

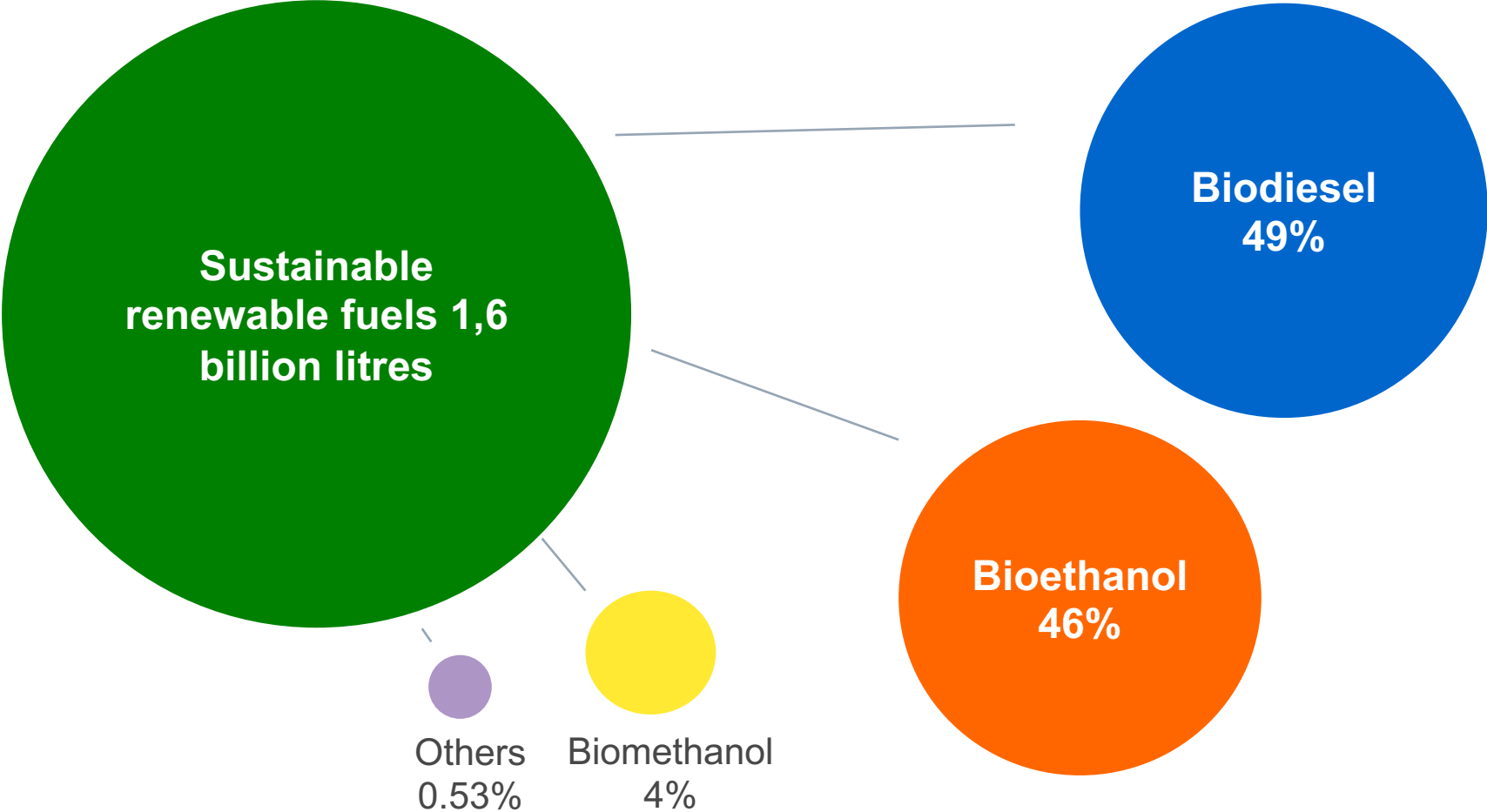


ISCC for Low Carbon Fuels

