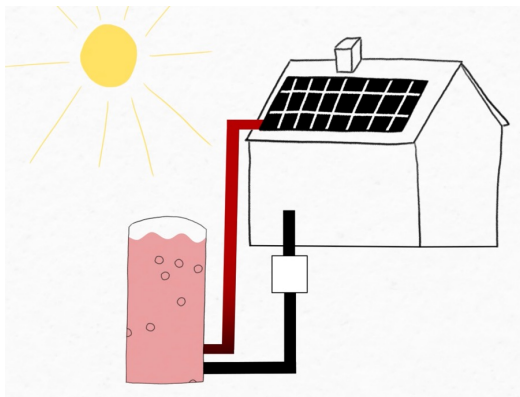
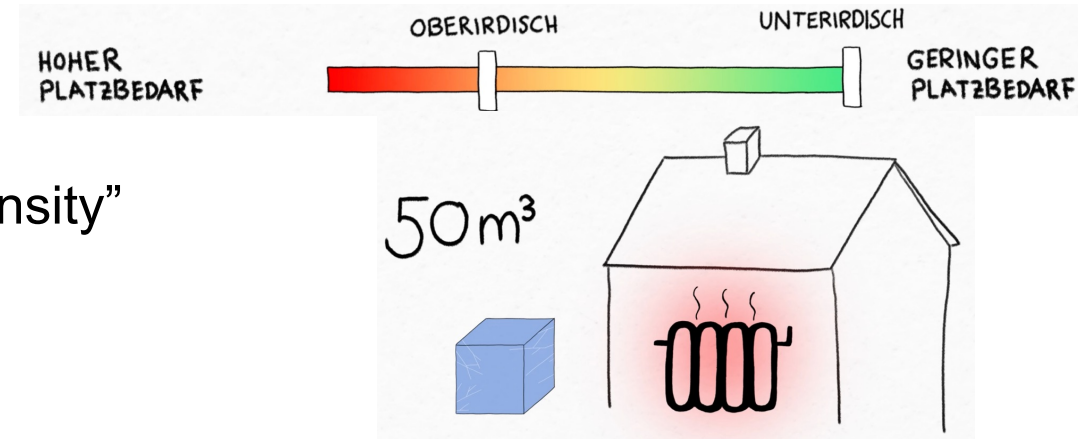
A challenge: Translating technical parameters into accessible information



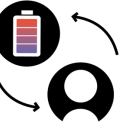
- Example 1: Energy density

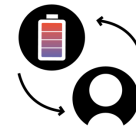
- Techies : “It is (almost) all about energy density”
- Lay people: “What is energy density?”

