Using AI for early prediction of social issues with emerging technologies: Advanced recycling plastic (ARP)

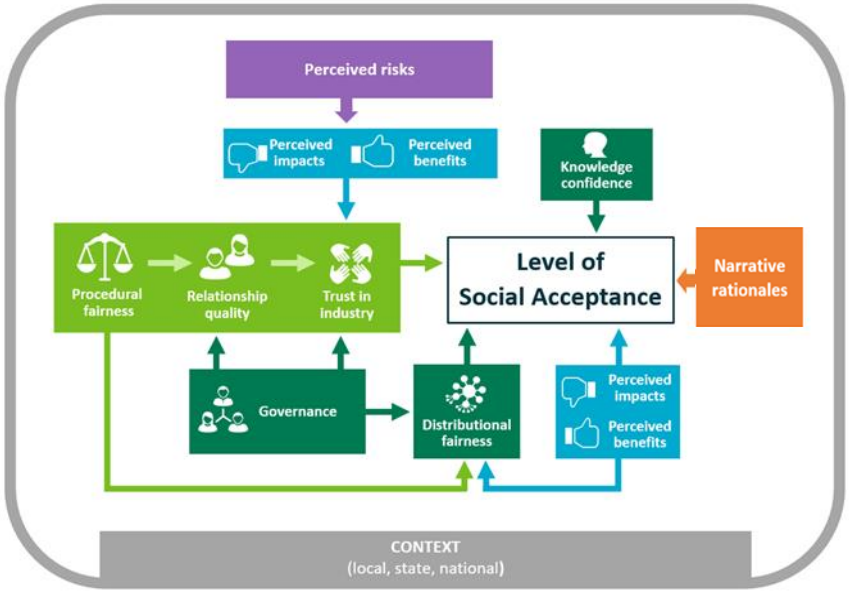
Responsible Innovation - Future Science Platform (RI-FSP) project

Presenter: Dr Rod McCrea

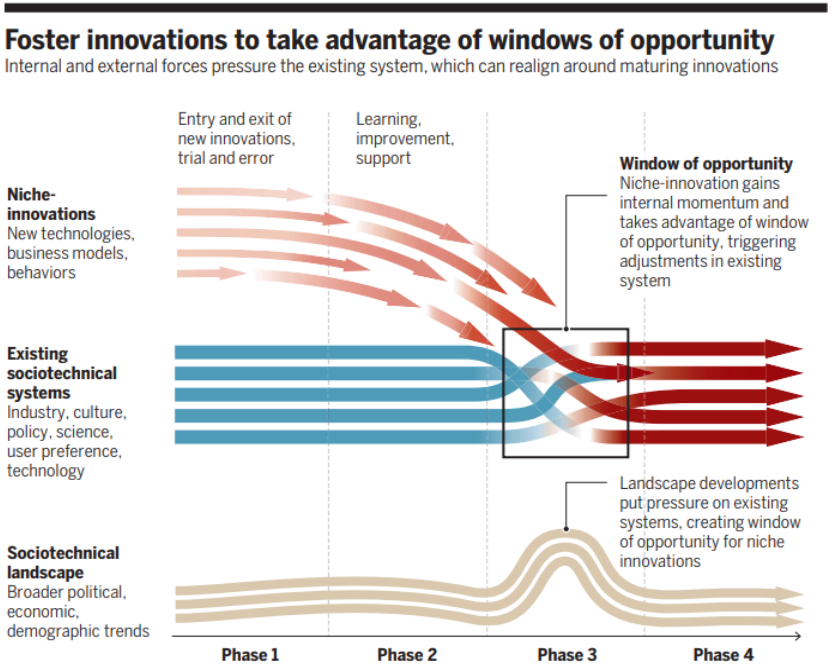
Overall research objectives

- To identify and engage with *emerging* and *changing* public narratives
- To new opportunities for industry and government to integrate social concerns
- To support the deployment and scaling up of new technologies

Two frameworks: Social licence + Strategic niche management



Adapted: Walton, A., & McCrea, R. (2020). Understanding social licence to operate for onshore gas development: How the underlying drivers fit together. *Applied Energy*, *279*, 115750.



