Supplementary Material S2 – Aggregation Logic and Survey Questions

…submitted to the Journal Paper "*Mapping Stakeholder Perspectives for Sustainability Transitions: The Case of Lithium-ion Battery Recycling*" by Rutrecht et al. published at Sustainability Journal of MDPI in 2025.

Table S2.1: Example items, and aggregation logic of the stakeholder questionnaire.

Dimension	Example items	Number of items	Scale structure	Aggregation logic
Opportunities	"Reduce greenhouse gas emissions"; "Improve workforce attraction and retention"; "Enhance process efficiency"	27	Two-dimensional matrix: perceived impact (high/low) × implementation effort (high/low)	Individual impact and effort ratings were normalized and combined into four categories (low-hanging fruits, strategic leaps, incremental improvements, money pits). Aggregated scores were used to construct the opportunity map (Figure 3).
Risks	"Regulatory uncertainty"; "Loss of financing"; "Project failure"	21	Four-point criticality scale (1 = low … 4 = critical)	Item-level scores were averaged across respondents to calculate the criticality index **(c)**, grouped into low (< 40), moderate (40–44), high (45–49), and critical (> 50).
Barriers	"Lack of resources and funding"; "Complexity of systems"; "Lack of methodological know-how"	32	Five-point Likert scale (1 = very low … 5 = very high)	Mean values were converted into weighted barrier scores **(s_b)**. Thresholds: very low (< 36), low (36–40), moderate (40–44), high (45–50), very high (> 50).
Enablers	"Investment in R&D"; "Implementation of (green) technology"; "Management mindset and awareness"	23	Five-point Likert scale (1 = very low … 5 = very high)	Mean values were converted into weighted enabler scores **(s_e)**. Thresholds: very low (< 50), low (51–55), moderate (56–60), high (61–65), very high (> 66). (Table 1, Table 2)
Cross-check ranking	—	—	Open selection of top 5 items per dimension	Respondents selected their five most relevant items within each dimension to validate consistency and capture practical salience. Rankings were compared with aggregated weights to triangulate quantitative scores.

All questionnaire items were derived from the literature-based inventory presented in Tables S1.1 – S1.4 (Supplementary Material S1). Responses were collected using an online survey tool during a project workshop and conference sessions. Aggregation of item-level means yielded weighted scores per dimension, which were subsequently used in the risk–opportunity and barrier–intervention mappings (Sections 3.3–3.4).

Table S2.2: Structure and content of the sustainability relevant stakeholder questions.

Q No.	Question / prompt	Dimension(s)	Response type and scale	Purpose / aggregation logic
Q1	**Do you associate** the following keywords (items) with successful **sustainability** management?	Opportunities (27 items)	Five-point Likert scale (1 = very low … 5 = very high)	Used to assess baseline awareness of sustainability-related opportunities. Mean values aggregated to identify perceived strength of association per item.; supports construct-validity discussion (Section 3.3).
Q2	Please rate the **perceived sustainability impact** and **implementation effort** of each opportunity item identified in the literature.	Opportunities (27 items)	Two-dimensional matrix: impact (1 = low … 2 = high) × effort (1 = low … 2 = high)	Combined impact and effort ratings categorized items into four quadrants (low-hanging fruits, strategic leaps, incremental improvements, money pits) forming the opportunity map. (Figure 3).
Q3	From your perspective, **select the five most relevant opportunities** for your own organization.	Opportunities (27 items)	Multiple-choice ranking (top 5 selection)	Used to validate consistency and highlight perceived salience. Triangulated with aggregated scores of Q2.
Q4	How strongly do you **associate** the following **keywords** (items) **with** the **risks of not implementing sustainability** management?	Risks (21 items)	Five-point Likert scale (1 = very low … 5 = very high)	Used to validate individual prioritization behaviour and triangulate with aggregated opportunity scores; supports construct-validity discussion (Section 3.3).
Q5	Evaluate the **criticality** of each risk item for your organization.	Risks (21 items)	Four-point ordinal scale (1 = low … 4 = critical)	Captures perceived presence and awareness of risk factors. Mean values used to identify overall salience of risk themes. Item-level means aggregated into the **criticality index (c)**; thresholds define low/moderate/high/critical risks.
Q6	**Select the five most relevant risks** for your own organization.	Risks (21 items)	Multiple-choice ranking (top 5 selection)	Same purpose as Q3; triangulated with aggregated scores of Q5. Confirms alignment between organizational context and aggregated criticality scores.
Q7	Rate the **relevance of each internal barrier** to sustainability implementation.	Barriers (32 items)	Five-point Likert scale (1 = very low … 5 = very high)	Mean values converted to weighted scores ($\mathbf{s_b}$); grouped by threshold ranges into very low, low, moderate, high, or very high categories.
Q8	**Select the five most relevant internal barriers** for your own organization.	Barriers (32 items)	Multiple-choice ranking (top 5 selection)	Same purpose as Q3. Highlights perceived priority barriers AND Confirms priority barriers used in Table 1. Triangulated with aggregated scores of Q7.
Q9	Rate the **effectiveness of each internal enabling factor** in supporting sustainability implementation.	Enablers (23 items)	Five-point Likert scale (1 = very low … 5 = very high)	Mean values converted to weighted scores ($\mathbf{s_e}$); grouped by threshold ranges into very low, low, moderate, high, or very high categories.
Q10	**Select the five most relevant enablers** for your own organization.	Enablers	Multiple-choice ranking (top 5 selection)	Highlights practical importance of enabling measures and validates their relative importance against aggregated scores.

