

# Assessment of the potential for new feedstocks for the production of advanced biofuels

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Presentation of results from stakeholder consultations

September 16, 2020



# Please help us make this webinar smooth and fruitful...

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- All participants' lines are muted by default. **Please do not unmute your line**, unless the moderator invites you to do so.
- **You do not need to turn your webcam on.**
- **Please use the chat box to write down your questions.** As many questions as possible will be addressed at the end of the webinar. Remaining questions can be addressed afterwards by email.
- **The objective of this webinar is to present the results of the stakeholder consultation, not to collect additional inputs or comments.** Priority will be given to clarification questions.
  
- Thank you for your cooperation 😊

# Today's Agenda (16.00-17.30 CET)

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- 16.00 – 16.10** Welcome by B.Küpker (DG ENER) and background to the Annex IX Evaluation Project
- 16.10 – 16.15** Summary of the stakeholder consultation (Round 1 and 2)
- 16.15 – 16.20** Description of the feedstock categories
- 16.20 – 17.00** Preliminary assessment of feedstocks and resulting shortlist
- 17.00 – 17.05** Next steps
- 17.05 – 17.30** Questions

# Background

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Objectives, Activities and Outcomes

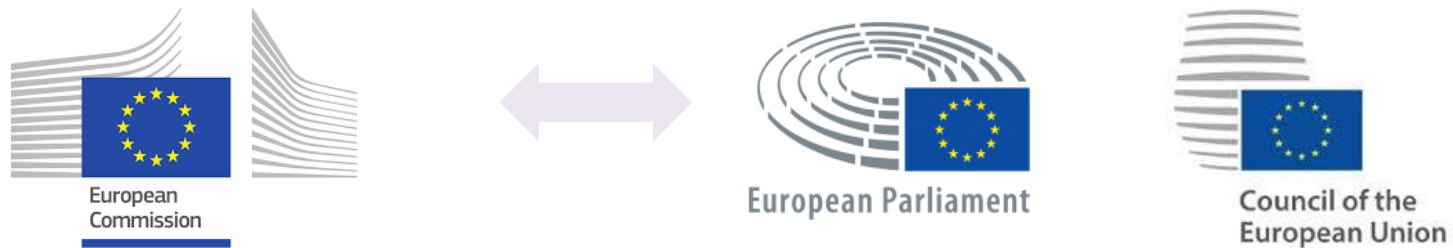
# Background to RED II

- The revised **Renewable Energy Directive (EU) 2018/2001 (RED II)** sets a binding 32% renewables target for 2030, with a separate target of 14% renewables in the **transport sector** including a minimum share of 3.5% of **advanced biofuels (after double counting)**.
- Advanced biofuels are defined based on the list of feedstocks included in **Annex IX Part A** of the Directive.

Annex IX Part A	Annex IX Part B
Includes feedstocks that can only be processed with <b>advanced</b> technologies	Includes feedstocks that can be processed into biofuels with <b>mature</b> technologies
No cap	1.7 % cap (can be modified by MS)
Feedstocks in Annex IX (both Part A and Part B) are eligible for <b>double-counting</b>	

# Basis for adding feedstocks to Annex IX (article 28) (1)

- The Commission is empowered to adopt **delegated acts** to amend the list of feedstocks in parts A and B of Annex IX in order to add feedstocks, but not to remove them.



**Delegated acts are prepared and adopted by the Commission**, after consulting expert groups composed of representatives from the MSs.

Once the Commission has adopted a delegated act, the **European Parliament** and the **EU Council** generally have two months to formulate any objections. If there are none, the delegated act enters into force.

## Basis for adding feedstocks to Annex IX (article 28) (2)

- Any **delegated act** to add feedstocks to Annex IX shall be, "based on an analysis of the potential of the raw material as feedstock for the production of biofuels and biogas for transport, taking into account all of the following:
  - a) the principles of the circular economy and of the waste hierarchy established in Directive 2008/98/EC;
  - b) the Union sustainability criteria laid down in Article 29(2) to (7);
  - c) the need to avoid significant distortive effects on markets for (by-)products, wastes or residues;
  - d) the potential for delivering substantial greenhouse gas emissions savings compared to fossil fuels based on a life- cycle assessment of emissions;
  - e) the need to avoid negative impacts on the environment and biodiversity;
  - f) the need to avoid creating an additional demand for land."
- Feedstocks processed via **advanced** technologies would be added to Part A. Feedstocks processed via **mature** technologies would be added to Part B.