Geels, F., Sovacool, B., Schwanen, T., and Sorrell, S. (2017). Sociotechnical transitions for deep decarbonization. *Science,* 357 (6357), • DOI: 10.1126/science.aao3760

Narratives are also important for engaging with communities

A traditional community engagement approach

Pre-engagement

- Desktop review to understand social issues
  - visiting websites/social media/literature
- Run focus groups
  - gaining a deeper understanding of issues

Initial engagement

- Local community engagement
  - listening to concerns, presenting information

Collaborative engagement

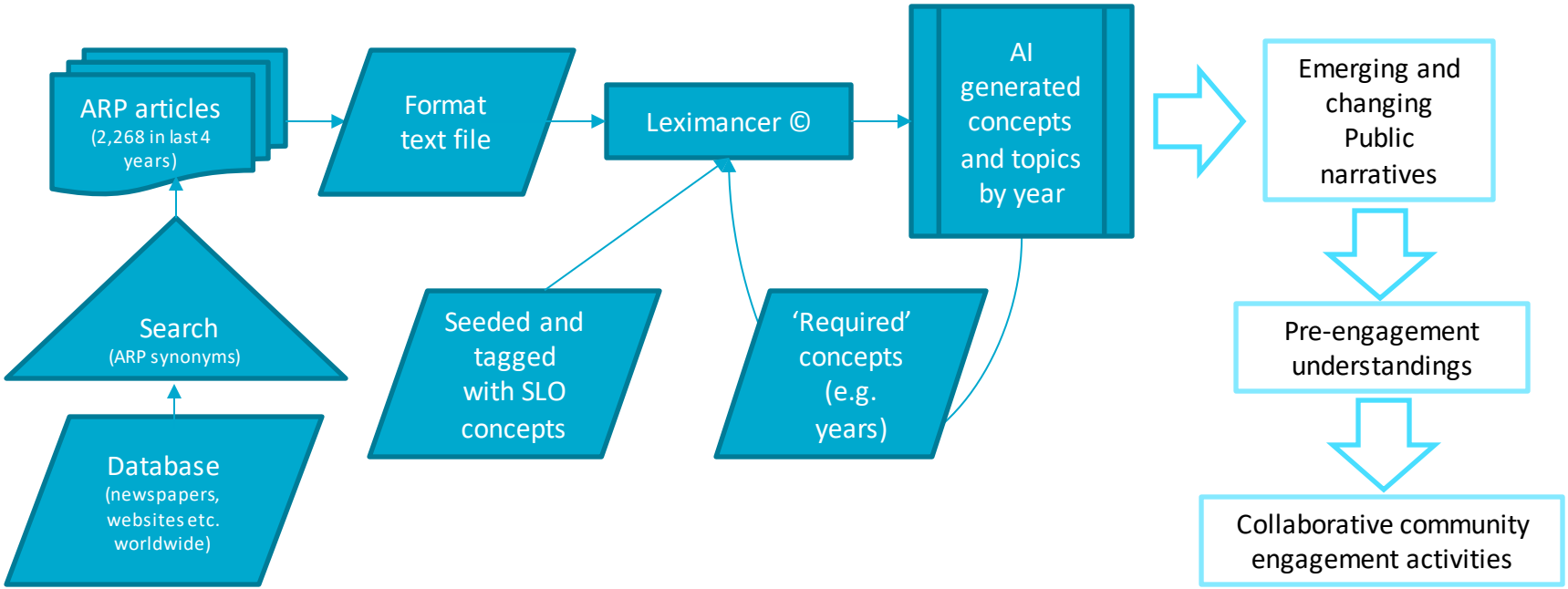
- Co-designing solutions
  - resolving social concerns with technology deployment