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Table S2.3 - Complete barrier-intervention-mapping

	Barrier		Lack of resources and funding	Complexity of systems	No (reliable) data	Lack of know-how	Establishing Transparency	Scope and limits of existing methods	Lack of standards and frameworks	Lack of (green) technology	Uncertainty of effects of measures	Interdisciplinarity	Lack of comparability and benchmarks	Fear of quality loss	Long time horizons for planning	Inertia and everyday business	Awareness and mindset of employees	Fear of dependence on others	Challenge of information exchange	(Incorrect) Risk perception	Performance monitoring	Lack of risk management	Challenge to convert best practices to own business	Easily externalized costs	Capital in fixed assets (e.g. plants)	Greenwashing	Fear of eroding profits	Lack of dedication of management	Low-level education of employees	Spatial isolation of company	Fear of power loss	Social norms and culture	Corruption				
	Enabler	**Type**	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	Sum	Rank (basic)	Rank (weigh.)	Delta Rank	Weighing factor s_e
			Strategic	Institutional	Operational	Strategic	Institutional	Technical	Technical	Institutional	Strategic	Cultural	Technical	Cultural	Strategic	Operational	Cultural	Strategic	Operational	Cultural	Operational	Strategic	Technical	Institutional	Operational	Institutional	Cultural	Cultural	Institutional	Operational	Strategic	Cultural	Cultural	Institutional					
E22	**Promotion of risk literacy**	Cultural	0	0	0	0	0	4	0	0	3	0	0	3	6	0	3	6	0	6	0	4	0	2	2	2	0	4	2	0	0	0	1	1	49	18	22	-4	1
E21	**Stakeholder integration**	Strategic	0	15	15	0	24	0	0	0	0	18	0	18	18	0	18	18	18	9	6	0	0	6	12	6	0	6	0	12	3	3	6	3	234	9	16	-7	3
E20	**Risk management**	Strategic	15	0	0	0	12	0	0	9	18	9	0	18	18	9	18	18	0	18	6	12	0	0	0	6	12	0	0	0	0	3	3	6	210	14	17	-3	3
E19	**Benchmarks**	Institutional	0	0	0	15	0	0	12	9	9	0	18	9	0	0	0	0	9	0	6	0	0	0	0	12	0	6	6	6	0	0	0	0	117	20	19	1	3
E18	**New business models**	Strategic	15	0	0	0	0	0	0	0	0	0	0	0	9	9	0	0	0	0	12	0	12	6	6	6	6	0	0	6	0	0	6	3	96	21	20	1	3
E17	**(Sustainable) Supply chain management**	Operational	0	30	15	0	12	0	0	0	0	9	0	9	18	0	0	18	9	9	6	6	0	12	0	12	0	0	0	12	0	3	3	6	189	16	18	-2	3
E16	**Best practices**	Operational	0	30	15	30	24	12	24	9	9	9	18	18	18	9	18	9	9	0	12	0	6	6	0	12	6	12	12	6	3	0	6	6	348	2	11	-9	3
E15	**Ecodesign of products**	Strategic	0	15	15	15	24	0	24	0	0	0	18	18	9	0	9	9	0	18	0	6	6	12	0	12	0	0	0	0	0	0	3	0	213	17	15	2	3
E14	**Revisioning of processes**	Strategic	40	20	40	20	32	0	32	0	0	0	0	12	12	0	12	0	24	12	16	0	8	0	16	0	8	0	0	8	0	0	8	8	328	15	8	7	4
E13	**Evidence-based decision making**	Operational	20	0	0	0	16	0	16	0	24	12	0	24	24	0	24	24	12	24	0	16	0	8	0	16	16	0	0	0	4	8	8	8	304	8	14	-6	4
E12	**Use of key performance indicators**	Institutional	0	40	40	0	32	16	0	12	24	12	0	24	12	12	24	12	0	24	16	8	0	0	0	16	16	0	0	0	0	0	4	4	348	10	10	0	4
E11	**Internal knowledge and data exchange**	Operational	0	40	40	40	32	32	0	0	12	24	0	24	12	12	24	0	24	24	16	16	8	0	0	8	0	0	16	0	4	0	8	8	424	5	7	-2	4
E10	**Sustainability policy with set priorities**	Strategic	0	40	20	20	32	16	0	24	0	24	0	0	24	0	24	0	0	0	8	8	0	16	0	16	0	16	0	0	8	0	8	0	304	11	12	-1	4
E9	**Mindset and awareness of management**	Cultural	40	20	20	20	32	32	32	24	0	12	0	24	24	24	24	12	0	12	0	8	0	8	0	16	8	16	0	8	0	8	4	8	436	6	6	0	4
E8	**Promotion of awareness among employees**	Cultural	0	20	40	20	32	16	0	12	0	12	0	0	0	12	24	12	24	24	0	0	0	0	0	8	0	0	0	0	0	0	8	8	272	19	13	6	4
E7	**Established transparency of processes**	Institutional	0	40	40	20	32	0	0	12	12	12	0	24	12	12	12	24	24	12	16	0	0	0	0	16	16	0	0	0	0	0	0	8	344	13	8	5	4
E6	**Establishment of frameworks and standards**	Strategic	0	50	50	50	40	40	0	30	30	30	0	30	15	0	15	0	30	30	20	20	10	10	0	20	0	0	10	0	10	0	10	10	560	3	2	1	5
E5	**Preference for renewables**	Cultural	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	30	0	0	0	0	0	20	0	20	0	0	0	0	0	0	5	0	90	22	21	1	5
E4	**Financing and resources**	Strategic	50	0	50	50	40	0	40	30	0	15	0	15	30	30	30	0	30	15	20	20	10	0	0	20	0	20	20	10	0	0	5	10	560	4	2	2	5
E3	**Industry-wide cooperation and network**	Strategic	25	50	50	50	20	20	40	15	15	30	30	0	30	0	15	30	30	30	0	0	10	0	20	10	0	0	0	20	5	5	5	0	555	7	4	3	5
E2	**Know-how on tools and methods**	Technical	50	50	50	50	40	40	40	30	30	30	30	30	30	0	15	0	30	30	20	20	10	0	0	10	0	0	20	0	10	0	0	10	675	1	1	0	5
E1	**Invest in research and development**	Strategic	0	50	50	50	40	40	40	0	15	15	30	30	15	0	0	30	0	0	20	0	20	0	0	0	10	20	0	0	5	0	0	0	480	12	5	7	5
	Weighing factor s_b		5	5	5	5	4	4	4	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	1	1	1	1						

