



Advanced Sustainable Biofuels for Aviation



Sustainability assessment of low-ILUC feedstock SAF value chains at scale

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ENERGY CENTRE



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Background



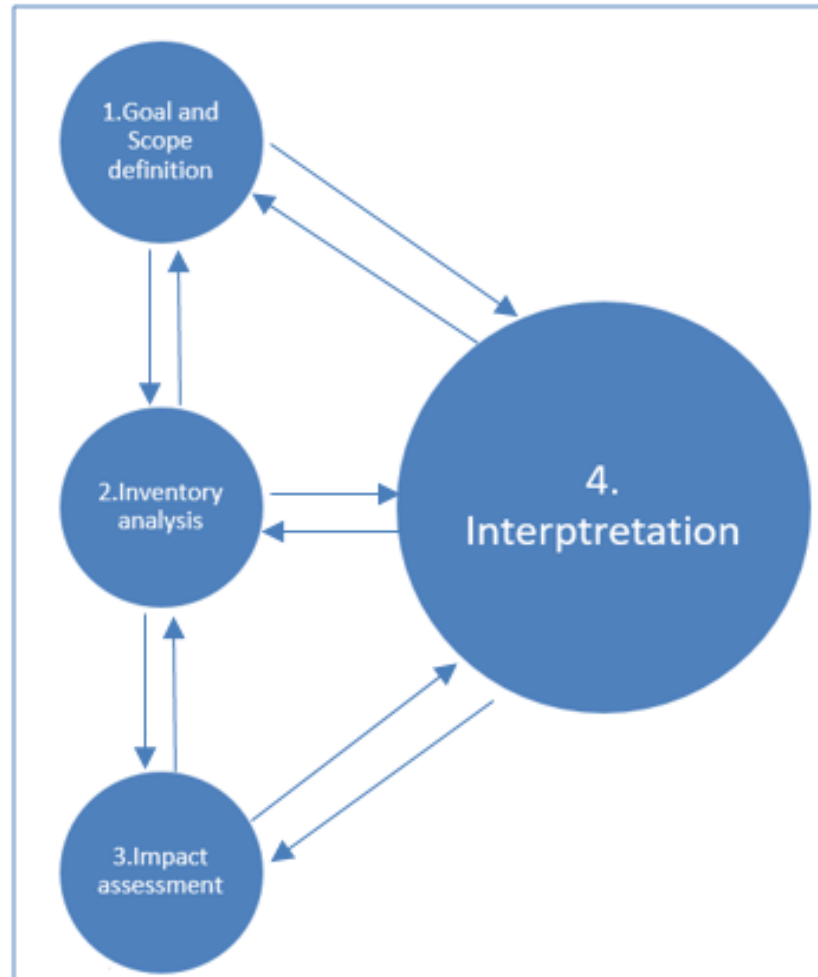
CENER is the partner coordinating WP4 (Evaluation) and *main* responsible for:

- T4.3 Environmental sustainability assessment
- T4.4 Socio-economic sustainability assessment



T4.3 Environmental sustainability assessment

Life cycle assessment (LCA)