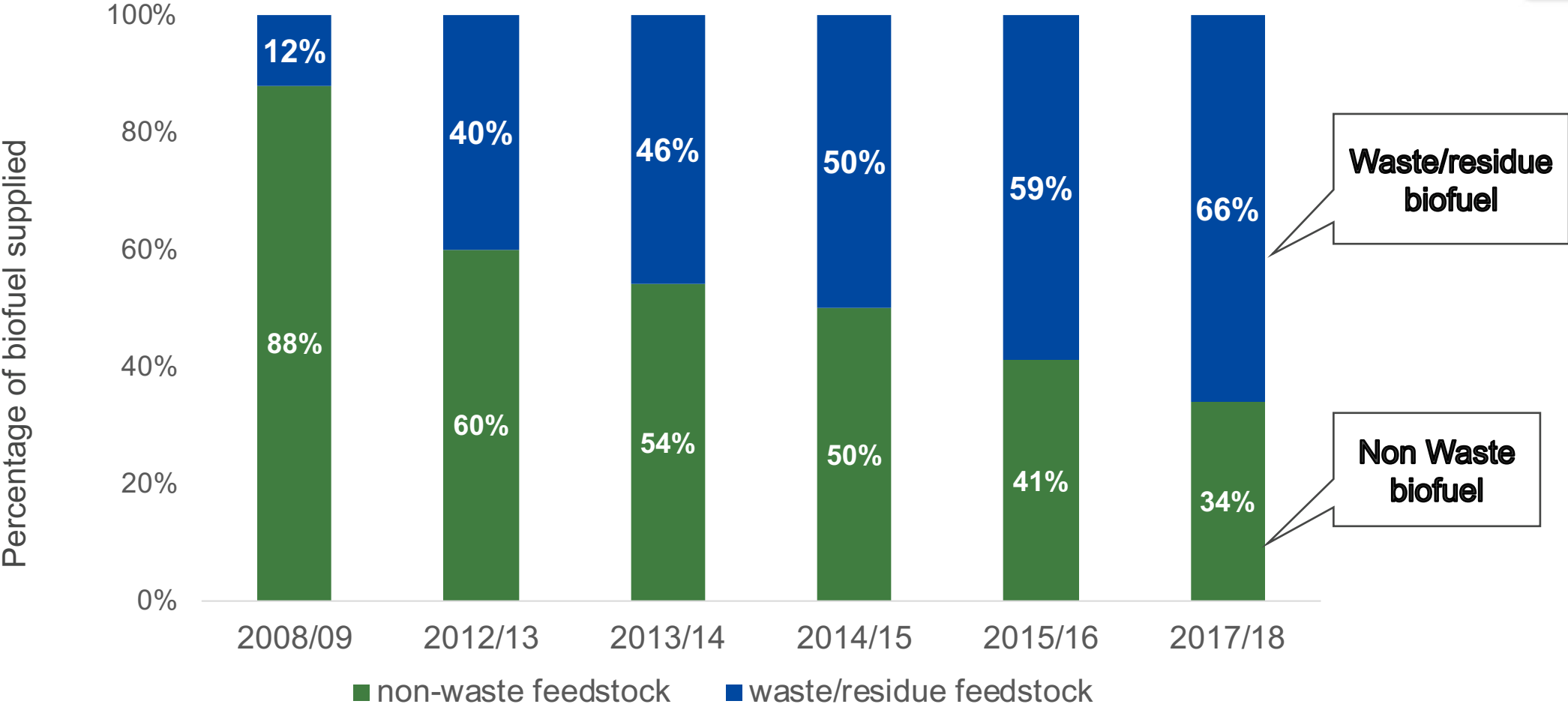
Biodiesel in the **UK** is dominated by **UCO**, ethanol by crops