...Very High ...High ...Moderate ...Low ...Very Low

Table S2.4 - Basic score for every enabler-barrier pairing

	Barrier		Lack of resources and funding	Complexity of systems	No (reliable) data	Lack of know-how	Establishing Transparency	Scope and limits of existing methods	Lack of (green) technology	Uncertainty of standards and frameworks	Lack of comparability and benchmarks	Uncertainty of effects of measures	Interdisciplinarity	Long time horizons for planning	Fear of quality loss	Inertia and everyday business	Awareness and mindset of employees	Fear of dependence on others	Challenge of information exchange	(Incorrect) Risk perception	Performance monitoring	Lack of risk management	Challenge to convert best practices to own business	Easily externalized costs	Capital in fixed assets (e.g. plants)	Greenwashing	Fear of eroding profits	Lack of dedication of management	Low-level education of employees	Spatial isolation of employees	No policy with regard on how to handle trade-offs	Fear of power loss	Social norms and culture	Corruption
	Enabler	**Type**	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32
			Strategic	Institutional	Operational	Strategic	Institutional	Technical	Technical	Institutional	Strategic	Cultural	Technical	Cultural	Strategic	Operational	Cultural	Strategic	Operational	Cultural	Operational	Strategic	Technical	Institutional	Operational	Institutional	Cultural	Cultural	Institutional	Operational	Strategic	Cultural	Cultural	Institutional
E22	**Promotion of risk literacy**	Cultural	0	0	0	0	0	1	0	0	1	0	0	1	2	0	1	2	0	2	0	2	0	1	1	1	0	2	1	0	0	0	1	1
E21	**Stakeholder integration**	Strategic	0	1	1	0	2	0	0	0	0	2	0	2	2	0	2	2	2	1	1	0	0	1	2	1	0	1	0	2	1	1	2	1
E20	**Risk management**	Strategic	1	0	0	0	1	0	0	1	2	1	0	2	2	1	2	2	0	2	1	2	0	0	0	1	2	0	0	0	0	1	1	2
E19	**Benchmarks**	Institutional	0	0	0	1	0	0	1	1	1	0	2	1	0	0	0	0	1	0	1	0	0	0	0	2	0	1	1	1	0	0	0	0
E18	**New business models**	Strategic	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	2	1	1	1	1	0	0	1	0	0	2	1
E17	**(Sustainable) Supply chain management**	Operational	0	2	1	0	1	0	0	0	0	1	0	1	2	0	0	2	1	1	1	1	0	2	0	2	0	0	0	2	0	1	1	2
E16	**Best practices**	Operational	0	2	1	2	2	1	2	1	1	1	2	2	2	1	2	1	1	0	2	0	1	1	0	2	1	2	2	1	1	0	2	2
E15	**Ecodesign of products**	Strategic	0	1	1	1	2	0	2	0	0	0	2	2	1	0	1	1	0	2	0	1	1	2	0	2	0	0	0	0	0	0	1	0
E14	**Revisioning of processes**	Strategic	2	1	2	1	2	0	2	0	0	0	0	1	1	0	1	0	2	1	2	0	1	0	2	0	1	0	0	1	0	0	2	2
E13	**Evidence-based decision making**	Operational	1	0	0	0	1	0	1	0	2	1	0	2	2	0	2	2	1	2	0	2	0	1	0	2	2	0	0	0	1	2	2	2
E12	**Use of key performance indicators**	Institutional	0	2	2	0	2	1	0	1	2	1	0	2	1	1	2	1	0	2	2	1	0	0	0	2	2	0	0	0	0	0	1	1
E11	**Internal knowledge and data exchange**	Operational	0	2	2	2	2	2	0	0	1	2	0	2	1	1	2	0	2	2	2	2	1	0	0	1	0	0	2	0	1	0	2	2
E10	**Sustainability policy with set priorities**	Strategic	0	2	1	1	2	1	0	2	0	2	0	0	2	0	2	0	0	0	1	1	0	2	0	2	0	2	0	0	2	0	2	0
E9	**Mindset and awareness of management**	Cultural	2	1	1	1	2	2	2	2	0	1	0	2	2	2	2	1	0	1	0	1	0	1	0	2	1	2	0	1	0	2	1	2
E8	**Promotion of awareness among employees**	Cultural	0	1	2	1	2	1	0	1	0	1	0	0	0	1	2	1	2	2	0	0	0	0	0	1	0	0	0	0	0	0	2	2
E7	**Established transparency of processes**	Institutional	0	2	2	1	2	0	0	1	1	1	0	2	1	1	1	2	2	1	2	0	0	0	0	2	2	0	0	0	0	0	0	2
E6	**Establishment of frameworks and standards**	Strategic	0	2	2	2	2	2	0	2	2	2	0	2	1	0	1	0	2	2	2	2	1	1	0	2	0	0	1	0	2	0	2	2
E5	**Preference for renewables**	Cultural	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	0
E4	**Financing and resources**	Strategic	2	0	2	2	2	0	2	2	0	1	0	1	2	2	2	0	2	1	2	2	1	0	0	2	0	2	2	1	0	0	1	2
E3	**Industry-wide cooperation and network**	Strategic	1	2	2	2	1	1	2	1	1	2	2	0	2	0	1	2	2	2	0	0	1	0	2	1	0	0	0	2	1	1	1	0
E2	**Know-how on tools and methods**	Technical	2	2	2	2	2	2	2	2	2	2	2	2	2	0	1	0	2	2	2	2	1	0	0	1	0	0	2	0	2	0	0	2
E1	**Invest in research and development**	Strategic	0	2	2	2	2	2	2	0	1	1	2	2	1	0	0	2	0	0	2	0	2	0	0	0	1	2	0	0	1	0	0	0