# Objectives of the project and expected outcomes

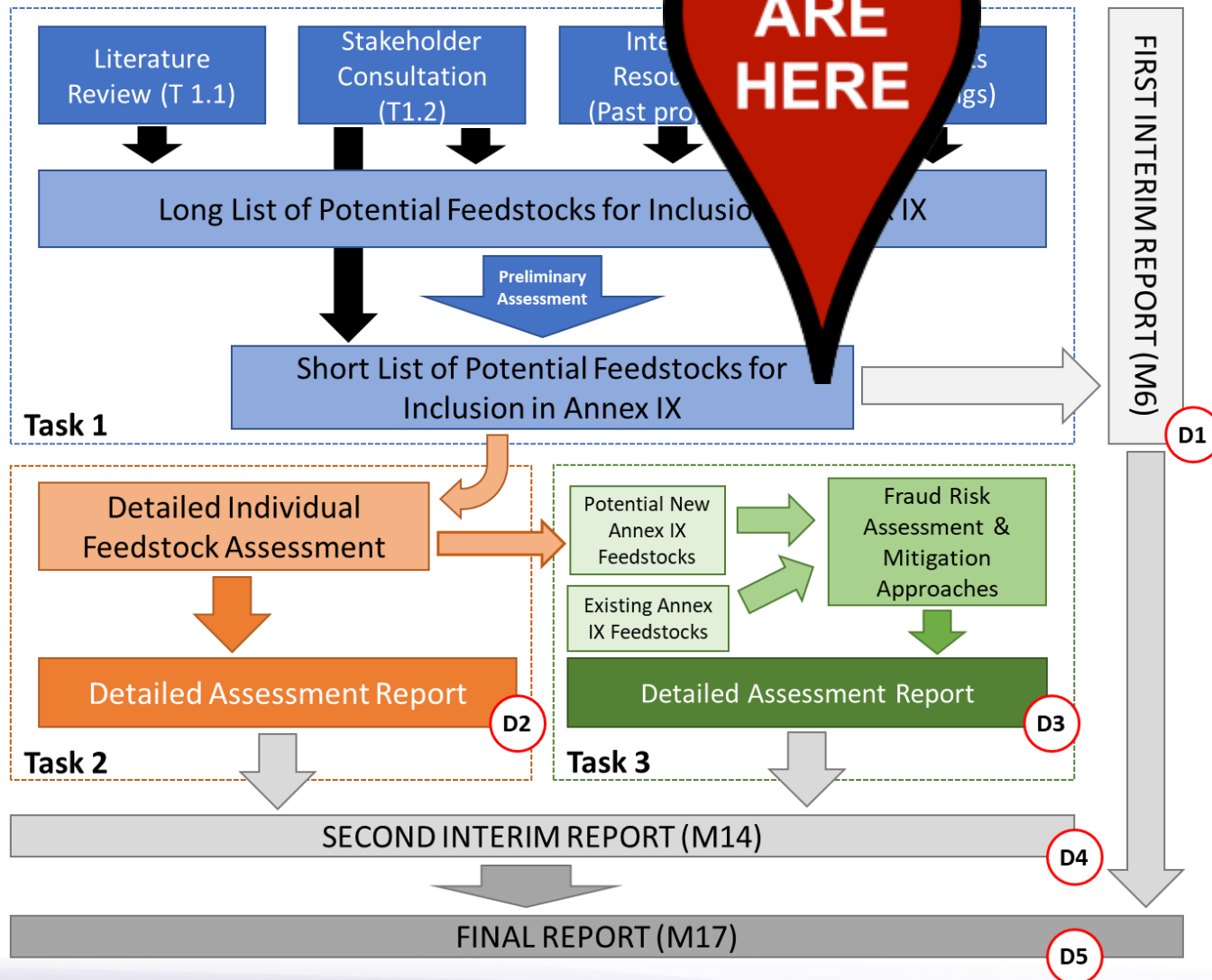
- The objectives of this project are to:
  - **Identify biofuel feedstocks** that could potentially be added to Annex IX
  - **Assist the Commission in the evaluation of the list of feedstocks** that could be added to parts A and B of Annex IX by conducting detailed assessments of each raw material
  - **Identify risks for fraud** for existing and potential new Annex IX feedstocks, and develop fraud mitigation mechanisms.

**Important:** The Consortium will only provide the European Commission with detailed evidence, documentation and conclusions regarding the conformity of candidate feedstocks with Art. 28 Criteria and the result of the fraud risk evaluation.