Volume of sustainable renewable fuels 2017/2018



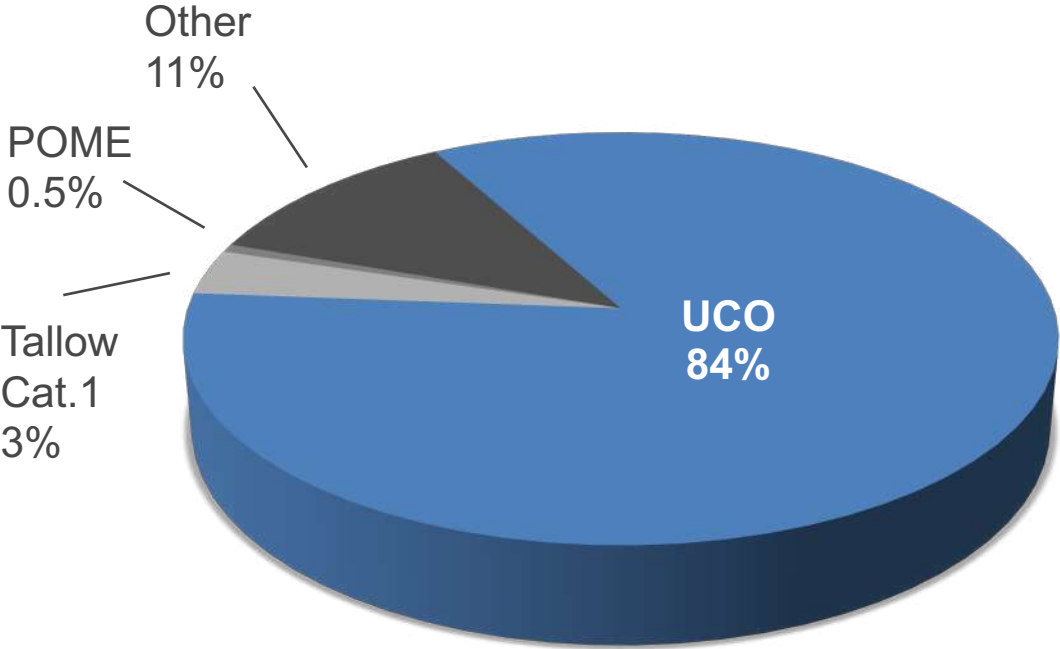
The share of biofuels based on **waste/residues** supplied to the **UK** increased



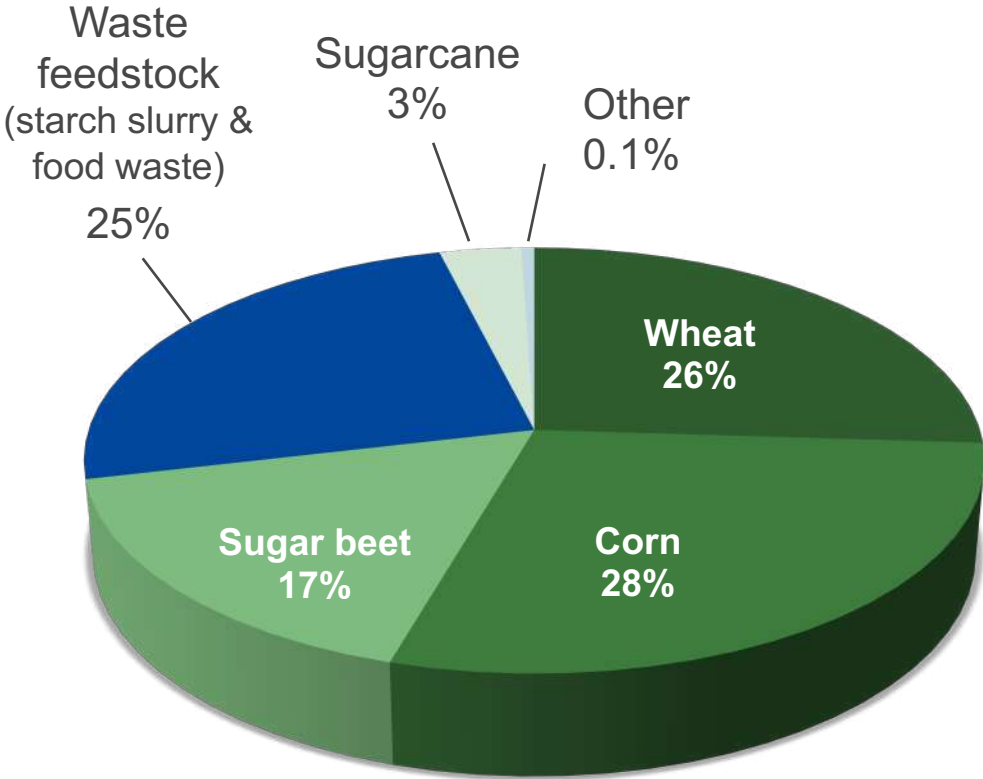
Biodiesel in the UK is dominated by UCO, ethanol by crops