...Very High ...High ...Moderate ...Low ...Very Low

1st FuLIBatteR Workshop - Sustainability Radar

Introduction
The project team of COMET module FuLIBatteR is asking for your support in collecting data on the perception of risks and chances of zero waste and sustainability management in your domain. This survey enables a holistic approach to formulate strategies to increase the sustainability in the value chain of lithium-ion batteries with special focus on the sector of lithium-ion battery recycling.

We value your privacy.
All answers are collected anonymously and used for evaluation purposes in COMET module FuLIBatteR only.

Curious about the result?
We are happy to share the results with you. You can provide a valid email address for this purpose at the end of the process.

Thank you for your participation!
Your valuable time and willingness to cooperate are precious to us.

Duration
10-13 minutes

For more information on the COMET module FuLIBatteR, please visit our project homepage
https://www.k1-met.com/modul_fulibatter or follow us on Linkedin https://www.linkedin.com/company/fulibatter/

* Erforderlich

Personal data

1

Man *

- ◯ Woman
- ◯ Man
- ◯ Other
- ◯ Prefer not to say

2

What is your age? *

- ◯ 18-24
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 54+

3

What is your position and job description? *

4

Do you have work related experience in sustainability or environmental management? *

- ◯ Yes
- ◯ No

Data on your company

5

Which domain can your company be assigned to? *

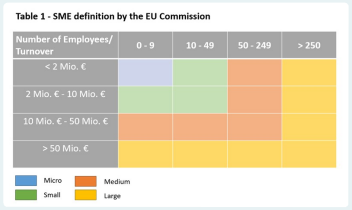
- ◯ Public sector
- ◯ Research institute
- ◯ Private company
- ◯ Listed company

6

Which industry can your company be assigned to? (e.g. manufacturing, recycling, IT,...) *

7

According to the given definition, is your company or institution considered as micro, small, medium or large? *



- ◯ Micro
- ◯ Small
- ◯ Medium
- ◯ Large

8

How many employees are exclusively involved in sustainability or environmental management in full time equivalents? *

- ◯ None.
- ◯ < 1
- ◯ 1-2
- ◯ 3-5
- ◯ > 5

Risks and chances of (not) implementing sustainability management

The next section gives a non-structured compilation of **chances associated with** the implementation of **zero waste and sustainability management** reported by literature. This is going to be contrasted by a non-structured list of **risks associated with neglecting sustainability management**.

