

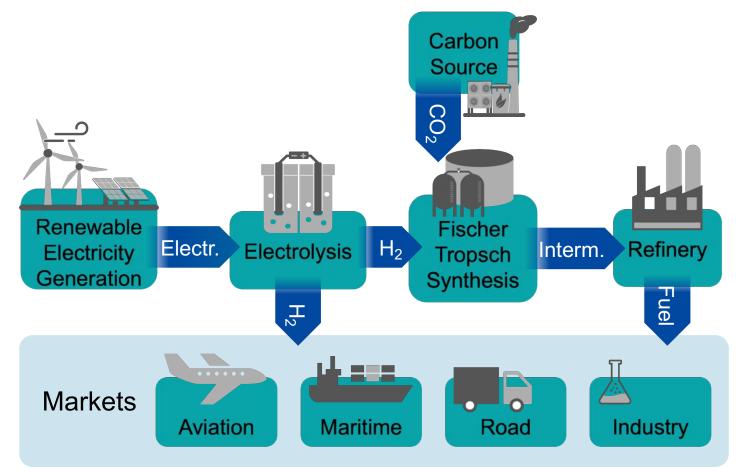
RFNBOs Certification: Requirements and GHG methodology



Julia Nevares, Meo Carbon Solutions GmbH 15th ISCC Regional Stakeholder Meeting – Latin America Hybrid event, Bogotá, August 30th 2023



RFNBOs supply chains provide a pathway for the production of low-carbon fuels



Hydrogen may be used directly as fuel or serve as an intermediate for other RFNBOs.



Example

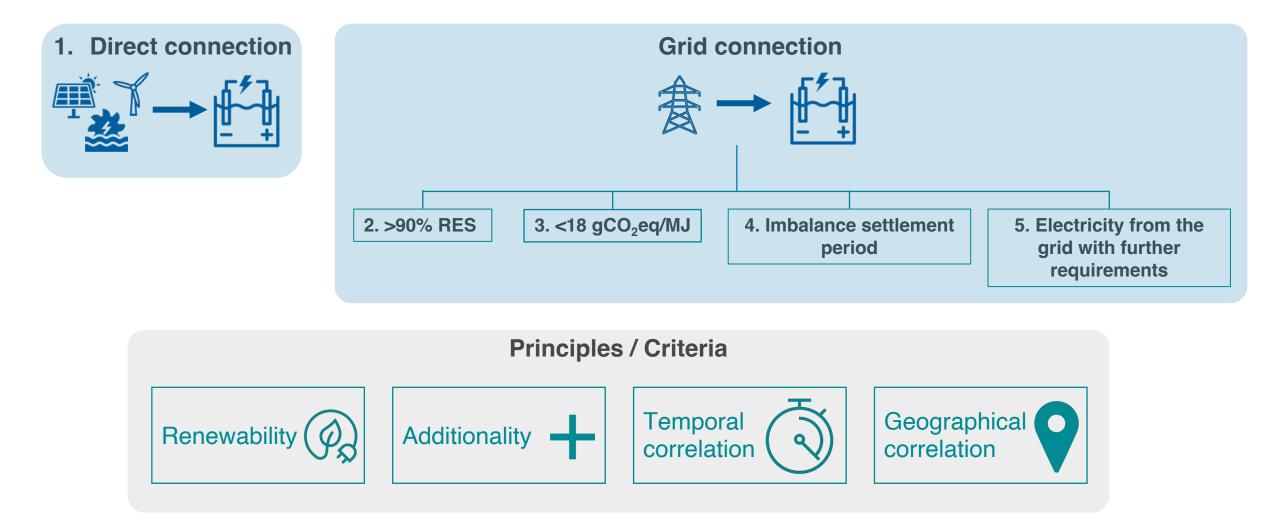
The requirements for RFNBO supply chain certifications are based on the RED II and Commission Delegated Regulations