Biodiesel supply by feedstock



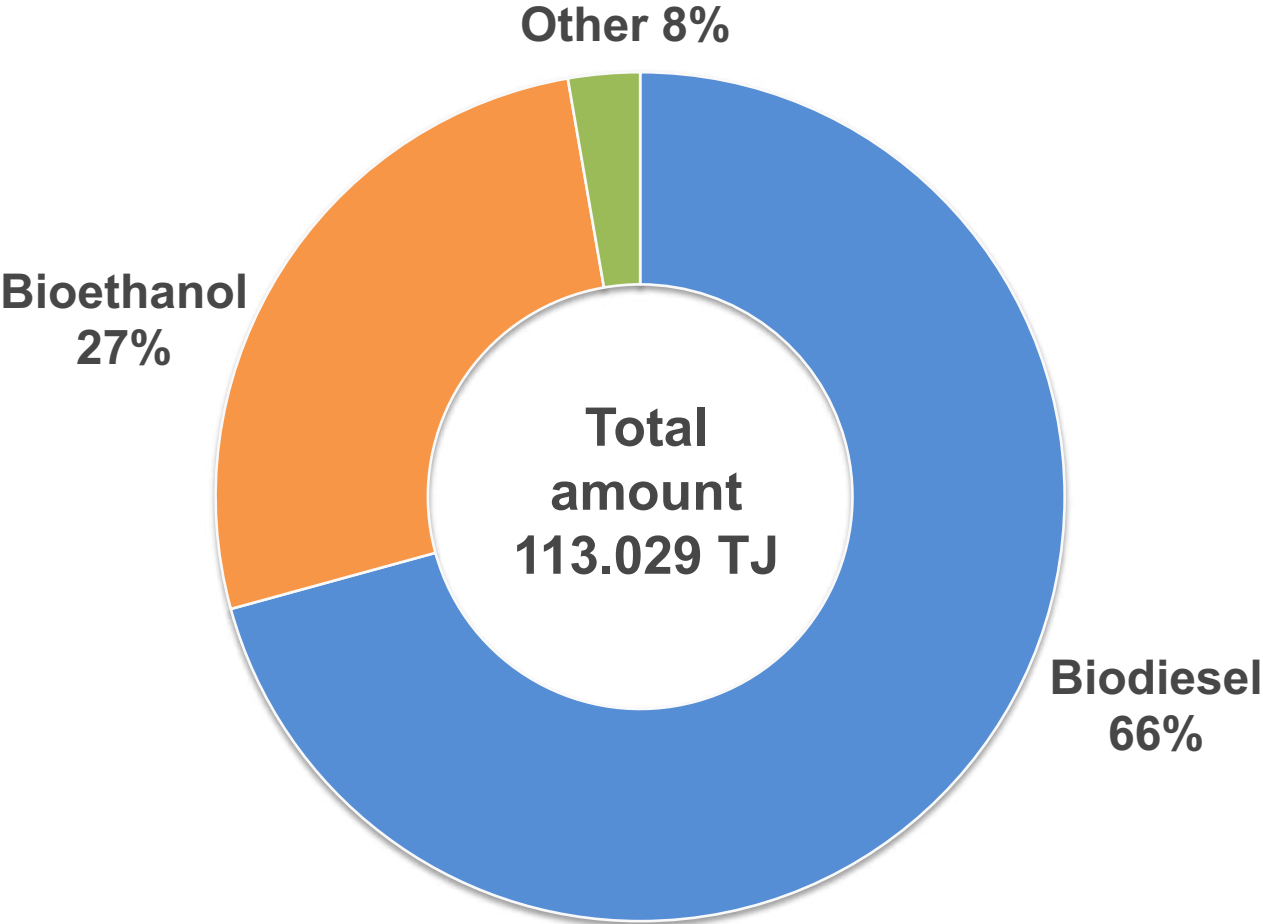
Bioethanol supply by feedstock