The goal is to assess the main risks and chances that arise for businesses when applying or desisting from sustainable management over time and to **assess the stakeholder's view on the likelihood and significance**. The next step will be to identify and formulate strategies that enable and accelerate the commitment to sustainable management in specific industrial sectors with special focus on recycling and waste management.

9

To what extent do you agree with the following statement:
The company or institution I work for is already extensively involved in environmental and sustainability issues. *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sustainability commitment	◯	◯	◯	◯	◯

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To what extent do you associate the following keywords with a positive outcome (chance) of successful sustainability management? (Part 1 of 5) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Cope with climate change	◯	◯	◯	◯	◯
Promote social equity	◯	◯	◯	◯	◯
Saving Energy	◯	◯	◯	◯	◯
Energy Security	◯	◯	◯	◯	◯
Saving resources	◯	◯	◯	◯	◯

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To what extent do you associate the following keywords with successful sustainability management? (Part 2 of 5) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Secure resource supply	◯	◯	◯	◯	◯
Affordable resources	◯	◯	◯	◯	◯
Reduction of environmental impacts	◯	◯	◯	◯	◯
Waste reduction	◯	◯	◯	◯	◯
Reduction of greenhouse gas	◯	◯	◯	◯	◯

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To what extent do you associate the following keywords with successful sustainability management? (Part 3 of 5) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Create new business models	◯	◯	◯	◯	◯
Create jobs	◯	◯	◯	◯	◯
Generate profit	◯	◯	◯	◯	◯
Less disposal costs	◯	◯	◯	◯	◯
New technologies	◯	◯	◯	◯	◯

13

To what extent do you associate the following keywords with successful sustainability management? (Part 4 of 5) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Improvement of existing technology	◯	◯	◯	◯	◯
Protection of assets and equity	◯	◯	◯	◯	◯
Reduce production costs	◯	◯	◯	◯	◯
Increase production efficiency	◯	◯	◯	◯	◯
Diversify revenue streams	◯	◯	◯	◯	◯

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To what extent do you associate the following keywords with successful sustainability management? (Part 5 of 5) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Superior stakeholder relations	◯	◯	◯	◯	◯
Sustainable decision making	◯	◯	◯	◯	◯
Compliance	◯	◯	◯	◯	◯
Human health and work safety	◯	◯	◯	◯	◯
Image and PR	◯	◯	◯	◯	◯
Attract and keep work force	◯	◯	◯	◯	◯
Funding and financing	◯	◯	◯	◯	◯

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In your personal opinion, how would you rate the potential **positive impact** on businesses and the **implementation effort** of the listed keywords for successful sustainability management? (Part 1 of 5) *

	Low effort, weak impact	Low effort, high impact	High effort, weak impact	High effort, high impact
Cope with climate change	◯	◯	◯	◯
Promote social equity	◯	◯	◯	◯
Saving Energy	◯	◯	◯	◯
Energy Security	◯	◯	◯	◯
Saving resources	◯	◯	◯	◯

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In your personal opinion, how would you rate the potential **positive impact** on businesses and the **implementation effort** of the listed keywords for successful sustainability management? (Part 2 of 5) *

	Low effort, weak impact	Low effort, high impact	High effort, weak impact	High effort, high impact
Secure resource supply	◯	◯	◯	◯
Affordable resources	◯	◯	◯	◯
Reduce environmental impact	◯	◯	◯	◯
Waste reduction	◯	◯	◯	◯
Reduction of greenhous gas	◯	◯	◯	◯

17

In your personal opinion, how would you rate the potential **positive impact** on businesses and the **implementation effort** of the listed keywords for successful sustainability management? (Part 3 of 5) *

	Low effort, weak impact	Low effort, high impact	High effort, weak impact	High effort, high impact
New business models	◯	◯	◯	◯
Create jobs	◯	◯	◯	◯
Generate additional profit	◯	◯	◯	◯
Minimize disposal costs	◯	◯	◯	◯
Research of new technology	◯	◯	◯	◯

18

In your personal opinion, how would you rate the potential **positive impact** on businesses and the **implementation effort** of the listed key words to successfully address them in sustainability management? (Part 4 of 5) *

	Low effort, weak impact	Low effort, high impact	High effort, weak impact	High effort, high impact
Improvement of existing technology	◯	◯	◯	◯
Protection of assets and equity	◯	◯	◯	◯
Reduction of production costs	◯	◯	◯	◯
Increasing production efficiency	◯	◯	◯	◯
Diversify revenue streams	◯	◯	◯	◯

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In your personal opinion, how would you rate the potential **positive impact** on businesses and the **implementation effort** of the listed key words for successful sustainability management? (Part 5 of 5) *

	Low effort, weak impact	Low effort, high impact	High effort, weak impact	High effort, high impact
Superior stakeholder relations	◯	◯	◯	◯
Sustainable decision making	◯	◯	◯	◯
Compliance	◯	◯	◯	◯
Human health and work safety	◯	◯	◯	◯
Image and PR	◯	◯	◯	◯
Attract and keep work force	◯	◯	◯	◯
Funding and financing	◯	◯	◯	◯

20

To which five chances do you yourself attribute the most (untapped) potential in your company? *

Wählen Sie 5 Optionen aus.