- Example 2: Seasonality and energy flows



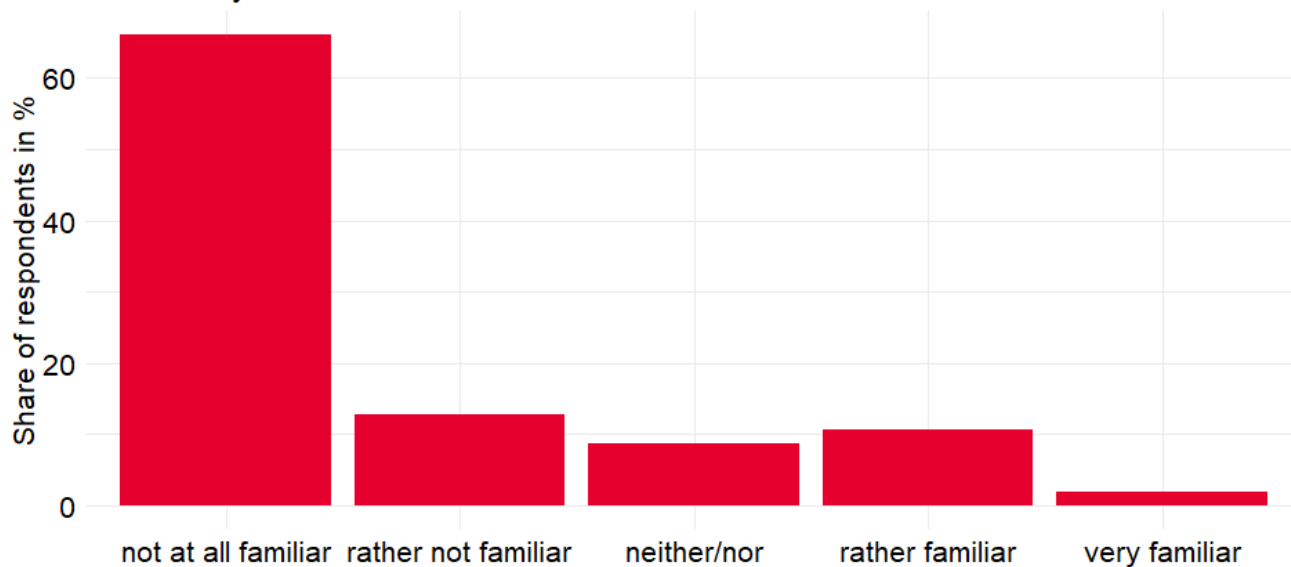
Some findings



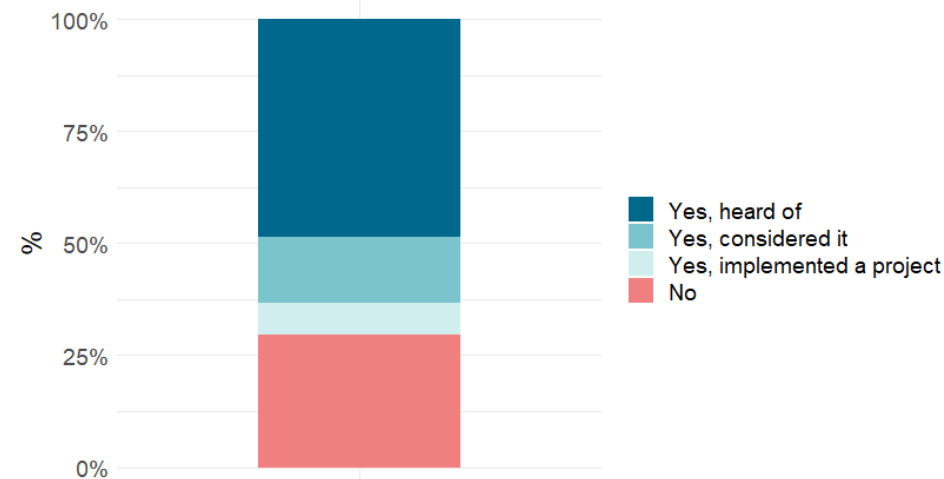


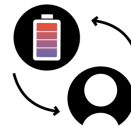
Only few people and a minority of stakeholders know STES