		20.6.2023	EN	Official Journal of the European Union	L 157/11	
			c	OMMISSION DELEGATED REGULATION (EU) 2023/1184		
				of 10 February 2023		
7/20 EN Official Journal of th		supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council by establishing a Union methodology setting out detailed rules for the production of renewable liquid and gazons transport fusion of non-biological origin				
	COMMISSION DELEGATED R					
	of 10 Febru					
supplementing Directive (EU) 2018/2001 of the establishing a minimum threshold for greenhouse t by specifying a methodology for assessing greenhe and gaseous transport fuels of non-biology		THE ELECOPEAN COMMISSION.				
		Having regard to the Treaty on the Functioning of the European Union,				
THE	EUROPEAN COMMISSION,					
Having regard to the Treaty on the Functioning of the Europea		Having regard to Directive (IJ) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (?), and in particular Article 27(3), seventh subparagraph thereof,				
	ng regard to Directive (EU) 2018/2001 of the European i notion of the use of energy from renewable sources (!), an	When	eas:			
Whe	hereax.		(1) Renewable liquid and gaseous transport facts of non-biological origin are important for increasing the share of renewable energy in sectors that are expected to rely on gaseous and liquid forels in the long term, such as maritime and available. It is necessary to exabilite a Totion methodology serving out detailed these on electricity used for liquid			
(1)	Taking into account the need to substantially reduce possibility for each faul to make significant greenhos storage techniques, among other measures, and consis fuels in Directive (EU) 2018/2001, a minimum greenh all types of recycled carbon fuels.		and gaseous transport 1 the overall environmen objective and non-discr produced from electrici may be supplied by a	uels of non-biological origin to be considered fully renewable. To this al objectives in Directive (EU, 2018)2001 it is nocessary to lay down minanory criteria. Na a principle, langia and gazeoso licks of non-biology ar ze considered renewable only when the deterticity is renewable. This is installation that is directly connected to the installation typically aid and gaseous transport faels of non-biological origin, or may come of	end and considering clear rules, based on gical origin which are renewable electricity an electrolyser) that	
(2)	Clear rules need to be set, based on objective and a emissions savings for renewable liquid and gaseous to fuels and their fossil fuel comparators.	(2)	(2) The energy content of nearly all renewable liquid and gaseous transport furth of non-biological origin is based on renewable hydrogen produced vita electrolysis. The emission intensity of hydrogen produced from fossil-based electricity is substantially higher than the emission intensity of hydrogen produced from natural gas in conventional processes. In iterevise important to ensure that the electricity demands of the production of renewable liquid and gaseous transport fields of non-biological origin is me by renewable electricity. Following Runais immediate the electricity demands of the production of renewable liquid and gaseous transport fields of non-biological origin is me by renewable electricity. Following Runais immediate the electricity demands of the electrol of the disclosed origin of the interval in the liquid and gaseous transport fields of non-biological origin is me by renewable liquid and strategies to bosome independent from Runais microling with electron into of the decade. However, the renewable liquid and gaseous transport fields of the relation of its decade from Runais microl in the Runai of the decade. However, the renewable liquid and gaseous transport field imports in general. Therefore, the criteria to be laid down are also important to preven that electricity decade biological origin is general. Therefore, the criteria to be laid down are also important to preven that electricity decade biological origin is general. Therefore, the criteria to be laid down are also important to preven that electricity of substances of the decade biological origin would lead to increased fissel functions for decade biological origin would lead to increased fissel field.			
(3)	The greenhouse gas emissions accounting methodolog producing renewable liquid and gaseous transport fue based on objective and non-discriminatory criteria.					
(4)	Credits should not be granted for capturing CO_3 which of Union law. Therefore that kind of captured CO_3 shot emissions from the inputs' existing use or fate.					
(5)	The origin of carbon used for the production of res- origin and recycled carbon fuels in not relevant for den currently may carbon sources are available and can be economy on a traitectory towards climate neutrality by states: in the mediatum-to long-term, increasingly rest- the continued on the mean state liquid and gaeons tran- that contain carbon from non-sustainable fields hold sources as it would entail the continued used of non-sustainab- ensistents from non-sustainable fields sould not be co- emissions from non-sustainable fields sould not be co-	(3)	(1) The rules set out in this Regulation should apply regardless of whether the lagad and gaseous transport fad of non-biological origin is produced inside or consults the territory of the thank. Where references is made to biology more and imbalance stelements provide, onceres that actis in the Units but not in all other constructs. It is appropriate to allow find producers in third constructs to rely on equivalent concept serviced in the discover effective of this Regulation is maintained and the provision is imagemented based on the most similar concept existing in the hind constructions of the similar market regulations, the physical characteristics of the detectivity gall, notably the level of uncerconstruction or a last records construct.			
	the greenhouse gas emissions savings from the use of re origin and recycled carbon fuels. Captured emission production of electricity should be considered avoided while emissions from other uses of non-sustainable fu these emissions will remain longer. These dates will sectors covered by Directive 2003/87/EC of the Euro-	 () O(1.128, 2.1.12.5018, p. 42. () COM(2022) 108 final. 				