**The decision to include feedstocks in Annex IX through the Delegated Act belongs to the European Commission.**



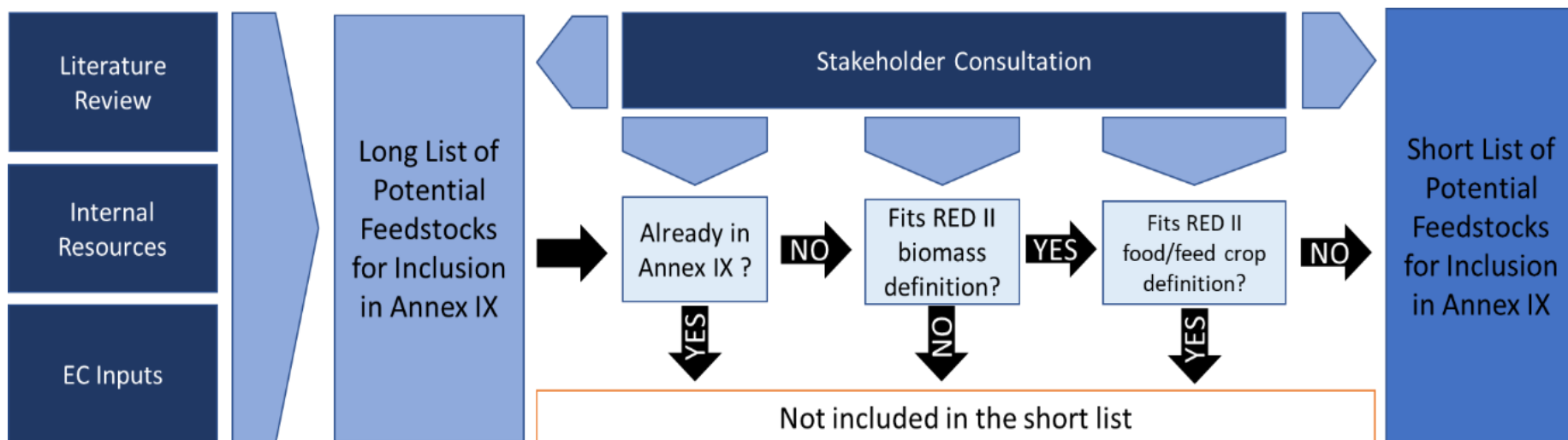
# Overall project approach



# Task descriptions

- **Task 1** consists of a preliminary assessment of candidate feedstocks.
  - A long list was established based on internal resources, literature and stakeholder consultation (2 rounds)
  - **Feedstocks were shortlisted** if 1) they qualify as **biomass**; 2) they do not qualify as **food/feed crop**; and 3) they are **not already covered in Annex IX**. RED II art 28 criteria (e.g. competition with other end-uses, market distortion, GHG savings) are not used in Task 1. They will be used in Task 2.
  - **Shortlisted feedstocks continue to a more detailed evaluation in Task 2 and Task 3 (not directly suggested for inclusion in Annex IX).**
  - **Non-shortlisted feedstocks are in majority considered as being already covered in Annex IX.**
- **Task 2** will take shortlisted feedstocks through an in-depth evaluation against RED II Art 28 – par.6 criteria.
- **Task 3** will take shortlisted feedstocks and existing Annex IX feedstocks through an evaluation of fraud risks.

# Task 1 in detail



The **objectives** of the stakeholder consultations are to:

- Collect additional suggestions for the **long list of feedstocks**
- Benefit from **stakeholders' expertise** through additional inputs, rationale, evidence and documentation about feedstocks
- **Strengthen** the consortium's recommendations for **shortlisted feedstocks**
- Enhance the **transparency** of the process

# Summary of the Stakeholder Consultation

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Round 1 and Round 2

# Two rounds of stakeholder consultations were conducted to draw up a shortlist of feedstocks for further analysis

## Round 1

(Apr –  
May'20)

- **427 feedstock-specific suggestions** received from 79 organisations
- **14 additional higher-level contributions** (to be transferred to DG ENER separately).
- **Systematic process** adopted to review and evaluate stakeholder contributions that led to filtering of the feedstocks into 3 categories –
  - **Shortlisted** (22)
  - **Not shortlisted** (32)
  - **Take to 2<sup>nd</sup> round of consultation** (15) to collect additional evidence and documentation to determine their inclusion in the short list

## Round 2

(Aug –  
Sep'20)

- Feedback specific to the 3 questions posed in round 2 was received from **34 organisations (energy use/palm mesocarp/fish oil)**
- **6 additional higher-level contributions** received
- Review of stakeholder contributions has led to **shortlisting of 7 additional feedstocks.**

# The preliminary assessment did not always yield conclusive results...

- Evaluating **current coverage in Annex IX** is challenging for many feedstocks, due to the generic nature of existing definitions. The notion of “waste” (Ref: Waste Framework Directive) is particularly ambiguous, e.g. when material is discarded or used for energy for practical/economic reasons.
- Evaluating whether feedstocks match the **food/feed crop** definition often boiled down to whether these material can be considered as a primary product from agricultural production or as a residue, which may requires in-depth evaluation, e.g. to understand relative market value (hence more appropriate for Task 2).
- **Whenever the preliminary assessment was inconclusive, feedstocks were added to the short list for further evaluation.**

