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# Supplementary Material

The following Tables and Figures report the completed alternative matrix, along with Priority Scale, weights vector and solved alternative matrix for each decision-maker.

#### **Decision-maker 1**

Table S1. Completed alternative matrix for Decision-maker 1

A 14 arm a 4 im a a	Evaluation criteria					
Alternatives	C1-Management	C2-Environment	C3-Economy	C4-Efficiency		
A1_Biodiesel	2	2	1	1		
A2_Biolubricant	1	3	1	1		
A3_Biosurfactant	3	3	3	3		

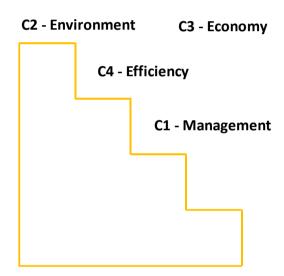


Figure S1. Priority Scale for Decision-maker 1

Table S2. Weights vector for Decision-maker 1

Weights vestor	Evaluation criteria				
Weights vector	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	
Values	0.1	0.35	0.35	0.2	

Table S3. Solved alternative matrix and Priority index for Decision-maker 1

Altamativas	Evaluation criteria				- Duiouity indov
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	- Priority index
A1_Biodiesel	0.2	0.7	0.35	0.2	1.45
A2_Biolubricant	0.1	1.05	0.35	0.2	1.70
A3_Biosurfactant	0.3	1.05	1.05	0.6	3.00

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**Table S4.** Completed alternative matrix for Decision-maker 2

Altomotivos	Evaluation criteria					
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency		
A1_Biodiesel	3	3	1	3		
A2_Biolubricant	1	2	2	2		
A3_Biosurfactant	2	1	3	1		

C3 - Economy

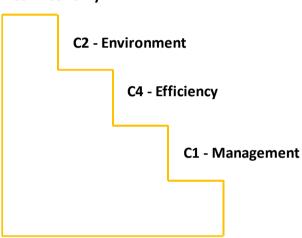


Figure S2. Priority Scale for Decision-maker 2

Table S5. Weights vector for Decision-maker 2

Waighta vootan	Evaluation criteria				
Weights vector	C1-Management	C2-Environment	C3-Economy	C4-Efficiency	
Values	0.1	0.3	0.4	0.2	

Table S6. Solved alternative matrix and Priority index for Decision-maker 2

Alternatives	Evaluation criteria				- Priority index
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	- Friority index
A1_Biodiesel	0.3	0.9	0.4	0.6	2.20
A2_Biolubricant	0.1	0.6	0.8	0.4	1.90
A3_Biosurfactant	0.2	0.3	1.2	0.2	1.90

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**Table S7.** Completed alternative matrix for Decision-maker 3

A 14 ann a 4 mag	Evaluation criteria					
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency		
A1_Biodiesel	1	1	1	1		
A2_Biolubricant	2	2	2	2		
A3_Biosurfactant	2	2	2	3		

#### C3 - Economy C4 - Efficiency

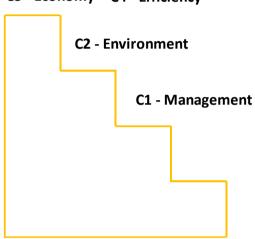


Figure S3. Priority Scale for Decision-maker 3

**Table S8.** Weights vector for Decision-maker 3

Weights wester	Evaluation criteria				
Weights vector	C1-Management	C2-Environment	C3-Economy	C4-Efficiency	
Values	0.1	0.2	0.35	0.35	

Table S9. Solved alternative matrix and Priority index for Decision-maker 3

Alternatives	Evaluation criteria				- Driovity indov
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	- Priority index
A1_Biodiesel	0.1	0.2	0.35	0.35	1.00
A2_Biolubricant	0.2	0.4	0.7	0.7	2.00
A3_Biosurfactant	0.2	0.4	0.7	1.05	2.35

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Table S10. Completed alternative matrix for Decision-maker 4

