

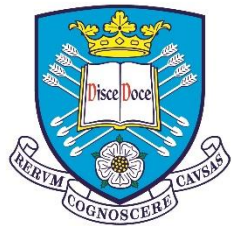
ACT Knowledge Sharing Workshop

Negative Emission in the Waste to Energy Sector: Technologies for CCUS
(NEWEST-CCUS, Project No. 299683)

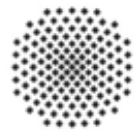
Dr Romain F H Viguier, Project Manager
(replacing project coordinator Dr Mathieu Lucquiaud)

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Project Partners



The University
Of Sheffield.
**Energy
Institute.**



University of Stuttgart
Germany



TNO innovation
for life

Negative Emissions in the Waste-to-Energy Sector: Technologies for Carbon Capture, Utilisation & Storage



The NEWEST-CCUS project is extending the reach of climate action by supporting the development of carbon capture, utilisation and storage (CCUS) technologies for the waste-to-energy sector.

The impact of climate change and increasing amounts of waste are challenges facing every country. Our research teams aim to de-risk, demonstrate and develop CO₂ capture technologies tailored for waste-to-energy plants worldwide.

Research

WP3

Oxyfuel and membrane technologies

- Exploiting synergies between Norway's CapeWaste project, Germany's NuCA project and NEWEST-CCUS on oxyfuel technology adaptation
- Assessing membrane capture technologies
- Pilot-scale testing at industrial facilities to consider use with waste-to-energy

WP4

Retrofit solutions with post-combustion capture with solvents

- Tackling challenge of trace metals and combustion aerosols in flue gases
- Addressing data gap on solvent ageing and management options
- Testing proprietary solvent at pilot scale and at industrial facilities, and novel solvents at lab scale

WP5

Comparative technology in waste-to-energy sector

- Building a framework for a comparative technology assessment using results from WP3 and WP4
- Assess the potential for negative emissions and the size of the market for CCUS in the European waste-to-energy sector
- Sharing results with technology developers and local regulators

Provide a full overview of CO₂ capture solutions applied to the European waste-to-energy sector



Assess technical possibilities and limitations of CO₂ capture technologies for different waste types



Investigate operational issues for CO₂ capture on waste-derived flue gases



Improve net efficiency of CO₂ capture solutions for waste-to-energy



Demonstrate promising CO₂ capture technologies and develop to a high technology readiness level (TRL 5-8)



Establish a common basis for comparing CO₂ capture technologies for waste-to-energy

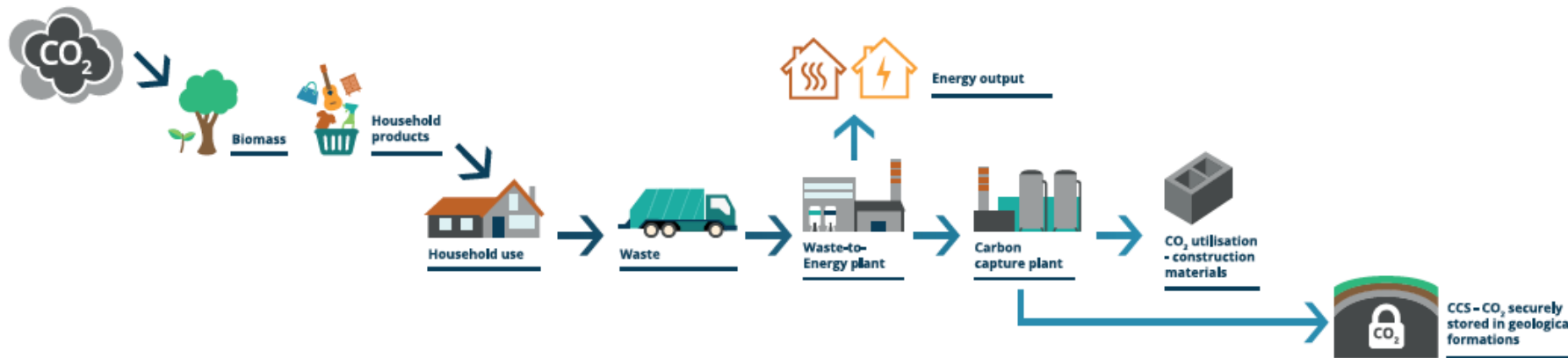
Delivery: Our three-year project, funded by research agencies and governments in Norway, Germany, the Netherlands and United Kingdom, will demonstrate CCUS technologies, assess the scale of the market and provide a robust methodology for “negative emissions” accounting.

Expertise: We harness Europe’s scientific and industrial expertise to help progress this technology, expand the range of fuel sources and create high-quality jobs, while responding to the climate emergency.

Negative emissions: Household waste from biogenic sources could deliver negative emissions – removing CO₂ directly from our atmosphere – if waste-to-energy plants deploy CCUS. We will assess this potential as a core objective.