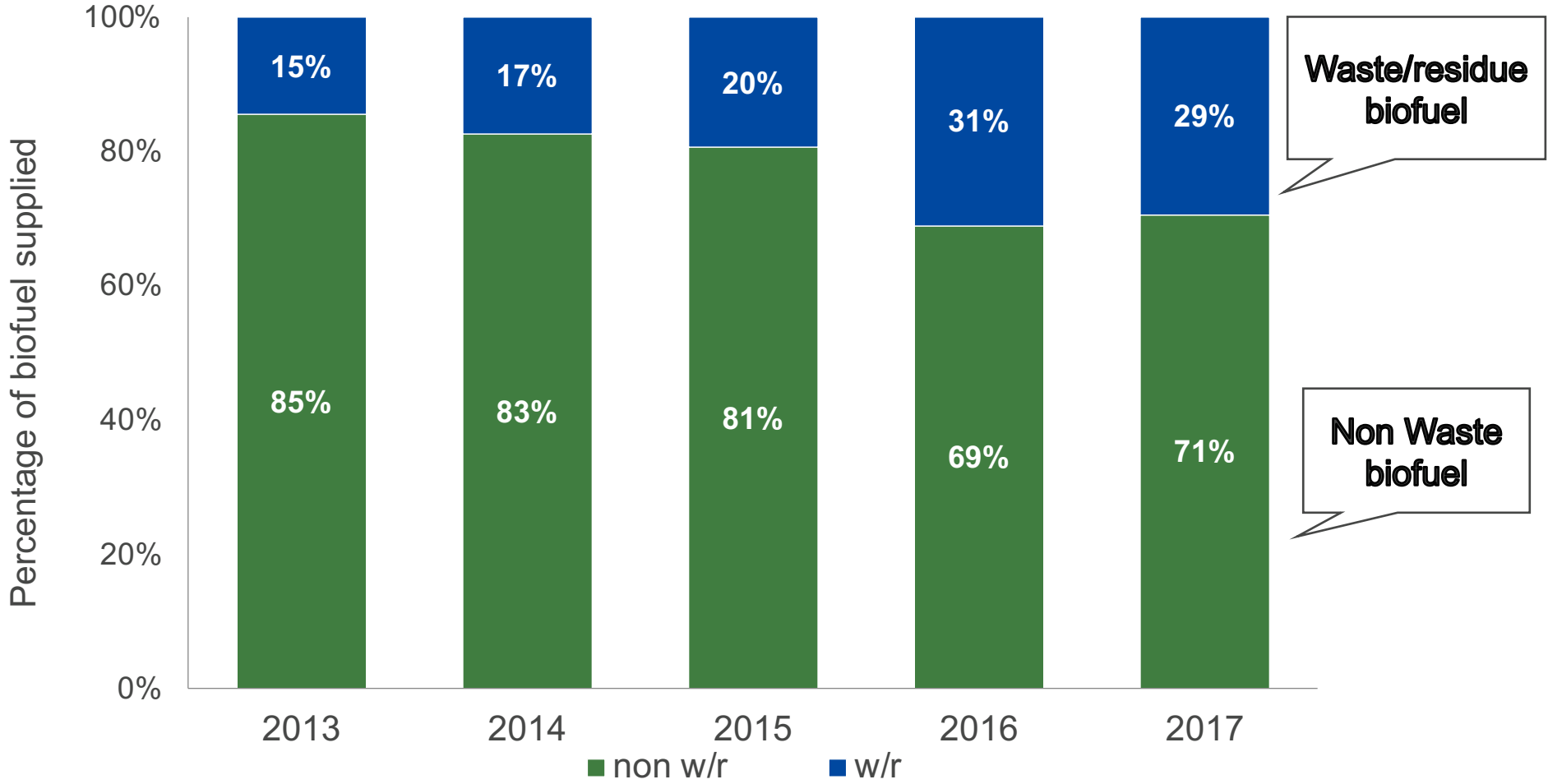
The share of biodiesel based on **waste/residues** has **doubled** in Germany between 2012 and 2017