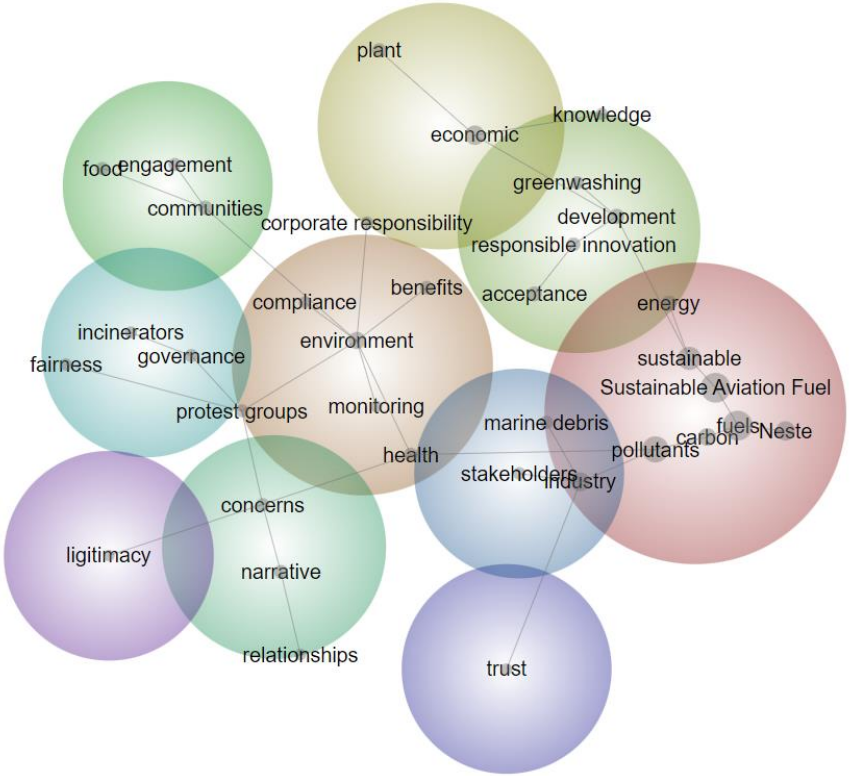
Public narratives

An AI assisted approach

- Social issue mining with AI natural language processing (NLP)
  - global searching with a social license lens
  - quantifying issues and monitoring emerging issues and narratives
  - timely and comprehensive
  - engendering a sense of trust and fair process for identifying and discussing issues with the public

Using Leximancer NLP for early prediction of emerging issues





Synopsis | Concepts | Thesaurus | Query | Summaries

Ranked Concepts

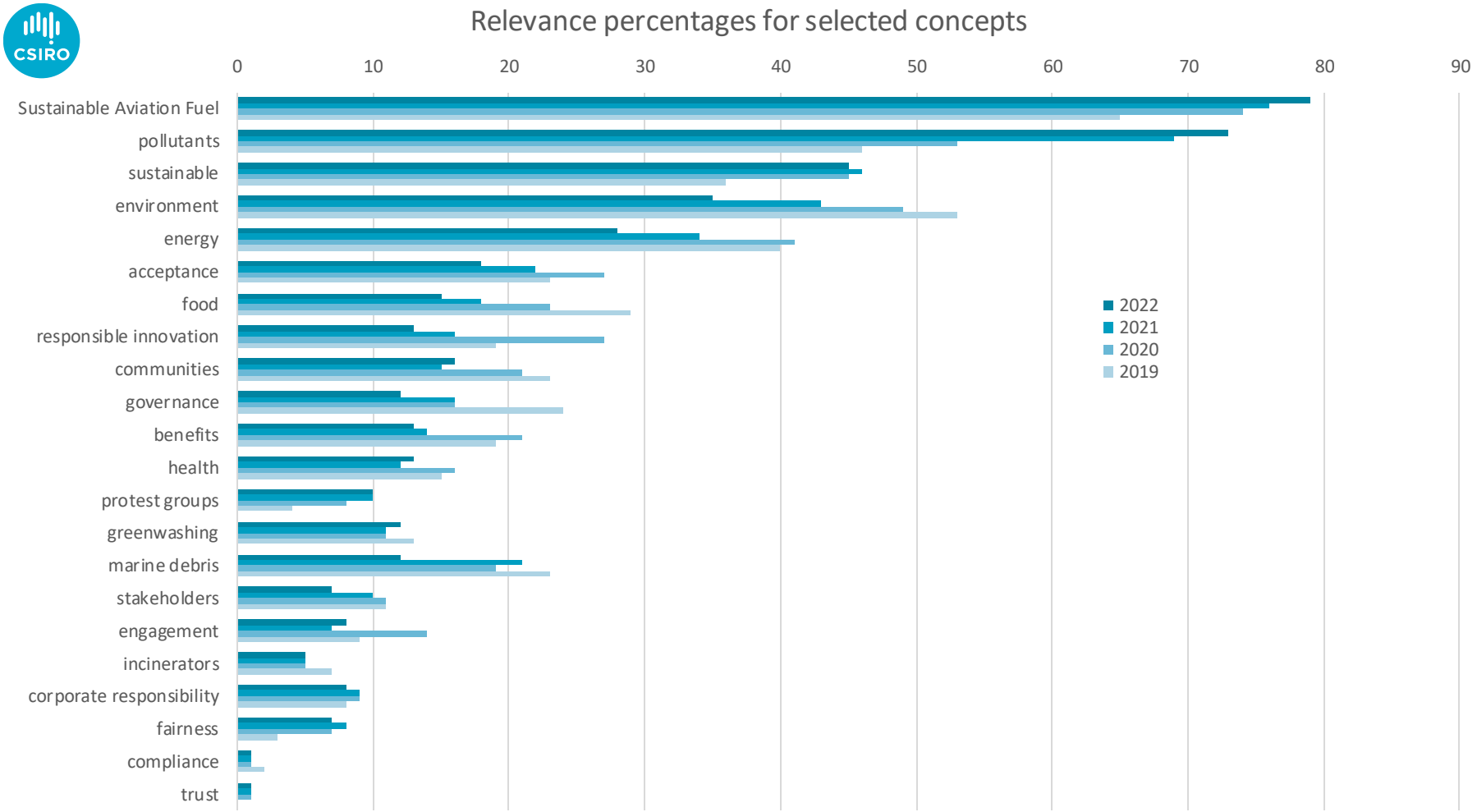
Export

Name-like (2)

