

# The Hydrogen Debate – A Twitter Analysis

Christoph Schräpel and Tobias Rosenberger



## Problem & Research Question

With the net zero target of the German government hydrogen has been identified as a crucial solution for decarbonization.

A debate on hydrogen emerged on its use cases and the different forms of it. We examine all #wasserstoff tweets.

### Research Question

Who talks what about hydrogen on Twitter and in which way?

## Theory

### Advocacy Coalition Framework (ACF)

Without having contextual information such as the belief systems the ACF observes general interpretations, storylines and frames.

Twitter data cannot reflect the entirety of the discourse on the hydrogen debate it can serve as a general indicator of the content of the public discourse.

## Method

### Twitter

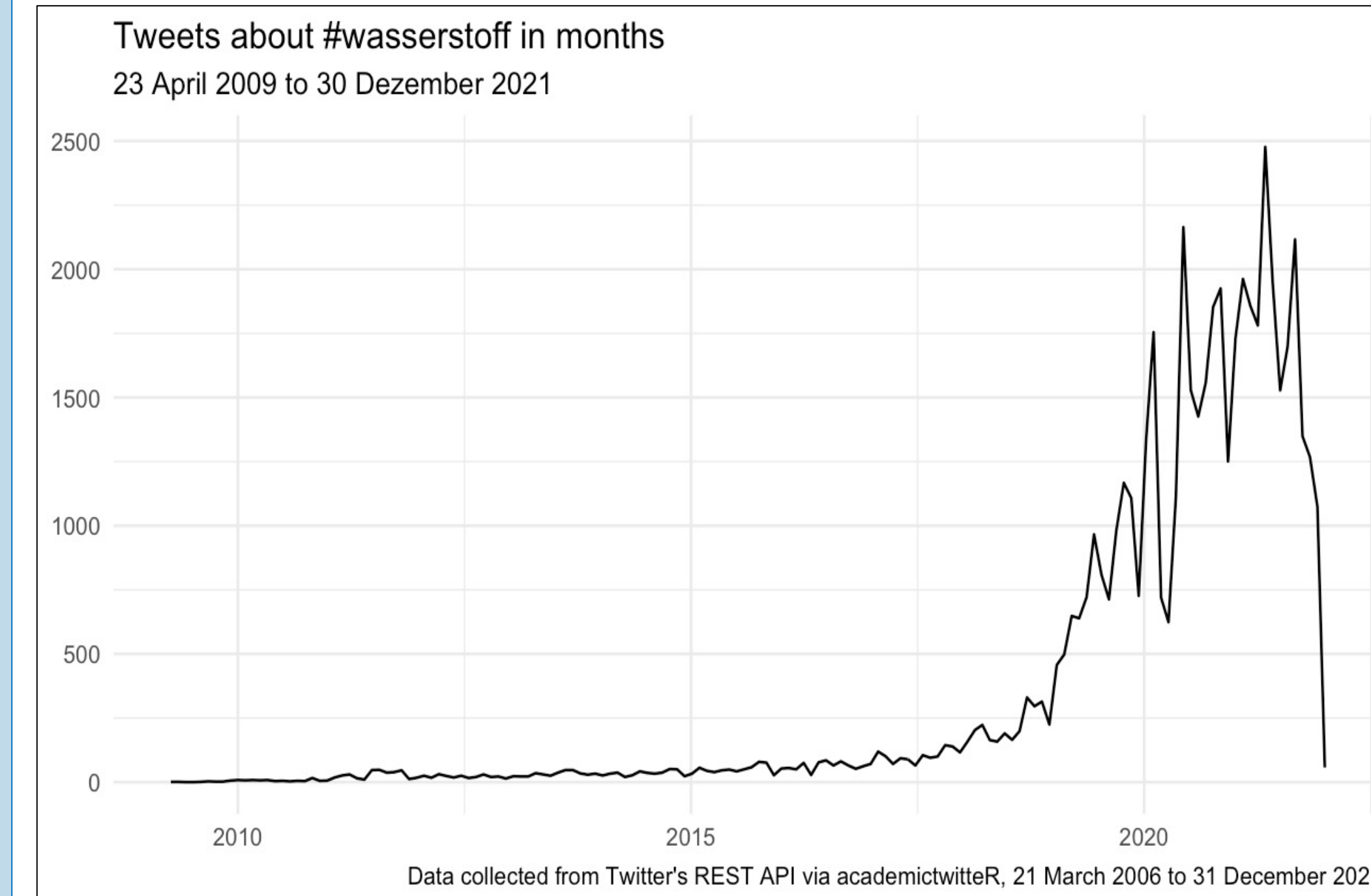
Twitter is especially relevant when it comes to discourse analysis because of its comparatively higher politized nature.

