Risk management framework

How to use this risk management framework

This Excel workbook is designed to help project developers systematically identify, evaluate, prioritise and manage risks throughout the lifecycle of a BECCS project. It is composed of three interlinked sheets: **Risk Taxonomy**, **Risk Register** and **Risk Heat Map**.

Sheet 1: Risk Taxonomy

Purpose: Provides standard definitions and classifications for risks to ensure consistency in identification and evaluation.

How to use:

1. Understand terms and status
Status indicates whether a risk is Active, Dormant or Retired.
Use these categories to filter and focus on risks relevant to the current project phase.

2. Identify relevant phases
Risks may occur during Construction, Operation, Construction & Operation or Post-closure.
Assign each risk to the phase(s) during which it is most relevant.

3. Select risk category
Categorise risks according to the taxonomy (e.g. Regulatory, Market, Financial, Health & Safety).
This allows for grouping and reporting by risk type.

4. Determine impact type
Decide if the risk primarily affects Cost, Time, Scope or Quality.

5. Select a response strategy
Decide whether the risk will be Avoided, Mitigated, Transferred or Accepted.
This informs subsequent mitigation planning.

Sheet 2: Risk Register

Purpose: Capture all identified risks, assesse their likelihood & impact and plan mitigation measures.

How to use:

Step 1: Risk identification
Record each risk as a unique entry in the register.
Include:
- Risk event: What might happen.
- Cause/condition: Why the risk might occur.
- Phase and category: Reference Sheet 1 for consistency.
- Status: Active, Dormant or Retired.

Step 2: Risk asssessment
Assign numerical values for Probability (1–5) and Impact (1, 2, 4, 8, 16).
- **Probability** (P):
1 – Rare
2 – Unlikely
3 – Possible
4 – Probable
5 – Almost Certain
- **Impact** (I):
1 – Insignificant
2 – Minor
4 – Moderate
8 – Large
16 – Heavy

The P x I column calculates the Risk Score, which quantifies the severity of the risk.

Step 3: Risk mitigation
Define a Mitigation Strategy: Avoid, Reduce, Transfer or Accept.
Specify Mitigation Measures: concrete actions to reduce probability or impact.

Sheet 3: Risk Heat Map

Purpose: Visual representation of risks by their P x I value to prioritise attention.

How to use:

The heat map automatically maps risks based on their Risk Score.

Interpret risk scores:
1 – 2: Negligible
3 – 8: Small
10 – 16: Moderate
20 – 32: High
40 – 80: Critical

Focus management efforts on High and Critical risks first.

Use the heat map to review portfolio-wide risk exposure and make strategic decisions.

General tips

- Update the Risk Register regularly to reflect new risks or changes in risk status.

- Use filters in the register to view risks by Phase, Category or Status.

- Review the Risk Heat Map periodically to ensure mitigation measures are effective.

- Document lessons learned from risk events in a separate log for continuous improvement.

Acknowledgement

This project was funded by CETPartnership, the Clean Energy Transition Partnership under the 2022 CETPartnership joint call for research proposals, co-funded by the European Commission (GA N°101069750) and with the funding organisations detailed on https://cetpartnership.eu/funding-agencies-and-call-modules.

The project is supported by the French Environment and Energy Management Agency ADEME and the Swiss Federal Office of Energy SFOE.

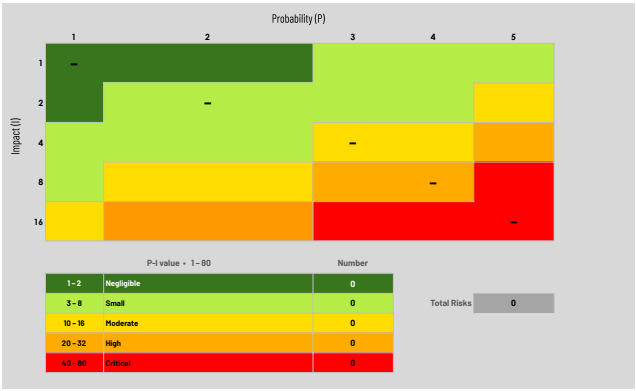
Risk taxonomy

Term		Definition
Status	**Active**	Currently in effect or ongoing
	Dormant	Temporarily inactive or on hold
	Retired	Permanently inactive or concluded
Phase	**Construction**	Initial building and development stage
	Operation	Active use and functioning phase
	Construction & Operation	Both contruction and operation phases
	Post closure	After project completion or decommisioning
Risk category	**Regulatory and political risks**	Changes in laws or political instability affecting operations
	Market risks	Economic shifts impacting overall conditions
	Financial risks	Issues related to financial stability and performance
	Project management risks	Challenges in executing and delivering projects
	Technological risks	Problems with technology
	Supplier risks	Issues with third-party suppliers affecting supply chain
	Stakeholders risks	Hazards affecting the health and safety of individuals
	Health and safety risks	Risks related to environmental impact and compliance
	Environmental risks	Risks related to environmental impact and compliance
	Transportation risks	Issues affecting the movement of goods or people
	Storage risks	Risks associated with storing goods or materials
	Societal risks	Risks related to societal impacts and public perception
Impact	**Costs**	Financial implications
	Time	Schedule and timing effects
	Scope	Changes in project extent or boundaries
	Quality	Effects on standards and performance
Response strategy	**Avoid risk**	Eliminate entirely risk by changing plans or processes
	Reduce or mitigate risk	Implement measures to lower the likelihood or impact of risk
	Transfer risk	Shift the risk to a third party
	Accept risk	Acknowledge the risk and its potential impact, without taking any specific action to address it

Risk identification and evaluation

Risk identification ("Due to a cause or condition, a risk event may occur that has an impact on either the *cost*, *time*, *scope* or *quality*").								Quantitative risk assessment			Risk mitigation	
Risk Ref.	Status	Phase	Risk category	Risk event	Cause / Condition	Impact	Main impact	Probability (1-2-3-4-5)[1]	Impact (1-2-4-8-16)	P x I	Mitigation strategy	Mitigation measures
1										0		
2										0		
3										0		
4										0		
5										0		
6										0		
7										0		
8										0		
9										0		
10										0		
n										0		

Risk heat map



P-I value • 1 – 80		Number
1 – 2	Negligible	0
3 – 8	Small	0
10 – 16	Moderate	0
20 – 32	High	0
40 – 80	Critical	0

Total Risks	0

Probability 1-5	Impact 1-16
1 - Rare	1 - Insignificant
2 - Unlikely	2 - Minor
3 - Possible	4 - Moderate
4 - Probable	8 - Large
5 - Almost certain	16 - Heavy

[1]
See Risk heat map

[2]
See Risk heat map