	Count	Relevance
Sustainable Aviation Fuel	1155	79%
Neste	576	39%

Word-like (33)

	Count	Relevance
fuels	1465	100%
pollutants	1071	73%
economic	896	61%
industry	731	50%
sustainable	666	45%
environment	510	35%
carbon	482	33%
energy	411	28%
plant	339	23%
development	332	23%


Relevance percentages for selected concepts
0
10
20
30
40
50
60
70
80
90
Sustainable Aviation Fuel
pollutants
sustainable
environment
energy
acceptance
food
responsible innovation
communities
governance
benefits
health
protest groups
greenwashing
marine debris
stakeholders
engagement
incinerators
corporate responsibility
fairness
compliance
trust
2022
2021
2020
2019

Arp Proquest V 2

Topic Guide

Topics or related concepts

Sustainable Aviation Fuel

- **Fuels:** *Neste, sustainable, Sustainable Aviation Fuel*
- **Neste:** *sustainable, Sustainable Aviation Fuel*
- **Sustainable:** *Sustainable Aviation Fuel*

Pollutants Carbon

- **Carbon:** *pollutants, Sustainable Aviation Fuel*
- **Pollutants:** *Sustainable Aviation Fuel*

Fairness Environment

- **Environment:** *fairness, health, incinerators, protest groups*

Health Pollutants

Marine Debris Pollutants

Acceptance Economic

- **Economic:** *acceptance, development*

Development Sustainable

Topic Matches: [#1 - 512] / 534

1. LINKS *Linking Service* FULL TEXT *Nippon Cargo Airlines* (NCA), the only international cargo airline based in *Japan*, has for the first time used *Neste* MY *Sustainable Aviation Fuel* for several cargo flights in November and December this year. The sustainable aviation fuel (SAF) is supplied by *Neste* at *Amsterdam Airport Schiphol*.

   1-300.rtf

2. *Neste* and *Airbus* recognize that one of the biggest challenges in accelerating SAF use is the ramp-up of SAF production. This collaboration is laying the foundation for *Airbus* and *Neste* to explore business opportunities together and jointly promote the production and use of sustainable aviation fuel.

   1-300.rtf

3. The combined knowledge and expertise of the companies will help advance the use and availability of SAF as a means of transitioning aviation towards more sustainable energy sources and reducing the climate impact of aviation," said *Thorsten Lange*, *Executive Vice President*, *Renewable Aviation* at *Neste*. " *At Airbus*, we believe SAF is one of aerospace's most promising decarbonisation solutions that can be used in both in-service aircraft fleets and those of tomorrow.

   1-300.rtf

4. *Key Highlights*: * The collaboration enables fuel marketing companies to comply with the *French* mandate for sustainable aviation fuel (SAF), which has set a requirement to include a minimum of 1% SAF in jet fuel for all commercial flights from *French* airports in 2022. * *Neste* is committed to contribute significantly as we are increasing our global SAF production capacity to 1.5 million tons per annum by the end of 2023.

   1-300.rtf

5. *Original Press Release*: Nov. 24 *Neste Corporation* issued the following news release: *Neste* and CIM, part of *NOVEN Group* in *France*, the leading independent *French* group of companies providing oil storage and supply services, are pleased to announce their collaboration to enable the supply of *Neste* MY *Sustainable Aviation Fuel*™ into *France*. The collaboration enables fuel marketing companies to comply with the *French* mandate for sustainable aviation fuel (SAF), which has set a requirement to include a minimum of 1% SAF in jet fuel for all commercial flights from *French* airports in 2022.

   1-300.rtf

6. LINKS *Linking Service* FULL TEXT *ITOCHU Corporation* has been selected for a sustainable aviation fuel (SAF) demonstration project by the *Japanese Civil Aviation Bureau*, *Ministry of Land*, *Infrastructure*, *Transport* and *Tourism* (MLIT). In this demonstration project, ITOCHU will import *Neste* MY *Sustainable Aviation Fuel* around January 2023 to blend it with conventional fossil jet fuel in cooperation with *Fuji Oil Company*.

Benefits of technology assisted approach for community engagement

Supports social license

- Uncovering potential concerns ↑
- Democratising information ↑
- Building trust in community engagement processes ↑
- Reducing social risks ↓
- Increasing co-benefits ↑
- Reducing information vacuums ↓
- Socially acceptable and socially responsible deployment of new technologies ↑

Other potential outcomes

- Time and money ↓
- Efficiency and effectiveness ↑
- Perceived bias ↓
- Clearing misconceptions ↓
- Sharing understandings ↑
- Empowering impacted communities ↑
- Co-designing strategies ↑

Thank you

Project team:
Andrea Walton
Rod McCrea
Andrew Terhorst
Melissa Skidmore
(Sarah King and Alex Krumpholz)