### A Mixed Methods Approach

**Sentiment Analysis:** Different general emotions could be analysed with the text mining package NRC Word-Emotion Association Lexicon (EmoLex).

**Network Analysis:** Discursive interactions generate complex interconnections between participants which were represented with a network analysis.

## Descriptive Results



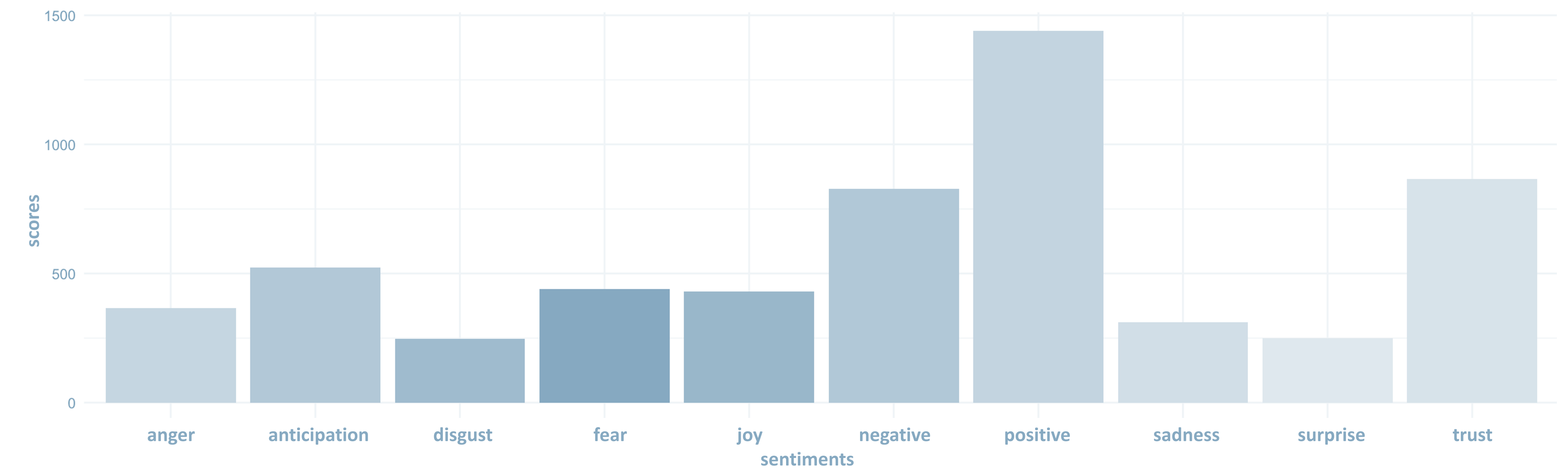
## Wordcloud

Articles and fill words were deleted, e.g. „ist“, „zu“, „den“, „und“, stemmed data (grüner → grün etc.).