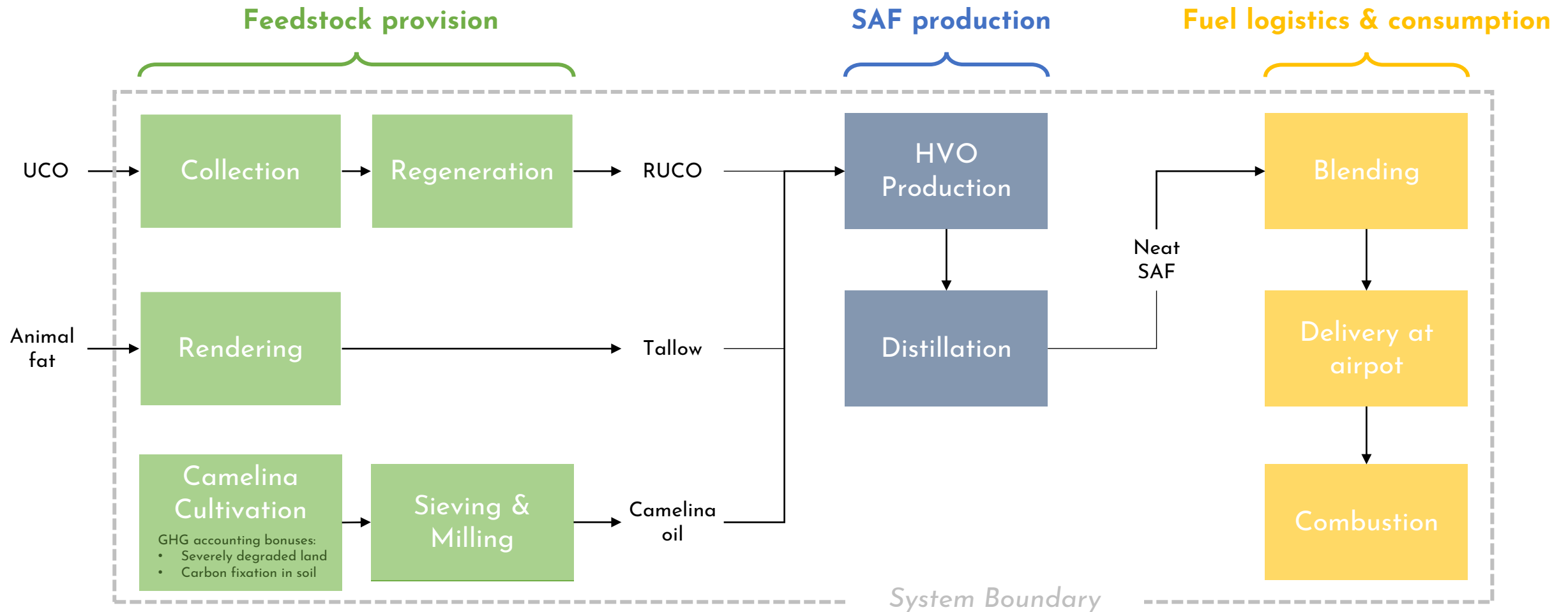
- ISO 14040:2006 Environmental Management–Life cycle assessment -Principles and framework.
- ISO 14044:2006 Environmental management -- Life cycle assessment -- Requirements and guidelines.



T4.3 Environmental sustainability assessment

Goal: To assess the GHG emissions ($\text{CO}_{2\text{eq}}$) of producing, delivering and combusting 1 MJ SAF