# Description of the Feedstock Categories

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# Relevant definitions

- **‘waste’** means waste as defined in point (1) of Article 3 of Directive 2008/98/EC [WFD], excluding substances that have been intentionally modified or contaminated in order to meet this definition;
  - The WFD says: “‘waste’ means any substance or object which the holder discards or intends or is required to discard.”
- **‘residue’** means a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process and the process has not been deliberately modified to produce it;
  - Note recital 117: "Co-products are different from residues and agricultural residues, as they are the primary aim of the production process. It is therefore appropriate to clarify that agricultural crop residues are residues and not co-products."



# Feedstock categories (1)

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- **Food-feed processing residues and waste**

- Residues and waste from primary and secondary processing of food and feed materials
- E.g. bakery and confectionery residues and waste; beans silverskins and dust from cocoa/hazelnut/coffee; shells/husks and derivatives

- **Agricultural / Forestry residues and waste**

- Field and forestry residues, and residues from processing of forest products
- E.g. harvesting residues, oil palm fronds and trunks, crude tall oil

# Feedstock categories (2)

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- **Intermediate crops**

- Crops (other than cellulosic and ligno-cellulosic crops) such as catch and cover crops, that may be able to provide biofuel feedstock without triggering demand for additional land
- Requires focus on systems rather than only plant types

- **Landscape care biomass**

- Biomass harvested in the process of landscape care activities, and biomass from damaged crops/forestry
- E.g. roadside trimmings, mown grass, damaged trees, damaged crops.

# Feedstock categories (3)

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- **Animal residues and waste**

- Residues and waste of livestock rearing and slaughter and meat supply.
- E.g. category 1-3 animal fats; manure; non-fat animal residues

- **Wastewater and derivatives**

- Biomass contained in solution/suspension in wastewater from industrial or municipal sources.
- E.g. municipal wastewater; potato sludge; biodiesel wastewater

# Feedstock categories (4)

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- **Fats, oils and greases (FOGs)**

- Residues and waste from vegetable oil and food processing, or recovered from oily wastewater
- E.g. brown grease; POME; industrial storage settlings

- **Others**

- Feedstocks that are not readily placed in another category
- E.g. plastic waste; tree and bushes that are not log/veneer grade; biogenic fraction of waste

# Summary of the preliminary assessment and resulting shortlist

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# Updated shortlist

(Feedstocks added after 2<sup>nd</sup> consultation are marked red)

Bakery and confectionery residues and waste – NEW	Alcohol distillery residues and wastes - NEW	Damaged crops
Drink residues - NEW	Spent grains	Animal residues (not fat) cat 2-3
Defective fruit /vegetables Waste from fruit/veg processing - NEW	Whey permeate	Animal fats cat 3
Potato/beet pulp	Olive pomace	Municipal wastewater and derivatives (other than sludge)
Starchy effluents - NEW	High boiling vegetable fraction (FAV) - NEW	Soapstock and derivatives
Dry starch - NEW	Raw methanol	Brown grease
Sugars refining residues	Grain, starch, sugar, oil, beans and meals derived from rotation crops	Fatty acid distillates
Molasses	Biomass from fallow land	Technical / Distillers Corn Oil
Vinasse	Biomass from degraded/polluted land	Distillers grain and solubles (DGS)
	Mixture meadow	Other biowaste

**Important: Shortlisted feedstocks will not necessarily be suggested for inclusion in Annex IX! They are just being taken to a detailed evaluation in Task 2 and Task 3.**

# Food-feed processing residues and waste (1)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Bakery and confectionery residues and waste</b>	Residues and waste from bread, biscuits, wafer, pastas, etc.	Yes	No	Inconclusive	Yes	2 <sup>nd</sup> consultation did not lead to clear conclusion with regards to non-energy uses
<b>Drink residues</b>	Citrus peel and pulp (pressing)	Yes	No	Inconclusive	Yes	2 <sup>nd</sup> consultation did not lead to clear conclusion with regards to non-energy uses
<b>Drink waste</b>	Waste wine and beverage (unfit for human consumption) Spent alcohols	Yes	No	Covered in Annex IX Part A d).	No	Feedstock raised stakeholders' concerns regarding fraud risks, which require further investigation in T3 (Existing annex IX feedstocks will also be evaluated).