Familiarity with STES



STES Knowledge and Experience



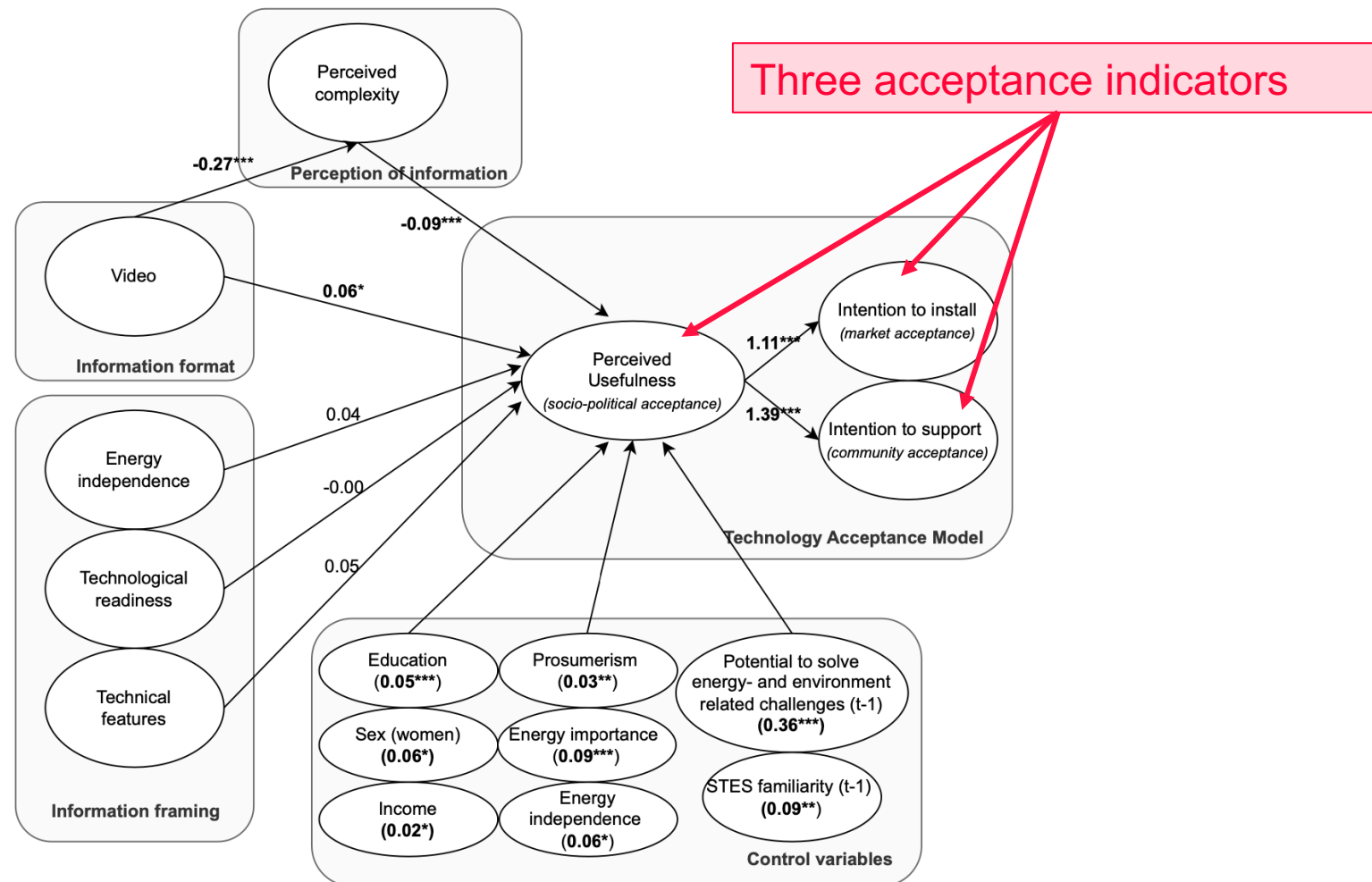


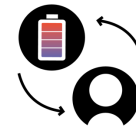
How does information affect social acceptance? (2)

Finding 1: Perceived usefulness affects intention to install and to support

Finding 2: Video-Information increases perceived usefulness directly and indirectly

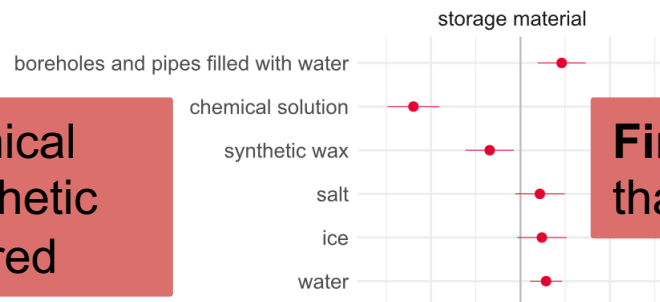
Finding 3: The framing of the information does not matter



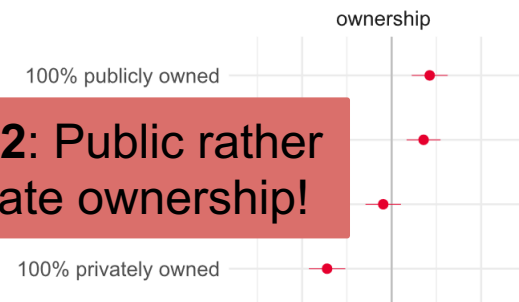


What type of STES do people want?

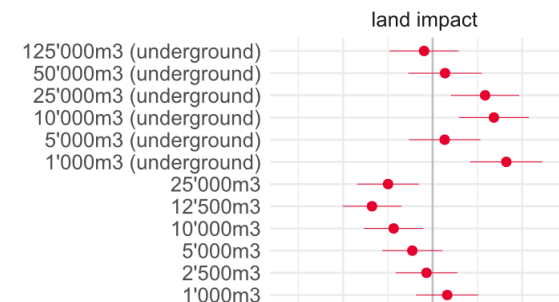
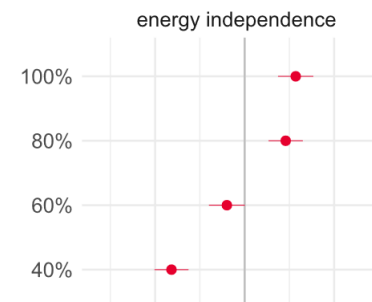
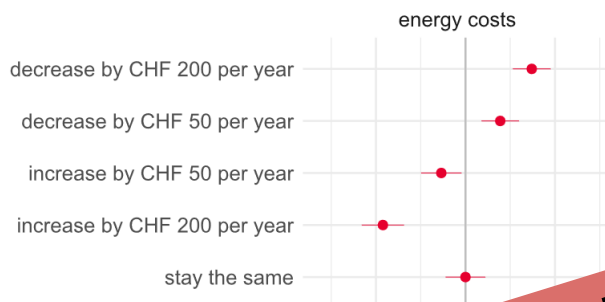
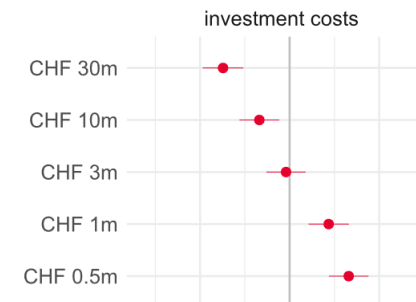
Supporting a STES Project