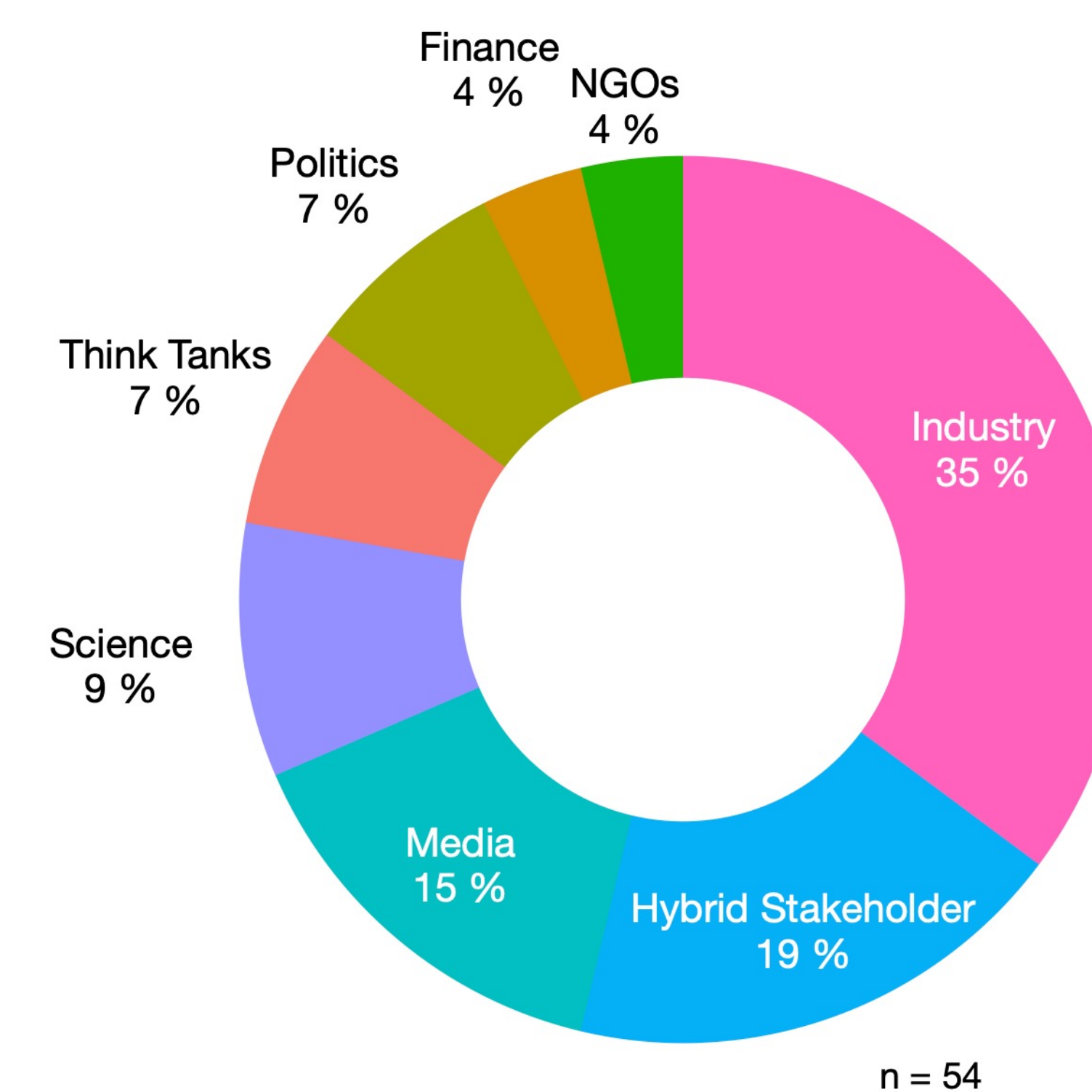


grün	blau	türkis	grau
18412	745	193	190