# Food-feed processing residues and waste (2)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Fruit / vegetable waste and residues</b>	Defective fruit /vegetables Waste from fruit / vegetable processing	Yes	No	Inconclusive	Yes	2 <sup>nd</sup> consultation did not lead to clear conclusion with regards to non-energy uses
	Potato/beet pulp	Yes	Inconclusive	Inconclusive	Yes	Pulp is one of the main co-products from beet and potato cultivation and it is usable as feed
	Tails Tops/leaves Stalks Husks	Yes	No	Covered in Annex IX Part A d).	No	



# Food-feed processing residues and waste (3)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Bean shells, silverskin, and dust (excluding nut shells)</b>	Cocoa Coffee Hazelnut	Yes	No	Covered in Annex IX A part d) and p)	<b>No</b>	Cocoa bean shells may have other uses, but these remain marginal.
<b>Shells/husks and derivatives</b>	Nutshells Soy hulls	Yes	No	Covered in Annex IX A – part l) and p)	<b>No</b>	Pulp is one of the main co-products from beet and potato cultivation and it is usable as feed
<b>Starchy effluents (up to 20% dry content)</b>	Starch slurry Steepwater	Yes	No	Inconclusive	<b>Yes</b>	Starch and other nutrients could theoretically be extracted for food/feed purposes. However, rapid degradation remains an issue (+ considered advanced in UK & NL)

## Food-feed processing residues and waste (4)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Corn processing residue</b>	Dry starch	Yes	Inconclusive	No	Yes	Different from starchy effluents. This is obtained from a process called dry fractionation process, which aims to extract protein feeds and corn oil as its main purpose.
<b>Sugars (fructose, dextrose) refining residues</b>	Ultrafiltration retentate Monohydrate hydrol	Yes	No	No	Yes	These residues can currently be treated and reinjected in the process.
<b>Molasses</b>	Molasses	Yes	Inconclusive	No	Yes	Although molasses are a residue from sugar refining, they still contain high level of sugar content and can be used as food / feed.

# Food-feed processing residues and waste (5)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Vinasse</b>	Vinasse Thin Stillage	Yes	No	No	Yes	Possible other uses as fertiliser or adhesive for feed require further investigation.
<b>Alcoholic distillery residues</b>	Heads and Tails Fusel alcohols/oils Technical ethanol	Yes	No	Inconclusive	Yes	Could be considered as waste from spirits distillation (Ref 200/532/EC). Documented uses as lubricant / solvent but exact demand unclear.
<b>Spent grains</b>	Brewers' spent grain/ spent grain (brewery)	Yes	No	Inconclusive	Yes	Possible use as food/feed requires further investigation

# Food-feed processing residues and waste (6)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Hot beverages</b>	Spent coffee grounds Spent tea leaves	Yes	No	Covered under Annex IX A part b), c) and d)	No	Not part of EU Feed Catalogue. Other uses mentioned (e.g. mushroom medium) but demand appears limited compared to available material.
<b>Dairy waste and residues</b>	Dairy waste scum	Yes	No	Covered under Annex IX A part b), c) and d)	No	Limited to dairy waste scum, which is not part of EU Feed Catalogue.
<b>Food waste oil</b>	Oil extracted from waste food from households and industry	Yes	No	Covered under Annex IX A part b) and d).	No	
<b>Whey permeate</b>		Yes	No	No	Yes	Several food/feed uses

# Food-feed processing residues and waste (7)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Non-edible cereal residues (residues from grain milling and processing)</b>	Wheat Corn Barley Rice	Yes	No	Covered under Annex IX A part d)	No	Non-edible means improper for use as food AND feed. Residues which are not fit for human, but usable as feed are not covered under this definition.
<b>Olive oil extraction residues</b>	Olive pomace	Yes	No	No	Yes	Several food use of pomace exist, which require further investigation in Task 2.
	Olive stones	Yes	No	Covered under Annex IX A part d).	No	
<b>High oleic sunflower oil extraction residues*</b>	High boiling vegetable fraction (FAV)	Yes	No	Not covered in Annex IX	Yes	Mostly composed of glycerides and carboxylic acids

\* To be moved under Fats, Oils and Greases

# Agricultural / Forestry residues and waste (1)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
Agricultural harvesting residues	Straws Stems Stalks Shells (not nuts) Hulls (not soy)	Yes	No	Covered in Annex IX A p).	No	
	Palm fronds, palm trunk	Yes	No	Covered in Annex IX A p) and q).	No	
Palm harvesting residues	Palm mesocarp	Yes	No	Fibers (yes) Fiber oil (no)	Only palm fiber oil	Mesocarp fibers used to produce ligno-cellulosic fuels would be covered under Annex IX part p) Mesocarp oil used for biodiesel is currently being used and traded, but has a lower grade than CPO.