- [ ] Create jobs
- [ ] Image and public relations
- [ ] Attract and keep work force
- [ ] Energy saving
- [ ] Increase production cost
- [ ] Compliance
- [ ] Minimize disposal costs
- [ ] Secure resource supply
- [ ] Sustainable decision making
- [ ] Energy security
- [ ] Diversify revenue stream
- [ ] Human health and work safety
- [ ] Cope with climate change
- [ ] Protect assets and equity
- [ ] Improve existing technology
- [ ] New business models
- [ ] Research of new technology
- [ ] Waste reduction
- [ ] Generate profit
- [ ] Funding and financing
- [ ] Reduce environmental impacts
- [ ] Superior stakeholder relationships
- [ ] Reduction of greenhouse gas
- [ ] Saving resources
- [ ] Promote social equity
- [ ] Affordable resources
- [ ] Reduce production cost

21

To what degree do you agree with the following statement:
The company I work for should take more action towards sustainability. *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Call to action	◯	◯	◯	◯	◯

22

Do you want to point out anything with regard to chances we did not cover yet?

23

To what degree do you associate the following keywords with **risks of not implementing** any kind of **sustainability management**? (Part 1of 4) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Loss of ability to innovate	◯	◯	◯	◯	◯
Loss of know-how	◯	◯	◯	◯	◯
Loss of power	◯	◯	◯	◯	◯
Liability risk	◯	◯	◯	◯	◯
Benefit loss	◯	◯	◯	◯	◯

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To what degree do you associate the following keywords with **risks of not implementing** any kind of **sustainability management**? (Part 2 of 4) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Risk to human health and work force	◯	◯	◯	◯	◯
Environmental impacts	◯	◯	◯	◯	◯
Loss of licence to operate	◯	◯	◯	◯	◯
Production downtime	◯	◯	◯	◯	◯
Unadressed defficiencies (org.+prod.)	◯	◯	◯	◯	◯

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To what degree do you associate the following keywords with **risks of not implementing** any kind of **sustainability management**? (Part 3 of 4) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Energy scarcity	◯	◯	◯	◯	◯
Non-social behaviour e.g. sabotage	◯	◯	◯	◯	◯
Image loss	◯	◯	◯	◯	◯
Market loss	◯	◯	◯	◯	◯
Project failure	◯	◯	◯	◯	◯

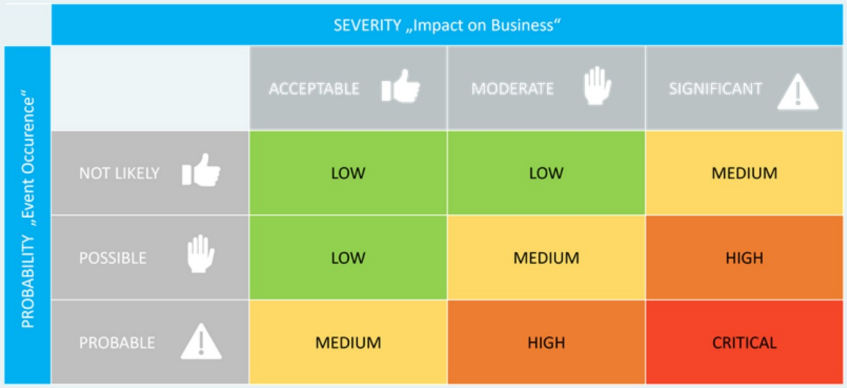
26

To what degree do you associate the following keywords with **risks of not implementing** any kind of **sustainability management**? (Part 4 of 4) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Non-compliance	◯	◯	◯	◯	◯
Loss of financing	◯	◯	◯	◯	◯
Supply chain failure	◯	◯	◯	◯	◯
Increasing costs	◯	◯	◯	◯	◯
Uncertainty	◯	◯	◯	◯	◯
Dependency	◯	◯	◯	◯	◯

27

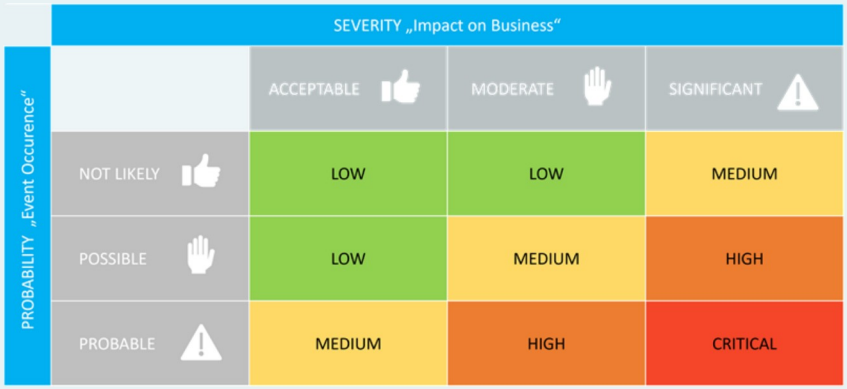
How do you personally assess the following list of risks for your company? For a definition of the terms low, medium, high and critical please consult the attached graphic. (Part 1 of 2) *