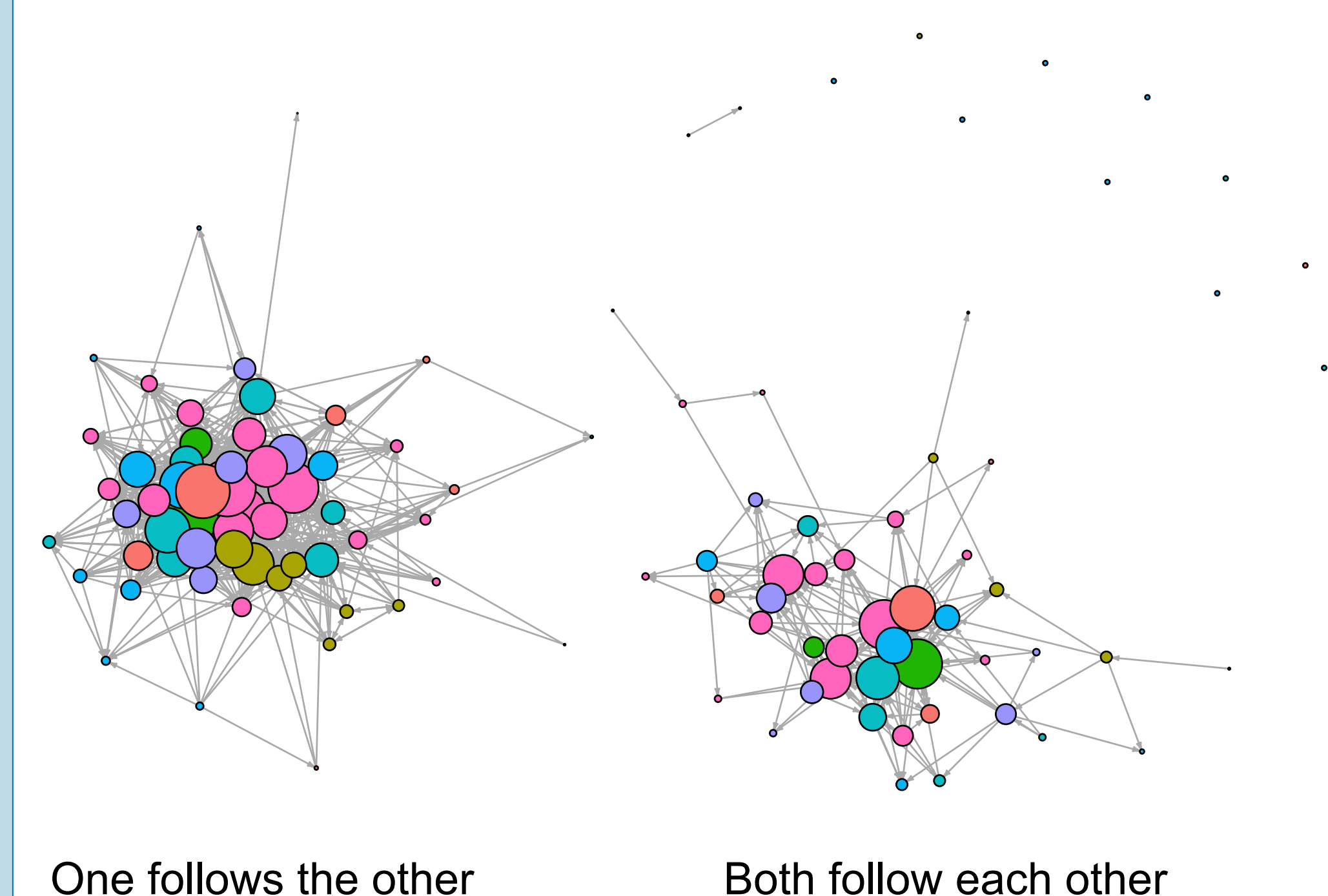
## Sentiment of the #wasserstoff Debate on Twitter