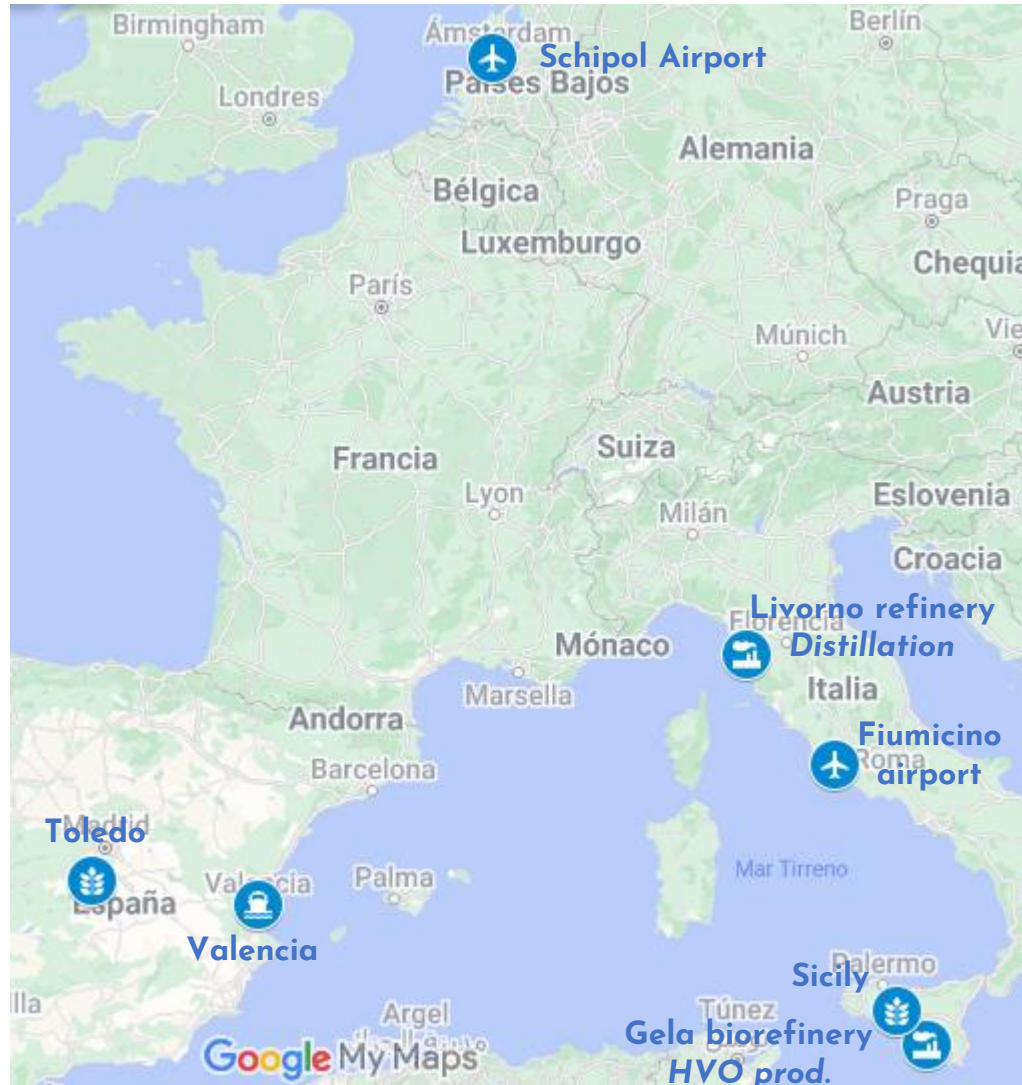
Scope: Well-to-wake approach





T4.3 Environmental sustainability assessment

- 1) Cultivation 2) SAF Production 3) Airport



Case(s)	Feedstock	Cultivation	Airport	Transportation [‡]
#1	UCO	n/a	NL, Schiphol	(T)+(S)+(S+P)
#2	Tallow	n/a	NL, Schiphol	(T)+(S)+(S+P)
#3-6 [†]	Camelina	Spain	NL, Schiphol	(T+S)+(S)+(S+P)
#7-10 [†]	Camelina	Italy	NL, Schiphol	(T)+(S)+(S+P)
#11	UCO	n/a	ITA, Fiumicino	(T)+(S)+(T)
#12	Tallow	n/a	ITA, Fiumicino	(T)+(S)+(T)
#13-16 [†]	Camelina	Spain	ITA, Fiumicino	(T+S)+(S)+(T)
#17-20 [†]	Camelina	Italy	ITA, Fiumicino	(T)+(S)+(T)

[†] Listed cases considering camelina cultivation comprehend 4 subcases: a: mineral fertiliser; b: addition of char; c: addition of compost; d: addition of COMBI.
[‡] Transportation (Feedstock to refinery)+(Gela-Livorno)+(SAF delivery)
 Transportation types: P: Pipeline; S: Ship; T: Truck