Facts about waste

- Waste-to-energy plants are in operation across the EU, interest in CCUS is growing and landfill sites are being phased out.
- This complements other waste treatment methods, such as recycling, as part of an integrated waste management system.
- It also diverts waste from landfill, reducing environmental impacts such as groundwater pollution and methane emissions.
- Visit newestccus.eu/facts-about-waste for more facts and figures.



How CO₂ from biogenic sources of waste can create negative emissions if it is captured and stored securely

Industry partners and Expert Advisory Group



WtE Plant Operators/ Waste Management

| | |
|----------------------|---------------------|
| BIR (NO) | Statkraft (NO) |
| FCC Environment (UK) | TWENCE (NL) |
| HVC (NL) | ARC Amanger RC (DK) |
| KRV (AT) | KHK SA (PO) |
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Technology/Engineering

Air Products AS (NO)
CCSL (UK)
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Rheinkalk-LHOIST (DE)
Steinmüller (DE)
HZ Inova (CH)
SUEZ (Fr)
TCM (NO)

Governmental/Regulatory Bodies

| | |
|-------------|-------------|
| CEWEP (EU) | VBSA (CH) |
| SEPA (UK) | BFE (CH) |
| UK CCC (UK) | ODNZKG (NL) |

Universities

SJTU (CN)

Energy/Utilities

Sembcorp (UK)

WP2

Technical Meeting (June 17th and 18th – involving 16 panelists, 54 attendees)



Accelerating
CCS
Technologies

NEWEST-CCUS

D2.3.3 Reports from project meetings

Author: Dr Romain F H Viguier
Release Status: FINAL
Date: 10 August 2020
Filename and version: D2.3.3_Reports_from_project_meetings_v3

A stylized illustration of a CCS plant with a large storage tank, a processing unit, and a chimney, surrounded by greenery and a road. A large white arrow points down from the text above to this illustration.

Department for Business, Energy & Industrial Strategy
Netherlands Enterprise Agency
Bundesministerium für Wirtschaft und Energie
The Research Council of Norway

ACT2 NEWEST-CCUS project No 299683

This project NEWEST-CCUS is funded through the ACT programme (Accelerating CCS Technologies, Horizon2020 Project No 294766). Financial contributions made from The Research Council of Norway, (RCN), Norway; Bundesministerium für Wirtschaft und Energie (BMWi), Germany; Netherlands Enterprise Agency (RVO), Netherlands; and Department for Business, Energy & Industrial Strategy (BEIS) together with the Natural Environment Research Council (NERC) and the Engineering and Physical Sciences Research Council (EPSRC), United Kingdom are gratefully acknowledged.

Project Progress to date – WP2

D2.5 Project website, Newsletter, second technology bulletins

News & Events

News

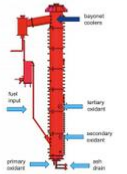


Stuttgart puts oxy-fuel technology for waste-to-energy through its paces

19/10/2020

NEWEST-CCUS partners at the University of Stuttgart are testing oxy-fuel technology for the combustion of solid recovered fuels, which is expected to be of value to operators of waste-to-energy...

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Technology Insight 2: Capture testing for solid recovered fuels combustion

23/09/2020

IFK's oxy-fuel fluidised bed research facilities at the University of Stuttgart Our second Technology Insight introduces experimental facilities offered by the University of Stuttgart's...

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NEWEST partner secures \$16m for low-cost carbon capture innovation

6/05/2020

Carbon Clean Solutions Limited (CCSL), an innovator in low-cost carbon capture and separation technology, has secured \$16 million from global investors to deliver an existing pipeline of projects...

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Technology Insight 1

University of Sheffield PACT facilities



By Dr Muhammad Akram
Energy 2050 (PACT Facilities), University of Sheffield

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[www.newestccus.eu](#)



Technology Insight 2

IFK's oxy-fuel fluidised bed research facilities at the University of Stuttgart

By: Joseba Moreno & Max Schmid, University of Stuttgart





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Tesco Ireland to become first Irish retailer to purchase renewable gas made from its surplus food waste. Will be enough to power six stores. [tescoireland.ie/news/news/arti...](https://www.tescoireland.ie/news/news/arti...) #waste #wastemanagement #wastetoenergy #biomass #bioenergy #circulareconomy#zerowaste



Jun 11, 2020

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Global investment in biomass & waste to energy projects grew by 9% to \$9.7bn in 2019, 3rd highest among renewables after wind&solar according to FS-UNEP report. Strong pockets of activity in UK & China.

Please register to the newsletter

Invite your colleagues and contacts

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LinkedIn:

<https://www.linkedin.com/company/newest-ccus>

Acknowledgements

NEWEST-CCUS project (Project No. 299683) is funded through the ACT programme (Accelerating CCS Technologies) with financial contributions from: The Research Council of Norway (RCN), Norway; The Federal Ministry for Economic Affairs and Energy (BMWFi), Germany; Netherlands Enterprise Agency (RVO), Netherlands; and the UK Department for Business, Energy & Industrial Strategy (BEIS)



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