## Agricultural / Forestry residues and waste (2)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Cottonseeds</b>		Yes	Yes	No	No	In spite of geographic disparities, seeds and oil can be considered as co-products.
<b>Wood processing residues</b>	Crude tall oil	Yes	No	Covered under Annex IX A o).	No	
	Raw methanol (processing residue from producing pulp at pulp mill)	Yes	No	Not included in Annex IX Part A (o).	Yes	

# Intermediate crops

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Grain, starch, sugar, oil, beans and meals derived from rotation crops</b>	Camelina Carinata Castor Silphium perfoliatum Tall wheat grass Tobacco	Yes	No	No	Yes	Intermediate crops are excluded from the definition of food and feed crops. The Consortium will look specifically at the production system used, first for intermediate crops generically, after which if necessary, the consortium will consider specific cases.
<b>Opuntia ("prickly pear")</b>	Cactus that grows in semi-arid regions	Yes	Yes	No	No	Cultivated. Fruits are the main product.



# Landscape care biomass (1)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Biomass from fallow land</b>	Hay Legumes Grass	Yes	No	Only partly covered by Annex IXA part p)	<b>Yes</b>	
<b>Biomass from degraded/polluted land</b>		Yes	No	Currently not covered in Annex IX.	<b>Yes</b>	
<b>Biomass from maintenance operations</b>	Roadsides Environmental protection areas Harvesting of invasive species Bush encroachment	Yes	No	Covered under Annex IXA parts c), o), p), q)	<b>No</b>	Annex IXA part c) for parks o) for forest maintenance operations p/q) for bushes and grasses from other ecosystems.

## Landscape care biomass (2)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Mixture meadow</b>	Timothy grass, tall fescue and clover/legumes	Yes	No	No	Yes	Only partly covered by Annex IXA part p)
<b>Damaged trees</b>	Trees made improper for use as log grade due to diseases or other natural events	Yes	No	Covered under Annex IXA part q).	No	
<b>Damaged crops</b>	Food / feed crops made inedible due to diseases or other natural events	Yes	No	Not covered under Annex IX.	Yes	High risk of fraud reported by stakeholders (to be investigated in Task 3)
<b>Unused feed/fodder from ley</b>		Yes	No	Covered under Annex IX A part p).	No	Ley crops grown for feed / fodder are covered in the definition of non-food cellulosic material.

# Animal residues and waste (1)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Animal residues (not fat) Cat 1</b>	Organs, ligaments, blood vessels, bones etc. (See EC Regulation 1069/2009)	Yes	No	Covered in Annex IX A part d)	No	Cat 1 material needs to be disposed of, either by incineration or as a fuel for combustion.
<b>Animal residues (not fat) Cat 2</b>	Organs, ligaments, blood vessels, bones etc. (See EC Regulation 1069/2009)	Yes	No	No	Yes	
<b>Animal residues (not fat) Cat 3</b>	See EC Regulation 1069/2009	Yes	No	No	Yes	
<b>Animal fats Cat 1-2</b>	Beef tallow Poultry fat Swine fat	Yes	No	Covered in Annex IX B	No	Currently processed via conventional technologies (cannot fit under Annex IX A).
<b>Animal fats Cat 3</b>	Beef tallow Poultry fat Swine fat	Yes	No	No	Yes	

## Animal residues and waste (2)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Manure and derivatives</b>	Wet manure Dry manure Manure washwater	Yes	No	Covered under Annex IX A part f).	<b>No</b>	

# Wastewater and derivatives

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Municipal wastewater and derivatives (other than sludge)</b>	Wastewater FOGs extracted from sewage	Yes	No	No	<b>Yes</b>	<u>Municipal</u> wastewater is outside the scope of the Waste Framework Directive (WFD), which Annex IX A b) and c) refer to for biowaste and mixed municipal waste.
<b>Municipal Wastewater (sewage) sludge</b>		Yes (Biogenic fraction)	No	Covered in Annex IXA part f).	<b>No</b>	
<b>Industrial wastewater and derivatives</b>	Biodiesel wastewater Potato sludge Olive mill wastewater Food processing wastewater	Yes	No	Covered in Annex IXA part d).	<b>No</b>	

# Fats, oils and greases (FOGs) (1)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Soapstock and derivatives</b>	Soapstock Acid oil Free fatty acids PSK-Keto	Yes	No	No	Yes	
<b>Brown grease</b>		Yes	No	Partly (Annex IX A d)	Yes	Partly covered (Industrial fryers) in Annex IXA part d) but not for restaurants and households. Could also fit under Annex IX B (along with UCO).
<b>Industrial storage settlings</b>	FAME storage settlings FAME distillation residues Waste tank bottom oil	Yes	No	Covered in Annex IX part d)	No	
<b>Fatty acid distillates</b>	PFADs Oilseed FADs	Yes	Inconclusive	No	Yes	Additional investigations required in Task 2

## Fats, oils and greases (FOGs) (2)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
POME		Yes	No	Covered under Annex IX A part g)	No	
Palm sludge oil		Yes	No	Covered under Annex IX A part g).	No	PSO is a residue that is removed in the same stream as POME but just before release in the POME ponds.
Used Veg Ester and Oils (waste stream)		Yes	No	Covered under Annex IX A part d)	No*	Obtained via the segregation of bio-based products (e.g. lube) at the end of life
Waste fish oil		Yes	No	Yes	No	Food-grade fish oil would qualify as Animal by-product cat 3, hence already shortlisted (see previously). Cat 2 fish oil is already covered in Annex IX B. Cat 1 would be covered in Annex IX A part d).