- As defined by the REDII (Directive 2018:2001):
 - Renewable fuels of non-biological origin (RFNBOs): renewable liquid or gaseous fuels which are used in the transport sector other than biofuels or biogas, the energy content of which is derived from renewable sources other than biomass.
- Delegated acts on RFNBOs adopted on 10th Feb 2023 and published 20th June 2023 - EU 2023/1184 and EU 2023/1185
- Specification of electricity sourcing and GHG methodology
- ISCC already applied for recognition



Depending on the connection, five possible scenarios can be envisioned





The methodology for RFNBOs GHG accounting differs from the biofuels RED methodology

$$\mathbf{E} = \mathbf{e}_{i} + \mathbf{e}_{p} + \mathbf{e}_{td} + \mathbf{e}_{u} - \mathbf{e}_{ccs}$$

Where:

E = total emissions from the use of the fuel in g CO₂/MJ e_i = e_i elastic + e_i rigid - e_{ex-use}: supply of inputs e_i elastic = emissions from elastic inputs e_i rigid = emissions from rigid inputs e_{ex-use} = emissions from inputs' existing use or fate e_p = emissions from processing e_{td} = emissions from transport and distribution e_u = emissions from combusting the fuel

e_{ccs} = emission savings from **carbon capture and geological storage**

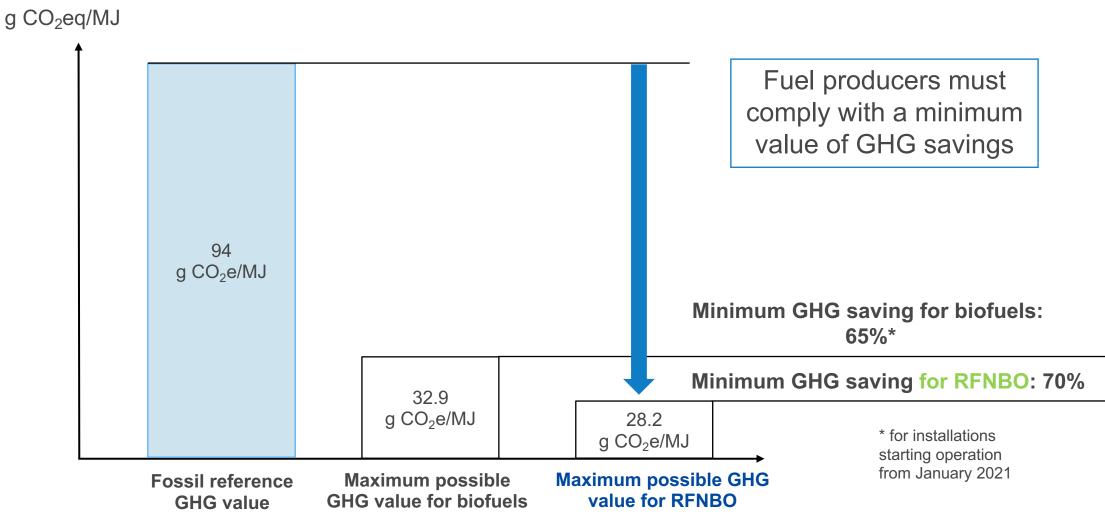
Source: Annex on Commission Delegated Regulation 2023/1185

Elastic: Supply can be expanded to meet additional demand (e.g. electricity)

Rigid: Supply <u>cannot</u> be expanded to meet additional demand (e.g. MSW, inputs for RCFs)



GHG emission savings for RFNBOs is higher than for biofuels





ISCC EU applied for recognition of the RFNBO certification document by the EU COM; certification under ISCC PLUS already possible





- ISCC applied for recognition by the EU COM for RENBO certification
- RFNBOs can not be certified at the moment
- ISCC is participating in pilot audits

ISCC PLUS



- It is already possible to certify PtX under ISCC PLUS
 - Examples are: Hydrogen, Ammonia, Chlorine, PVC

ISCC CORSIA



- At the moment, it is **not possible** to certify PtX under CORSIA
- Work in the PtX space is ongoing in ICAO (CAEP, FTG)
- ISCC is actively part of the working groups





Key takeaways

- Meo has already supported customers with different RFNBO pilot projects:
 - GHG calculations
 - Certification set-up and electricity requirements verification
 - Certification support under voluntary markets (already possible)
- Certification set-up assessments, GHG calculations and identification of GHG core impact categories can already be performed.





Feel free to get in touch with us!

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