Amounts of biofuels supplied in 2017



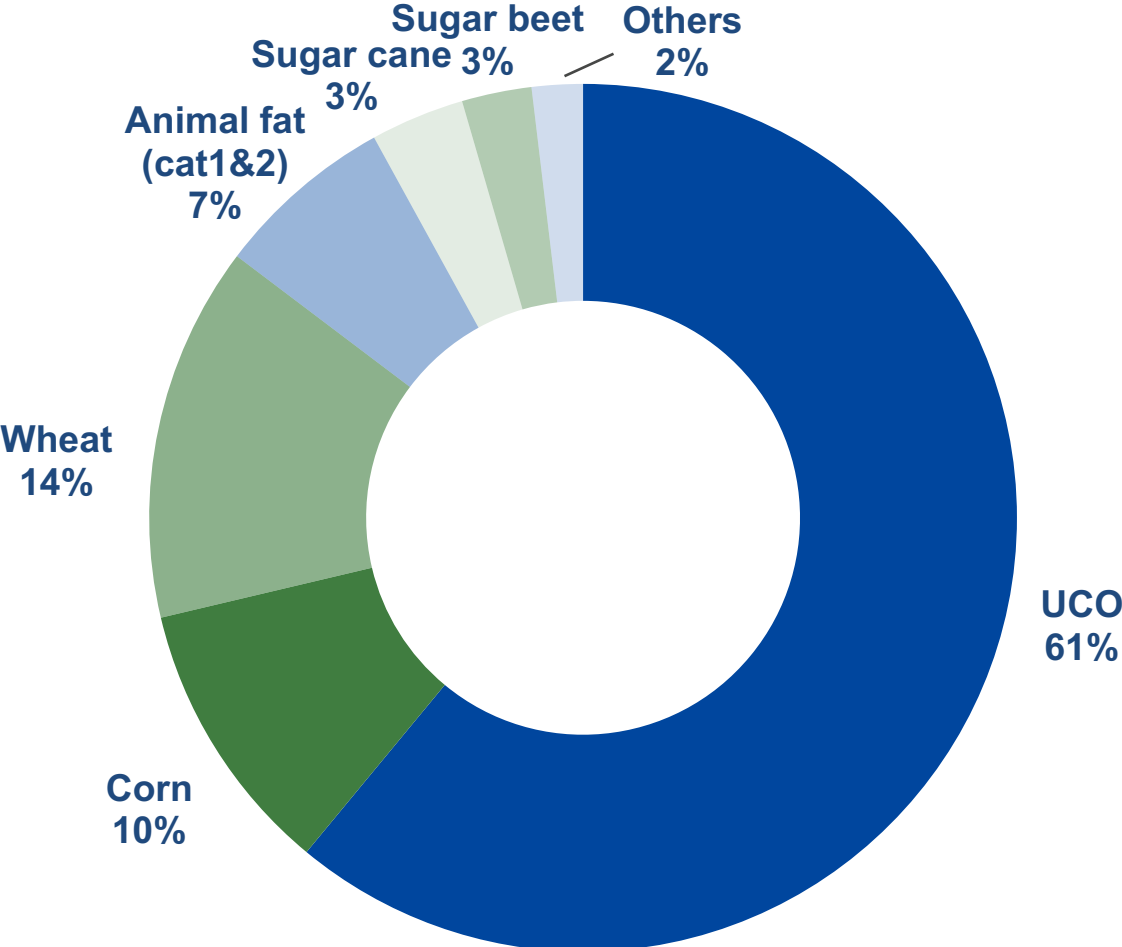
Almost one third of biofuels on German market are waste/residue based



The largest raw material contribution for biofuels in the Netherlands in 2016 has been **UCO**



Distribution of the main raw materials for biofuels in 2016



Source: Nea



RED II introduced new fuel categories – ISCC is prepared to cover these new categories

Advanced biofuels

- Annex IX of RED II (Part A)
- Sub-quota of 3.5% (Part A)
- 1.7% (Part B) but exemptions possible

Renewable fuels of non-biological origin (RFNBO)

- Fuels other than biofuels or biogas, the energy content of which is derived from renewable sources other than biomass, E.g. hydrogen
- Directly 70% GHG savings required
- GHG calculation methodology not defined yet

Recycled carbon fuels (RCFs)

- Fuels produced from e.g. waste plastics, exhaust gases
- Counted only for 14% transport target, not for overall renewable energy target
- Min. GHG saving and calculation methodology not defined yet

Under ISCC all types of bio-based waste and residues as well as non-bio feedstocks of low carbon fuels can be covered