*\*Bio-based plastics are currently not included, but the consortium will further investigate the possibility to add bio-based plastics.*

# Others (1)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Biogenic fraction of waste</b>	Municipal Solid Waste (MSW) Refuse Derived Fuels (RDF) Biostabilized material & compost	Yes (Biogenic fraction)	No	Covered in annex IXA part b, c) and d)	<b>No</b>	Annex IXA part b)= MSW/Refuse from households c) = biostabilized material and compost d) = industrial waste and refuses
<b>Various oils from ethanol production</b>	Technical / Distillers Corn Oil	Yes	No	No	<b>Yes</b>	
<b>Distillers grain and solubles (DGS)</b>	Corn DDGS Wheat DDGS	Yes	Inconclusive	No	<b>Yes</b>	May qualify as food/feed crop
<b>Other biowaste</b>	Biowaste as defined in point (4) of Article 3 of Directive 2008/98/EC	Yes	No	No	<b>Yes</b>	These are neither from households nor from industries (e.g. restaurants), hence not covered by Annex IXA d).



## Others (2)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>Trees / bushes (Not log/veneer grade)</b>	Black locust Pongamia Silvopastoral crops	Yes	No	Covered in Annex IXA part p)	No	
<b>Plastic waste</b>		No	No	No	No	Fossil fraction of waste is not covered in Annex IX, as it would not fit the definition of biofuels/biogas.
<b>Ligno-cellulosic crops or fraction of crops</b>	Energy cane Energy crops and grasses (incl. Virginia mallow) Grass pulp Bagasse	Yes	No	Already covered in Annex IXA parts c), j) or p).	No	
<b>Cyanobacteria</b>	Arthrospira platensis	Yes	No	No	No	No evidence or documentation provided during consultation about actual use as biofuel feedstock.

## Others (3)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
<b>End-of-life Tyres</b>	Oil from EOL Tyres	Yes (Biogenic fraction)	No	Covered in Annex IXA part d).	<b>No</b>	Energy recovery appears as the main use of EOL Tyres oil. Considered advanced in UK and Netherlands.
<b>Humins</b>	Residues from bio-based FDCA	Yes	No	Covered in Annex IXA part d).	<b>No</b>	No evidence provided of any ongoing use. Not part of EU Feed Catalogue
<b>Recycled/waste wood</b>	Wood from demolition and construction waste	Yes	No	Already covered in Annex IX A part (q).	<b>No</b>	
<b>Sea algae</b>		Yes	No	No. Only algae cultivated on land (open ponds/PBRs) are included in Annex IX.	<b>No*</b>	No evidence or documentation provided during consultation about actual use as biofuel feedstock.