A 14 aura a 4 in a a	Evaluation criteria					
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency		
A1_Biodiesel	2	1	1	1		
A2_Biolubricant	1	2	2	2		
A3_Biosurfactant	3	3	3	3		

#### **C2** - Environment

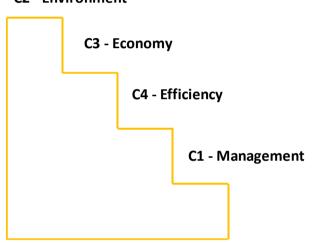


Figure S4. Priority Scale for Decision-maker 4

Table S11. Weights vector for Decision-maker 4

Woights vestor	Evaluation criteria				
Weights vector	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	
Values	0.1	0.4	0.3	0.2	

Table S12. Solved alternative matrix and Priority index for Decision-maker 4

Alternatives	Evaluation criteria				Priority index
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	Friority index
A1_Biodiesel	0.2	0.4	0.3	0.2	1.10
A2_Biolubricant	0.1	0.8	0.6	0.4	1.90
A3_Biosurfactant	0.3	1.2	0.9	0.6	3.00

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**Table S13.** Completed alternative matrix for Decision-maker 5

Altamativas	Evaluation criteria					
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency		
A1_Biodiesel	2	1	2	3		
A2_Biolubricant	3	3	3	2		
A3_Biosurfactant	3	3	3	1		

#### **C2** - Environment

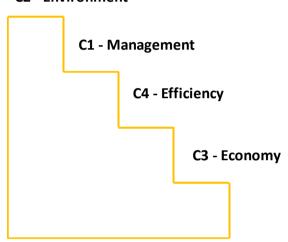


Figure S5. Priority Scale for Decision-maker 5

**Table S14.** Weights vector for Decision-maker 5

Weights vector	Evaluation criteria				
Weights vector	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	
Values	0.3	0.4	0.1	0.2	

**Table S15.** Solved alternative matrix and Priority index for Decision-maker 5

Alternatives	Evaluation criteria				Priority index
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	Friority index
A1_Biodiesel	0.6	0.4	0.2	0.6	1.80
A2_Biolubricant	0.9	1.2	0.3	0.4	2.80
A3_Biosurfactant	0.9	1.2	0.3	0.2	2.60

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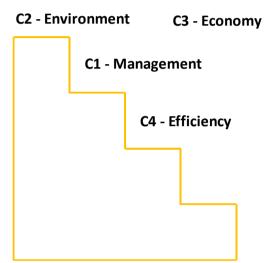
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Table S16. Completed alternative matrix for Decision-maker 6

Altamativas	Evaluation criteria					
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency		
A1_Biodiesel	2	1	1	1		
A2_Biolubricant	2	2	1	2		
A3_Biosurfactant	3	3	2	2		



**Figure S6.** Priority Scale for Decision-maker 6

**Table S17.** Weights vector for Decision-maker 6

Weights vestor	Evaluation criteria			
Weights vector	C1-Management	C2-Environment	C3-Economy	C4-Efficiency
Values	0.2	0.35	0.35	0.1

Table S18. Solved alternative matrix and Priority index for Decision-maker 6

Alternatives		Priority index			
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	Friority index
A1_Biodiesel	0.4	0.35	0.35	0.1	1.20
A2_Biolubricant	0.4	0.7	0.35	0.2	1.65
A3_Biosurfactant	0.6	1.05	0.7	0.2	2.55

**Table S19.** Completed alternative matrix for Decision-maker 7

Altamativas	Evaluation criteria					
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency		
A1_Biodiesel	2	1	1	3		
A2_Biolubricant	3	2	1	1		
A3_Biosurfactant	3	3	2	3		

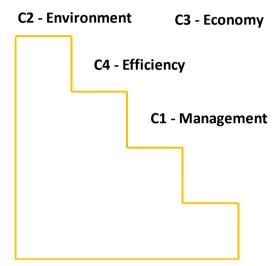


Figure S7. Priority Scale for Decision-maker 7

**Table S20.** Weights vector for Decision-maker 7

Waighta vactor	Evaluation criteria				
Weights vector	C1-Management	C2-Environment	C3-Economy	C4-Efficiency	
Values	0.1	0.35	0.35	0.2	