	Low	Medium	High	Critical
Loss of ability to innovate	◯	◯	◯	◯
Loss of know-how	◯	◯	◯	◯
Loss of power	◯	◯	◯	◯
Liability risk	◯	◯	◯	◯
Benefit loss	◯	◯	◯	◯
Risk to human health and work force	◯	◯	◯	◯
Environmental impacts	◯	◯	◯	◯
Loss of licence to operate	◯	◯	◯	◯
Production downtime	◯	◯	◯	◯
Unadressed defficiencies (org. + prod.)	◯	◯	◯	◯

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How do you personally assess the following list of risks for your company? For a definition of the terms low, medium, high and critical please consult the attached graphic. (Part 2 of 2) *



	Low	Medium	High	Critical
Energy scarcity	◯	◯	◯	◯
Non-social behaviour e.g. sabotage	◯	◯	◯	◯
Image loss	◯	◯	◯	◯
Market loss	◯	◯	◯	◯
Project failure	◯	◯	◯	◯
Non-compliance	◯	◯	◯	◯
Loss of financing	◯	◯	◯	◯
Supply chain failure	◯	◯	◯	◯
Increasing costs	◯	◯	◯	◯
Uncertainty	◯	◯	◯	◯
Dependency	◯	◯	◯	◯

29

To which five risks do you personally attribute the greatest potential for future damage to your company? *

Wählen Sie 5 Optionen aus.

- [ ] Increasing costs
- [ ] Non-compliance
- [ ] Project failure
- [ ] Loss of licence to operate
- [ ] Benefit loss
- [ ] Production downtime
- [ ] Risk to human health and work force
- [ ] Unadressed defficiencies
- [ ] Uncertainty
- [ ] Loss of ability to innovate
- [ ] Dependency
- [ ] Liability risk
- [ ] Supply chain failure
- [ ] Market loss
- [ ] Loss of financing
- [ ] Environmental impacts
- [ ] Loss of power
- [ ] Non-social behaviour e.g. sabotage
- [ ] Image loss
- [ ] Loss of know-how
- [ ] Energy scarcity

Barriers of sustainability management

Barriers to sustainability are ubiquitous in our modern world, hindering progress toward a more environmentally responsible and equitable future. Overcoming these barriers is crucial to ensure a sustainable and thriving world for generations to come. The first step is to identify and assess the severity of their impact with your help.

Internal barriers are barriers within the company's own sphere of influence which hinder them from within to implement or to expand their sustainability management.

External barriers are all barriers that prevent companies from implementing sustainability strategies from the outside and can hardly or not be influenced by companies. They are, however, not part of this survey.

30

How do you rate the hindering effect of the following **internal barriers**? (Part 1 of 2) *

	None	Minor	Medium	High	Very High
Lack of standards and frameworks	◯	◯	◯	◯	◯
Lack of know-how	◯	◯	◯	◯	◯
Uncertainty of effects of measures	◯	◯	◯	◯	◯
Complexity of systems	◯	◯	◯	◯	◯
Interdisciplinarity	◯	◯	◯	◯	◯
Establishing Transparency	◯	◯	◯	◯	◯
Performance monitoring	◯	◯	◯	◯	◯
Spatial isolation of company	◯	◯	◯	◯	◯
No policy with regard on how to handle trade-offs	◯	◯	◯	◯	◯
No (reliable) data	◯	◯	◯	◯	◯
Capital in fixed assets (e.g. plants)	◯	◯	◯	◯	◯
(Incorrect) Risk perception	◯	◯	◯	◯	◯
Green washing	◯	◯	◯	◯	◯
Lack of (green) technology	◯	◯	◯	◯	◯
Scope and limits of existing methods	◯	◯	◯	◯	◯
Lack of comparability and benchmarks	◯	◯	◯	◯	◯

31

How do you rate the hindering effect of the following **internal barriers**? (Part 2 of 2) *

	None	Minor	Medium	High	Very High
Lack of risk management	◯	◯	◯	◯	◯
Fear of eroding profits	◯	◯	◯	◯	◯
Fear of power loss	◯	◯	◯	◯	◯
Fear of quality loss	◯	◯	◯	◯	◯
Fear of dependence on others	◯	◯	◯	◯	◯
Social norms and culture	◯	◯	◯	◯	◯
Challenge of information exchange	◯	◯	◯	◯	◯
Lack of dedication of management	◯	◯	◯	◯	◯
Lack of resources and funding	◯	◯	◯	◯	◯
Awareness and mindset of employees	◯	◯	◯	◯	◯
Low-level education of emplyees	◯	◯	◯	◯	◯
Long time horizons for planning	◯	◯	◯	◯	◯
Challenge to convert best practices to own business	◯	◯	◯	◯	◯
Inertia and everyday business	◯	◯	◯	◯	◯
Corruption	◯	◯	◯	◯	◯
Easily externalized costs	◯	◯	◯	◯	◯

32

To which **five internal barriers** to sustainability do you personally attribute the greatest challenge for your company? *

Wählen Sie 5 Optionen aus.