*\*In light of the webinar discussion, the consortium will reconsider the case.*

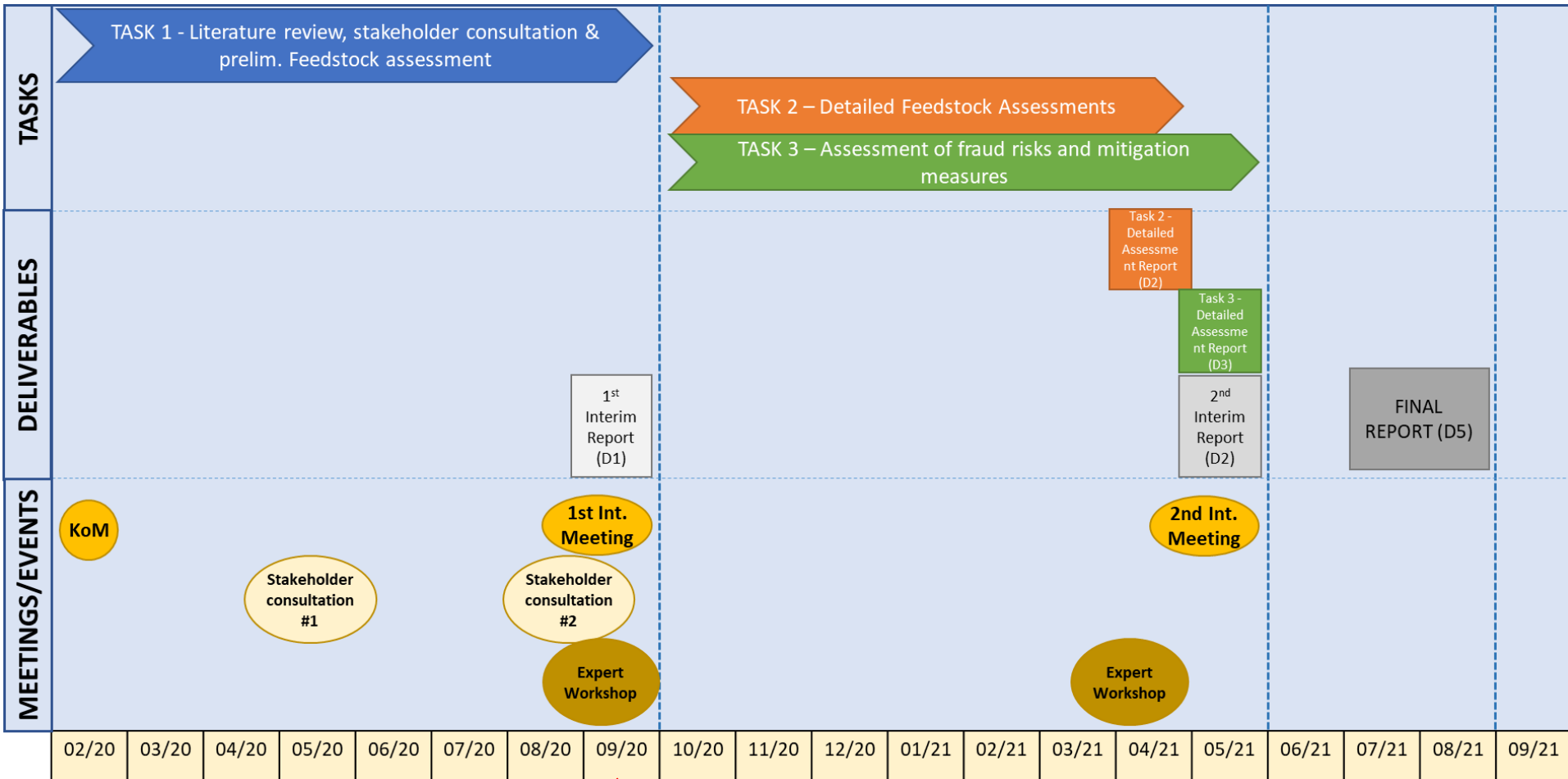
# Others (4)

Subcategory	Examples	Biomass?	Food/feed crop?	Covered in Annex IX?	Shortlisted	Additional remarks
Spent bleaching earth		Yes (Biogenic fraction)	No	Already covered in Annex IX A part d).	No	Bleaching earth per se is not biomass, but may contain some. The earth part has no energy content
Waste biogenic CO2 and CO2 from Direct Air capture		No	No	No	No	Biogenic CO2 does not fit the definition of biomass since it is not biodegradable. Furthermore, it is not an energy carrier. Therefore CO2-derived fuels qualify either as Renewable Fuels from Non-Biological Origins (RFNBOs) or Recycled Carbon Fuels (RCFs).

# Next steps

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# Project timeline



Thank you!  
Any clarification questions?

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Please use the chat box to write your question



# Definitions

- **‘Biomass’** means the biodegradable fraction of products, waste and residues from biological origin from agriculture, including vegetal and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and municipal waste of biological origin;
- **‘Food and feed crops’** means starch-rich crops, sugar crops or oil crops produced on agricultural land as a main crop excluding residues, waste or ligno-cellulosic material and intermediate crops, such as catch crops and cover crops, provided that the use of such intermediate crops does not trigger demand for additional land;
- **‘Ligno-cellulosic material’** means material composed of lignin, cellulose and hemicellulose, such as biomass sourced from forests, woody energy crops and forest-based industries' residues and wastes;

# Definitions

- **‘Non-food cellulosic material’** means feedstock mainly composed of cellulose and hemicellulose, and having a lower lignin content than ligno-cellulosic material, including food and feed crop residues, such as straw, stover, husks and shells; grassy energy crops with a low starch content, such as ryegrass, switchgrass, miscanthus, giant cane; cover crops before and after main crops; ley crops; industrial residues, including from food and feed crops after vegetal oils, sugars, starches and protein have been extracted; and material from biowaste, where ley and cover crops are understood to be temporary, short-term sown pastures comprising grass-legume mixture with a low starch content to obtain fodder for livestock and improve soil fertility for obtaining higher yields of arable main crops;
- **‘Residue’** means a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process and the process has not been deliberately modified to produce it;