Waste and processing residues



UCO



Landfill gas



Tall oil



End-of-life tires



MSW
Mixed plastic
waste



Crude glycerine

Renewable non-bio feedstocks



Power-to-Gas Power-to-Liquid



CO2

Forestry / agricultural crop residue



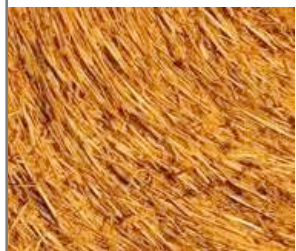
Forestry residue



Husks

Straw

Many materials from Annex IX (part A)* are already covered by ISCC

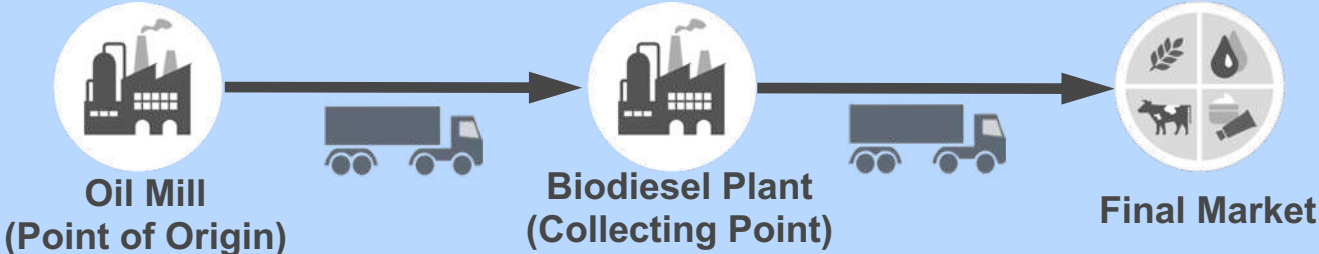


Materials Annex IX, Part A (selection)	No. of ISCC certificate holders
Biomass fraction of industrial waste not fit for use in the food or feed chain**	546
Palm oil mill effluent and empty palm fruit bunches	163
Crude glycerine	61
Animal manure and sewage sludge	59
Grape marc and wine lees	39
Straw	18
Biomass fraction of mixed municipal waste	13
Tall oil and tall oil pitch	11
Biomass fraction of wastes and residues from forestry and forest-based industries	4
Husks	6
Bagasse	1
Nut shells	1

GHG calculation of waste and residues starts at the Collecting Point of the raw material

Simplified supply chain of waste and residues (e.g. Palm Oil Mill Effluent)

- No upstream:**
- certification
 - sustainability requirements for cultivation
 - GHG emissions
 - traceability



Sampling for points of origin possible
No GHG at point of origin. First GHG with transport

ISCC certifies already several companies using Annex IX A feedstock for the production of low carbon fuels

EXAMPLES



raizen

Raizen produces bioethanol from **bagasse**



UPM

UPM is producing renewable diesel and bionaphta from **tall oil pitch and crude tall oil**



Enerkem

Enerkem is producing methanol and ethanol from **municipal solid waste**



BioMCN

BioMCN is converting **waste-based biogas** into biomethanol



Logos: Argent Energy, AGRICODE™, ASB biodiesel, Oberösterreichische Biodiesel BULGARIA, ecoMotion SARIA Group, MUSIM MAS, NESTE, REG Renewable Energy Group, Universal Biofuels, wilmar

Companies producing biofuels out of **Palm Oil Mill Effluent (POME)**

ISCC system users and members are already entering markets for RFNBO and recycled carbon fuels

Selection



The UK already developed own regulations for RFNBOs and introduced the new category “development fuels”

- The UK is the first “Member State” including RFNBOs in existing national legislation in April 2018 already (and also jet fuels)
- Definition of “Development fuels”
 - At fuel level
 - At feedstock level
- ISCC submitted a draft ISCC PLUS guidance document for the certification of RFNBOs to be recognized by the UK



Source: <https://www.gov.uk/government/publications/renewable-transport-fuel-obligation-rtfo-guidance-2019>

Certification of low carbon fuels with ISCC

- Biofuel mandates around the globe increasingly require **verification of sustainable supply chains** and **CI**
- **Increase in advanced biofuels** expected; already several companies using ISCC for this
- **New feedstocks** and **new technologies** require **secure verification** of sustainability parameters
- ISCC offers **solutions for the certification of different feedstocks of low carbon fuels**
- Established **TC on “Waste, Residues and Advanced Low Carbon Fuels”** with regular meetings. **Working group** on “further strengthening ISCC for waste and residues”
- Further **guidance from EC needed** for RFNBO’s and RCF’s via delegated acts
- ISCC develops happy to support pilot projects for **new fuel categories**



Many thanks for your attention!

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