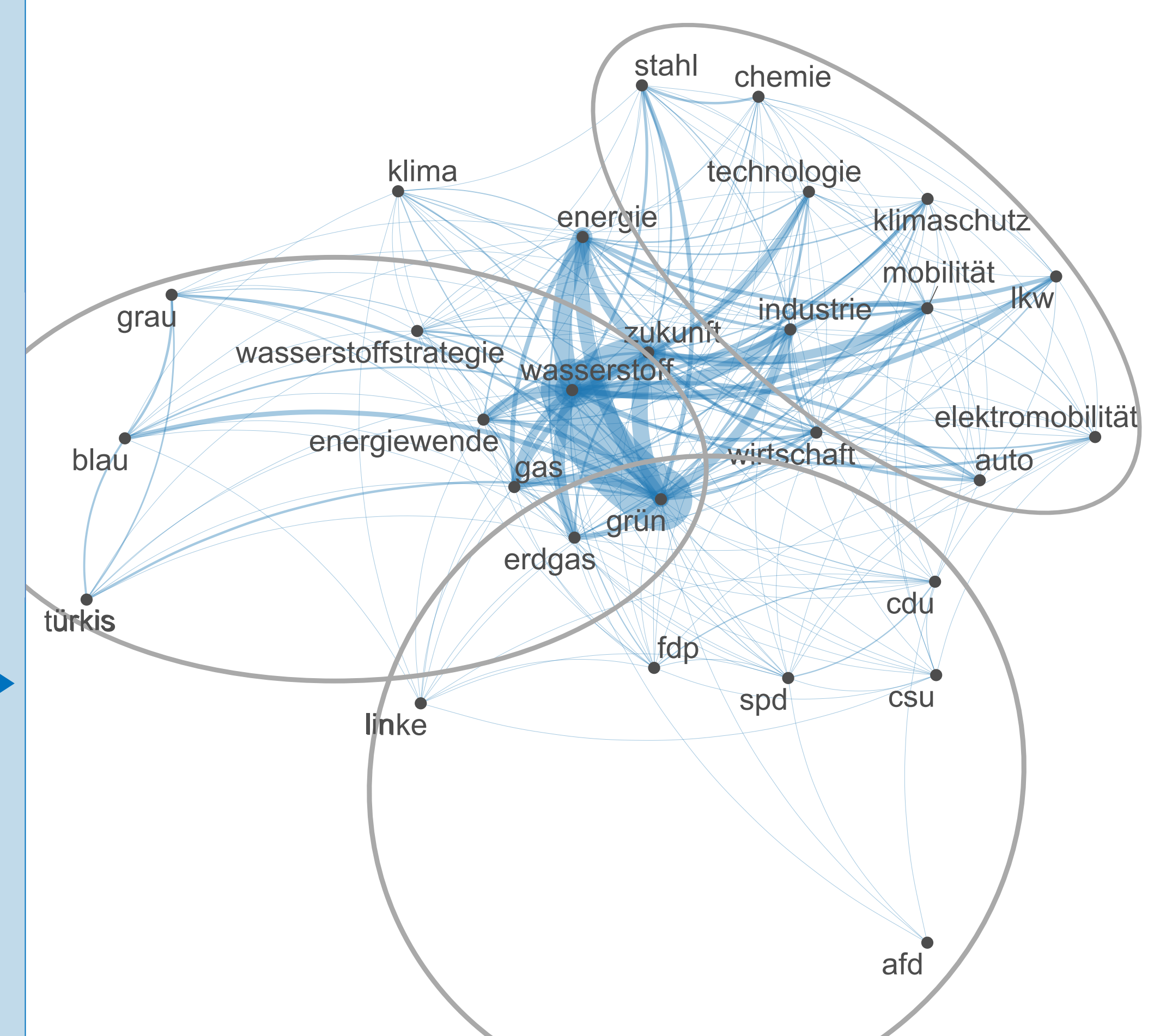
## Distribution of Stakeholders



## Network of Stakeholders – Who Follows Who



## Co-Occurrence Network



3 main topics were examined. All tweets, stemmed data.

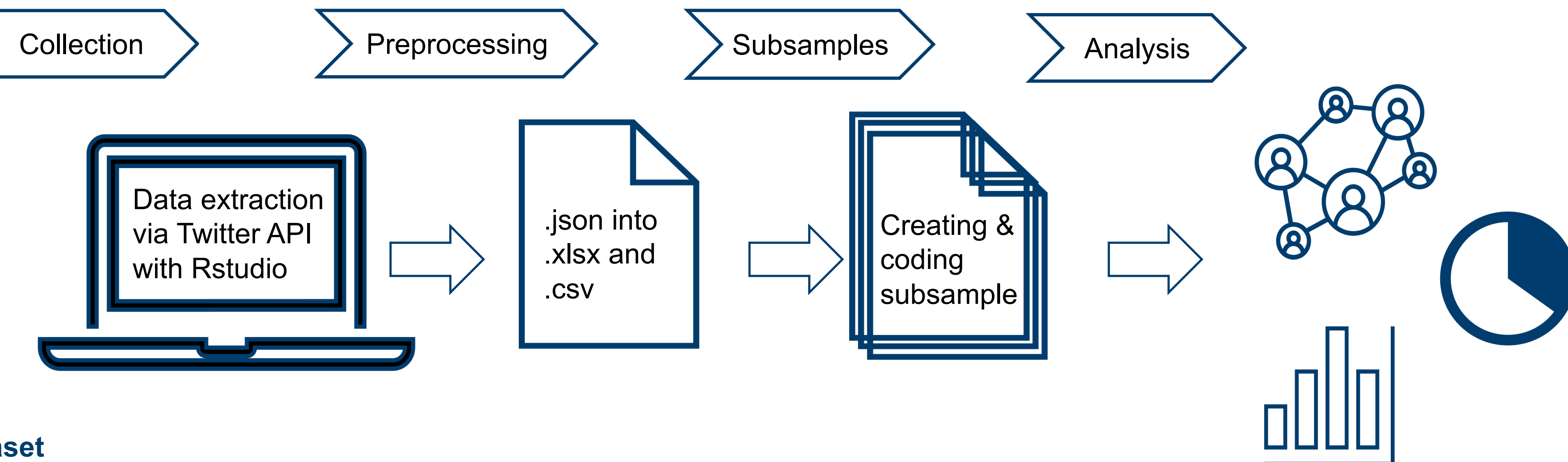
Types of hydrogen	Areas of usage	Political parties
grün, blau, türkis, grau	stahl, chemie, mobilität, auto, elektromobilität, lkW	grün, fdp, cdu, csu, spd, linke, afd

## Discussion & Conclusion

Coinciding with the development of the German hydrogen strategy the debate and public interest gained momentum from September 2018 and onwards. Predominantly positive sentiments throughout the entire discourse could be observed with a focus on green hydrogen and led by many industry accounts.

As this study relies solely on Twitter data, the scope is limited. Further studies could deeper analyse the framing of the types of hydrogen.

## Data



### Dataset

All #wasserstoff tweets since Twitter exists (21<sup>st</sup> of March 2006) – until the 31<sup>st</sup> of December 2021. First tweet with #wasserstoff was on the 23<sup>rd</sup> of April 2009: In total 54,322 tweets.