- [ ] Fear of dependency on others
- [ ] Easily externalized costs
- [ ] Fear of loss of quality
- [ ] Establishing transparency
- [ ] Lack of standards and frameworks
- [ ] Spatial isolation of company
- [ ] Low-level education of employees
- [ ] Scope and limits of existing methods
- [ ] Interdisciplinarity
- [ ] Capital in fixed assets
- [ ] Lack of policy on how to handle trade-offs
- [ ] Inertia and everyday business
- [ ] No (reliable) data
- [ ] Social norms and culture
- [ ] Lack of know-how
- [ ] Green-washing
- [ ] Challenge to convert best practices to own business
- [ ] Lack of comparability and benchmarks
- [ ] Lack of (green) technology
- [ ] Incorrect risk perception
- [ ] Complexity of systems
- [ ] Loss of risk management
- [ ] Fear of eroding profits
- [ ] Challenge of information exchange
- [ ] Corruption
- [ ] Long time horizons for planning
- [ ] Fear of loss of power
- [ ] Uncertainty of effects of measures
- [ ] Lack of dedication of management
- [ ] Awareness and mindset of employees
- [ ] Performance monitoring
- [ ] No resources and funding

Enablers of Sustainability Management

Enablers for sustainability are crucial to ensure a sustainable and thriving world for generations to come. The first step is to identify internal enabler within the company's sphere of influence and assess the degree of their positive impact with your help.

Internal enablers accelerate sustainability measures within the company's own sphere of influence.

External enablers are external factors, such as sustainability policies or national regulations, that drive sustainability efforts from outside the company. They are, however, not in scope of this survey.

33

How do you personally rate the positive effect on sustainability (economically, ecologically or social) of the following **internal enablers**? (Part 1 of 2) *

	None	Minor	Medium	High	Very High
New business models, e.g. product-as-a-Service thinking	◯	◯	◯	◯	◯
Preference for renewable resources and energy	◯	◯	◯	◯	◯
Evidence-based decision making	◯	◯	◯	◯	◯
Mindset and awareness of management	◯	◯	◯	◯	◯
Promotion of awareness among employees	◯	◯	◯	◯	◯
Promotion of risk literacy	◯	◯	◯	◯	◯
Sustainability policy with set priorities	◯	◯	◯	◯	◯
Stakeholder integration	◯	◯	◯	◯	◯
Internal knowledge and data exchange	◯	◯	◯	◯	◯
Revisioning of processes	◯	◯	◯	◯	◯
Established transparency of processes	◯	◯	◯	◯	◯
Ecodesign of products	◯	◯	◯	◯	◯

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How do you personally rate the positive effect on sustainability (economically, ecologically or social) of the following **internal enablers**? (Part 2 of 2) *

	None	Minor	Medium	High	Very High
Industry-wide cooperation and network	◯	◯	◯	◯	◯
Establishment of frame-works and standards	◯	◯	◯	◯	◯
Know-how on tools and methods	◯	◯	◯	◯	◯
(Sustainable) Supply chain management	◯	◯	◯	◯	◯
Benchmarks	◯	◯	◯	◯	◯
Best practices	◯	◯	◯	◯	◯
Financing and resources	◯	◯	◯	◯	◯
Risk management	◯	◯	◯	◯	◯
Use of key performance indicators	◯	◯	◯	◯	◯
Invest in research and development	◯	◯	◯	◯	◯

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To which **five internal enablers** to sustainability do you personally attribute the greatest driving potential for your company? *

Wählen Sie 5 Optionen aus.

- [ ] New business models, e.g. product-as-a-service
- [ ] Preference for renewable resources and energy
- [ ] Evidence-based decision making
- [ ] Sustainability mindset and awareness of management
- [ ] Promotion of risk literacy
- [ ] Sustainability policy with set priorities
- [ ] Stakeholder integration
- [ ] Internal knowledge and data exchange
- [ ] Revisioning of processes
- [ ] Established transparency of processes
- [ ] Edocdesign of products
- [ ] Know-how of experts
- [ ] Industry-wide cooperation and network
- [ ] Establishment of frameworks and standards
- [ ] Know-how on tools and methods
- [ ] (Sustainable) Supply chain management
- [ ] (Green) Technology
- [ ] Benchmarks
- [ ] Best practices
- [ ] Financing and resources
- [ ] Risk management
- [ ] Use of sustainability related key performance indicators
- [ ] Investment in research and development

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We highly appreciate your feedback. Here is some space for you to make comments, remarks or additions on the survey.

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We are happy to share the results with you. Please provide a valid email address that will be used for this purpose only. Thank you!

Dieser Inhalt wurde von Microsoft weder erstellt noch gebilligt. Die von Ihnen übermittelten Daten werden an den Formulareigentümer gesendet.

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