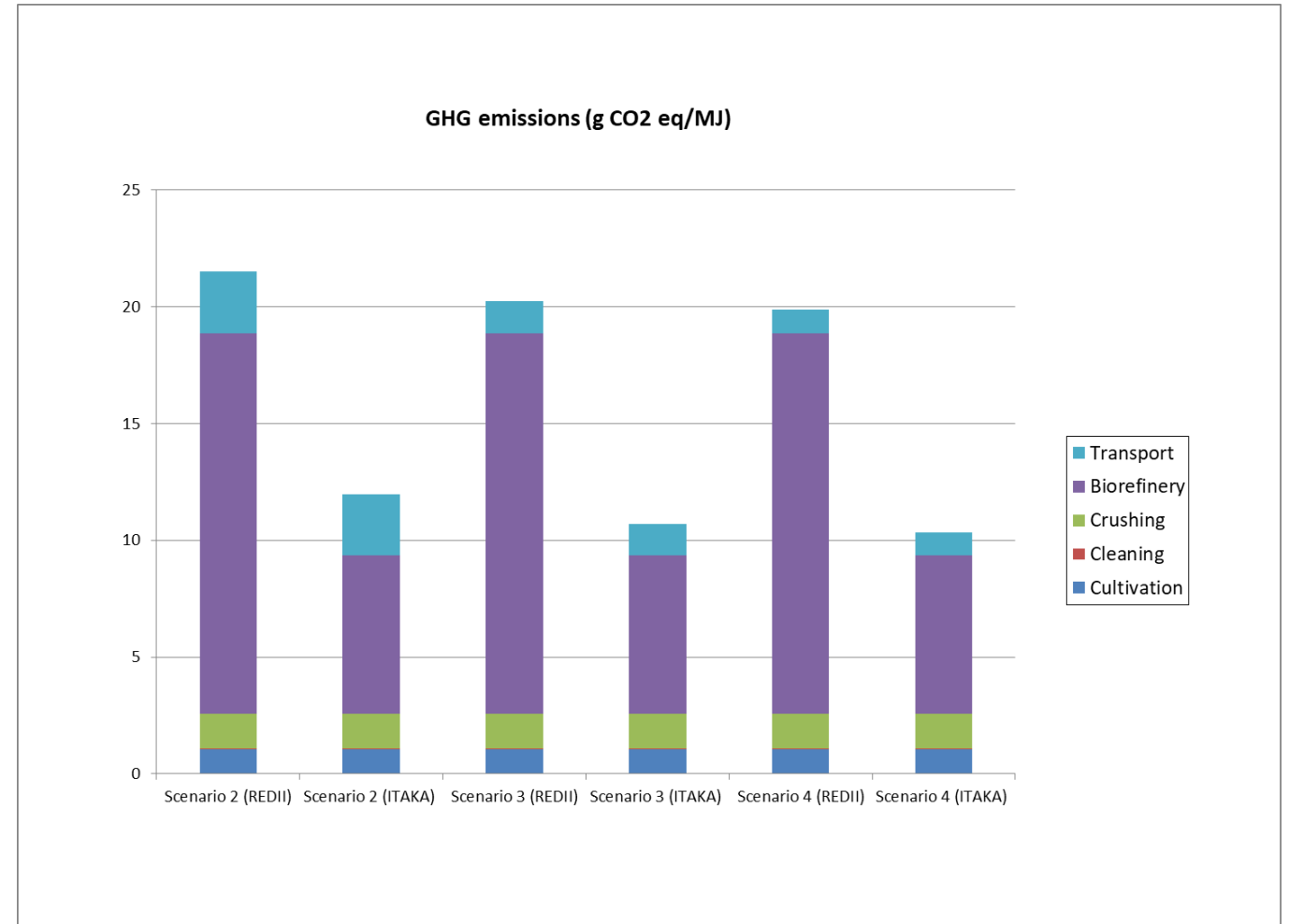
T4.3 Environmental sustainability assessment

Results from preliminary deliverable

	Biorefinery data		Transport distance
	RED II	ITAKA	
Scenario 2	16,3	6,70	Cultivation/Crushing ES+ Biorefinery FR+ Final use NL
Scenario 3	16,3	6,70	Cultivation/Crushing FR+ Biorefinery FR+ Final use FR
Scenario 4	16,3	6,70	RED Default value: 1 g CO ₂ /MJ

Savings estimated at 73-87% compared to REDII fossil fuel reference of 94 g CO_{2eq}/MJ