Finding 1: Chemical solution and synthetic wax is not preferred

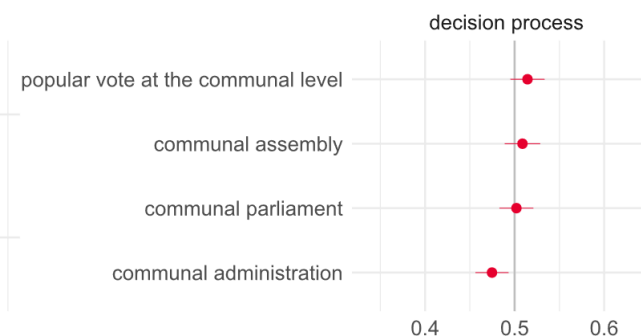
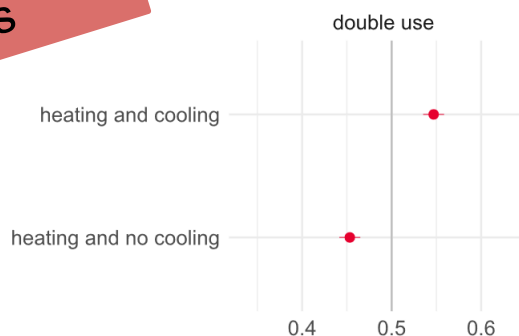
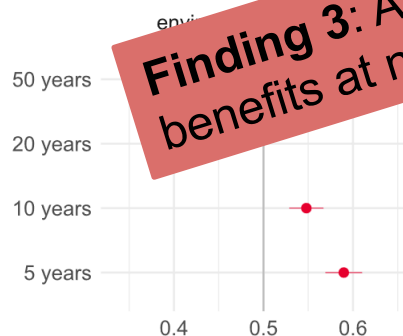


Finding 2: Public rather than private ownership!

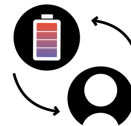


Finding 3: All the benefits at no costs

Conjoint analysis for district level projects

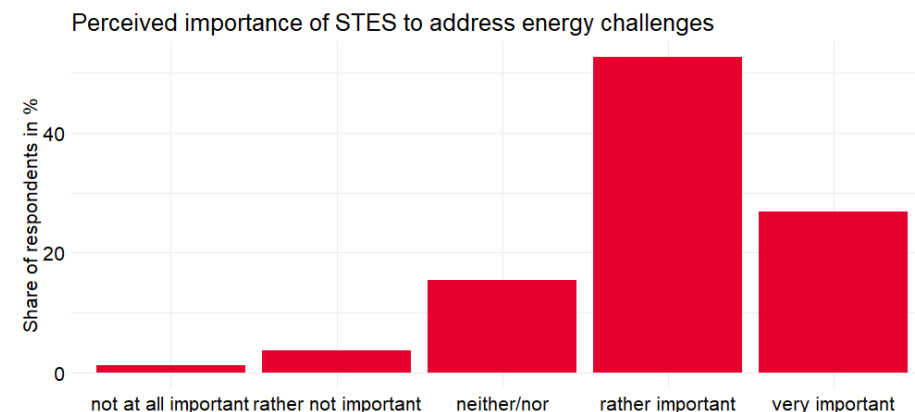


Estimated Marginal Means



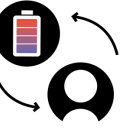
Conclusions

- **Basic assumption confirmed:**
 - STES is largely unknown in the population
 - Stakeholders have limited experience and see it as important barrier
- Overall: **high general acceptance**
- **Information** can impact perceived importance directly and indirectly
- **What STES?**
 - «familiar» technologies
 - High autarky, low costs, small, and water-based...