Table S21. Solved alternative matrix and Priority index for Decision-maker 7

Alternatives	Evaluation criteria				Priority index
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	Friority index
A1_Biodiesel	0.2	0.35	0.35	0.6	1.50
A2_Biolubricant	0.3	0.7	0.35	0.2	1.55
A3_Biosurfactant	0.3	1.05	0.7	0.6	2.65

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Table S22. Completed alternative matrix for Decision-maker 8

Alternatives	Evaluation criteria					
Alternatives	C1-Management	C2-Environment	C3-Economy	C4-Efficiency		
A1_Biodiesel	1	3	2	3		
A2_Biolubricant	2	1	2	2		
A3_Biosurfactant	3	2	3	2		

C4 - Efficiency

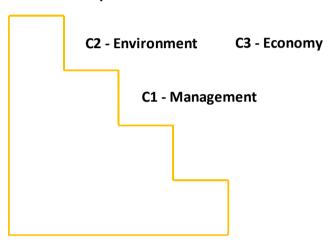


Figure S8. Priority Scale for Decision-maker 8

**Table S23.** Weights vector for Decision-maker 8

Waighta waatan	Evaluation criteria				
Weights vector	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	
Values	0.1	0.25	0.25	0.4	

Table S24. Solved alternative matrix and Priority index for Decision-maker 8

Alternatives		Drianity index			
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	Priority index
A1_Biodiesel	0.1	0.75	0.5	1.2	2.55
A2_Biolubricant	0.2	0.25	0.5	0.8	1.75
A3_Biosurfactant	0.3	0.5	0.75	0.8	2.35

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Table S25. Completed alternative matrix for Decision-maker 9

Alternatives	Evaluation criteria				
Alternatives	C1-Management	C2-Environment	C3-Economy	C4-Efficiency	
A1_Biodiesel	1	1	1	2	
A2_Biolubricant	3	3	3	2	
A3_Biosurfactant	3	2	3	3	

**C2** - Environment

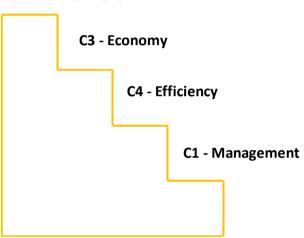


Figure S9. Priority Scale for Decision-maker 9

Table S26. Weights vector for Decision-maker 9

Weights vooton	Evaluation criteria					
Weights vector	C1-Management	C2-Environment	C3-Economy	C4-Efficiency		
Values	0.1	0.4	0.3	0.2		

Table S27. Solved alternative matrix and Priority index for Decision-maker 9

Alternatives		Priority index			
	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	Friority muex
A1_Biodiesel	0.1	0.4	0.3	0.4	1.20
A2_Biolubricant	0.3	1.2	0.9	0.4	2.80
A3_Biosurfactant	0.3	0.8	0.9	0.6	2.60

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**Table S28.** Completed alternative matrix for Decision-maker 10

Altamatina	Evaluation criteria					
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency		
A1_Biodiesel	1	2	2	2		
A2_Biolubricant	2	3	2	2		
A3_Biosurfactant	3	3	2	2		

C2 - Environment C3 - Economy

C4 - Efficiency

C1 - Management

Figure S10. Priority Scale for Decision-maker 10

Table S29. Weights vector for Decision-maker 10

Weights wester	Evaluation criteria			
Weights vector	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency
Values	0.1	0.35	0.35	0.2

Table S30. Solved alternative matrix and Priority index for Decision-maker 10

Alternatives	Evaluation criteria				Priority index	
Alternatives	C1-Management	<b>C2-Environment</b>	C3-Economy	C4-Efficiency	1 Hority muex	
A1_Biodiesel	0.1	0.7	0.7	0.4	1.90	
A2_Biolubricant	0.2	1.05	0.7	0.4	2.35	
A3_Biosurfactant	0.3	1.05	0.7	0.4	2.45	

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