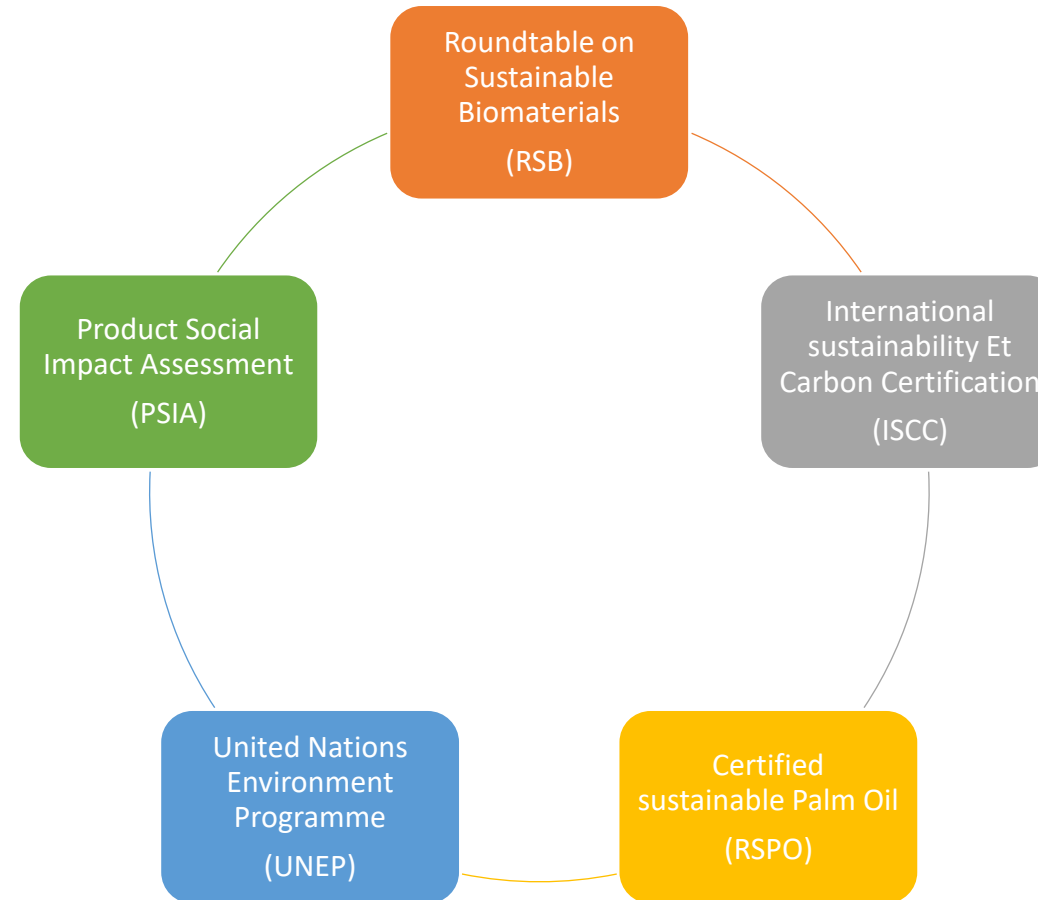
Updated inventory data still requiring some refinement. Final results expected (D4.3) by next next month.





T4.4 Socio-economic sustainability assessment

Methodologies and certifications analysed in the study

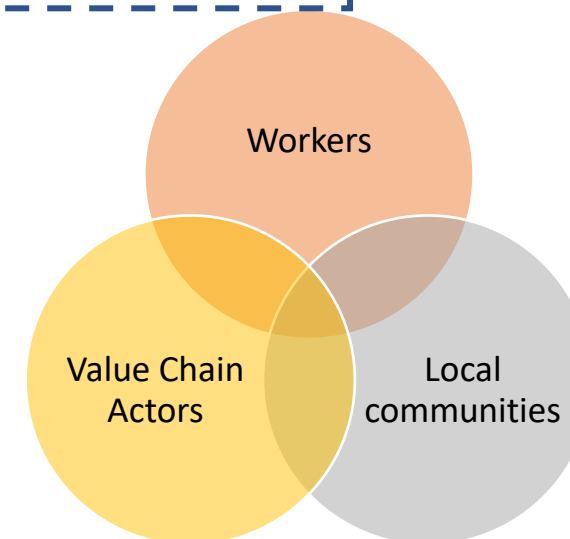




T4.4 Socio-economic sustainability assessment

Implemented methodology

Scale level	Description	Risk level
+2	Ideal performance	Very Low Risk
+1	Progress beyond compliance	Low risk
0	Compliance with local laws	Medium risk
-1	Non-compliant situation, improving	High risk
-2	No data or Non-compliant situation	Very high risk