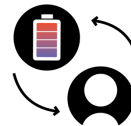


Note: After some introductory information

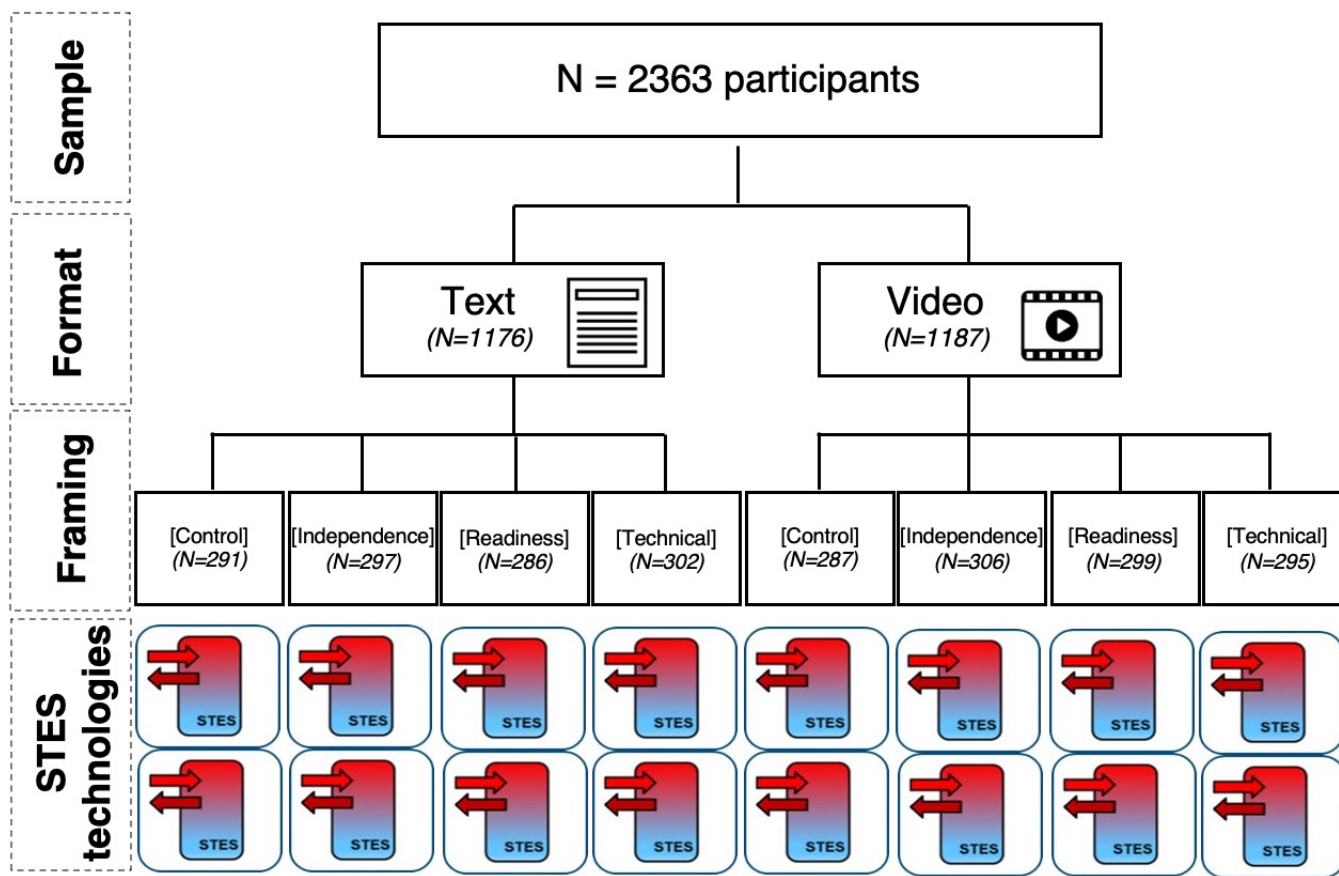
Open question: How do people decide when they understand the trade-offs?

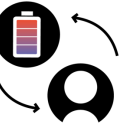


Thank you for your attention!



Back-up slide: The experimental design





Back-up slide: Survey information

Waves 1 (autumn 2022) and 2 (spring 2023) completed

Wave 1

- Info-Treatment (~1800 respondents)

Wave 2

- Respondents from Wave 1 with STES conjoint (~600 respondents)
- A fresh sample with Info-Treatment (~700 respondents)
- A fresh sample with STES conjoint (~1100 respondents)
- Architects (~300 respondents)
- Other stakeholders (~90 respondents, often as organizations!)