



Tailwind
FUTURES

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Identifying Maladaptation Risks in Climate Adaptation & Resilience Solutions

Executive Summary

What is Maladaptation?

- Maladaptation refers to **“actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence”** (IPCC AR6 2022).
- Maladaptation risks are not about bad intentions. While maladaptation can occur in any adaptation project, it manifests differently in venture-backed companies, where elements such as go-to-market pressures, growth expectations, and IP considerations shape where and how maladaptive outcomes can emerge.
- Because adaptation decisions are made under uncertainty, trade-offs are often inevitable, and there may not be a single, ideal adaptation solution. However, **maladaptation risks, when identified early, are frequently manageable and addressing them can ultimately improve the solution and investment outcomes.**

The goal of this toolkit is to give investors and founders the structure to identify maladaptation risks and trade-offs, assess whether they're manageable, and make better decisions as a result.

Factoring in these risks enables companies and their investors to deploy capital with greater confidence, accountability, and impact. Founders who understand where their products could create unintended harms are better positioned to design more effective solutions, and investors who surface these risks before closing are better positioned to help.

Types of Maladaptive Outcomes

This toolkit outlines **four primary types of maladaptive outcomes** and examples of how they manifest.

Inhibits Socioeconomic Progress

- Financial Access & Livelihoods
- Social & Community
- Health, Safety, & Security
- Conditions for Historically Marginalized Groups

Increases Climate-Related Ecosystem / Biodiversity Impacts

- Conservation or Restoration Efforts
- Sustainable Management

Inhibits Systemic Change and/or Adaptive Capacity

- Increases Exposure or Sensitivity to Climate, Social, or Economic Impacts
- Increases Severity of Hazards
- Introduces New Risks to the System
- Prevents or Delays Systemic Changes

Materially Increases GHG Emissions

- Substantially increases demand for energy in a carbon-intensive energy system
- Promotes carbon intensive activities

Sources: IPCC, BII & FMO's Climate Investment Playbook (2024), European Commission, Higuera Roa et al. (2025), Barnett & O'Neill (2010), Schipper (2020), Magnan (2014), Juhola et al. (2016), Chi et al. (2021), Jones et al. (2015)

Context Matters

In most cases, maladaptation is not intrinsic to a technology but rather depends heavily on context.

A key characteristic of maladaptive impacts is the fact that **they can manifest in people, entities, or ecosystems outside of the immediate or intended customer, user base, geography, or time horizon.**

Maladaptation risks can be uncovered by considering the company's products, business model, supply chain, and go-to-market strategy, as well as by considering contextual factors relevant to the markets where the company operates.

Examples of contextual factors include:

- Time Horizons
- Climate Shocks or Erratic Weather
- Demographics
- Technological & Infrastructure Dependencies
- Geography
- Regulatory & Policy Changes
- Macroeconomic & Geopolitical Forces

Identifying and Mitigating Maladaptation Risks

To help private investors identify maladaptation risks, we created the Maladaptation Due Diligence Questionnaire (DDQ). This is a tool for investors to diagnose what the maladaptation risks or trade-offs are in existing or potential portfolio companies, so they have the information needed to make responsible investment decisions. The questionnaire helps investors assess risks and identify potential mitigation measures.

Mitigating Maladaptation Risks

Maladaptation Type	Best-Practice Mitigation Measures
Inhibits Socioeconomic Progress	Stakeholder engagement, equity assessment, inclusive design, supply-chain due diligence, tiered pricing
Increases Climate-Related Ecosystem / Biodiversity Impacts	Life cycle assessment (LCA), biodiversity screening, nature-based design methods
Inhibits Systemic Change / Adaptive Capacity	Climate scenario analysis, modular design, adaptive management
Materially Increases GHGs	Lifecycle carbon accounting, counterfactual analysis, emissions reduction targets

Learn More

Find all materials at www.tailwindfutures.com/maladaptation.



The Primer introduces key concepts such as maladaptation outcome types, how context can influence maladaptation risks, and how to assess for maladaptation risks in commercial solutions. It offers a robust set of examples to understand what maladaptation risks can arise and how they can be mitigated. The Primer serves as the entry point into the Maladaptation Due Diligence Questionnaire (DDQ).

The DDQ helps private investors uncover potential maladaptation risks and trade-offs in A&R solutions, so they have the information needed to make responsible investment decisions.

The DDQ also includes an **AI Maladaptation Screener** that automates a first pass at the questionnaire, so investors spend less time transferring data and more time on the findings. **Two case studies** in the spreadsheet show what the DDQ looks like in practice and what mitigation steps can look like when risks are identified.

Q#	Section	Questions by Maladaptation Type
Section I: Inhibits Socioeconomic Progress		
Q1	S1	Labor and Working Conditions
Q2	S1	Social and Community Risks
Q3	S1	
Q4	S1	
Q5	S1	Health, Safety, and Security Risks
Q6	S1	Conditions for Historically Marginalized Groups

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