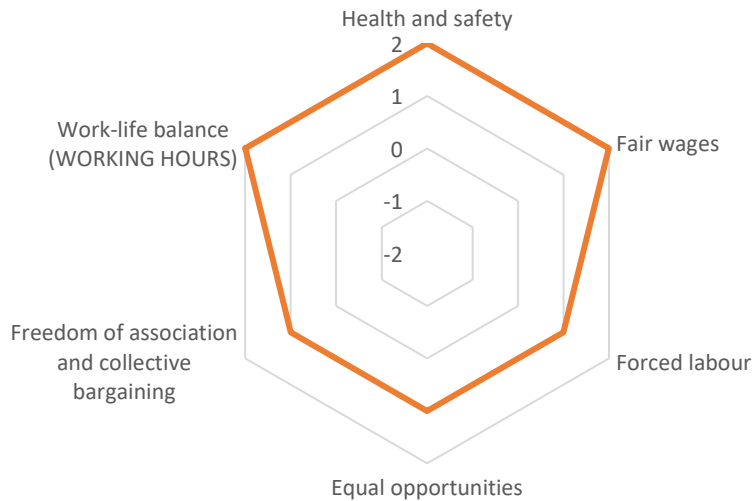
T4.4 Socio-economic sustainability assessment

Results

WORKERS

- Health and safety
- Fair wages
- Forced labour
- Equal opportunities
- Freedom of association and collective bargaining
- Work-life balance (WORKING HOURS)

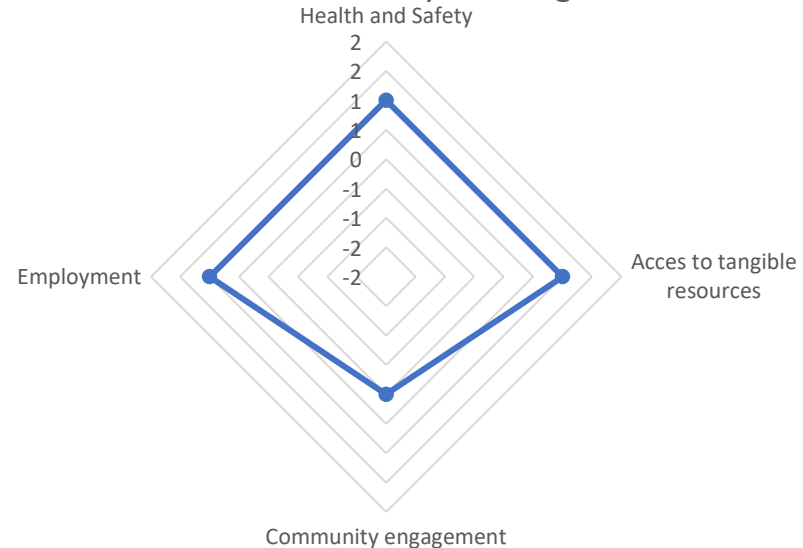
Workers - Average



LOCAL COMMUNITY

- Health and Safety
- Acces to tangible resources
- Community engagement
- Employment

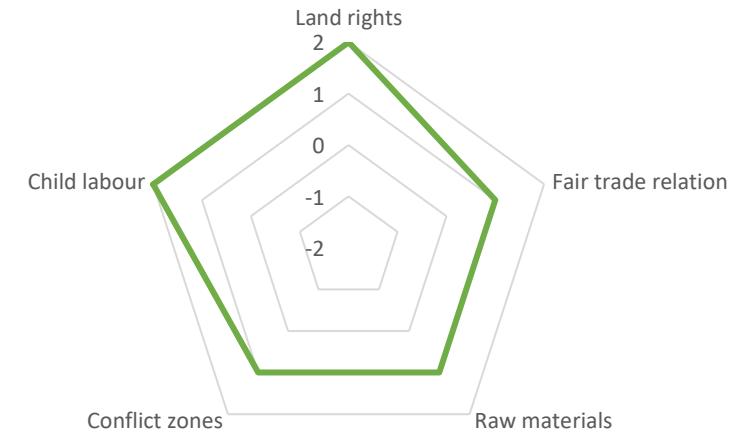
Local community - Average



VALUE CHAIN ACTORS

- Land rights
- Fair trade relation
- Raw materials
- Conflict zones
- Child labour

Value chain actors - Average





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Project Partners



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