

# Limits to adaptation: an actor-based, risk management framework

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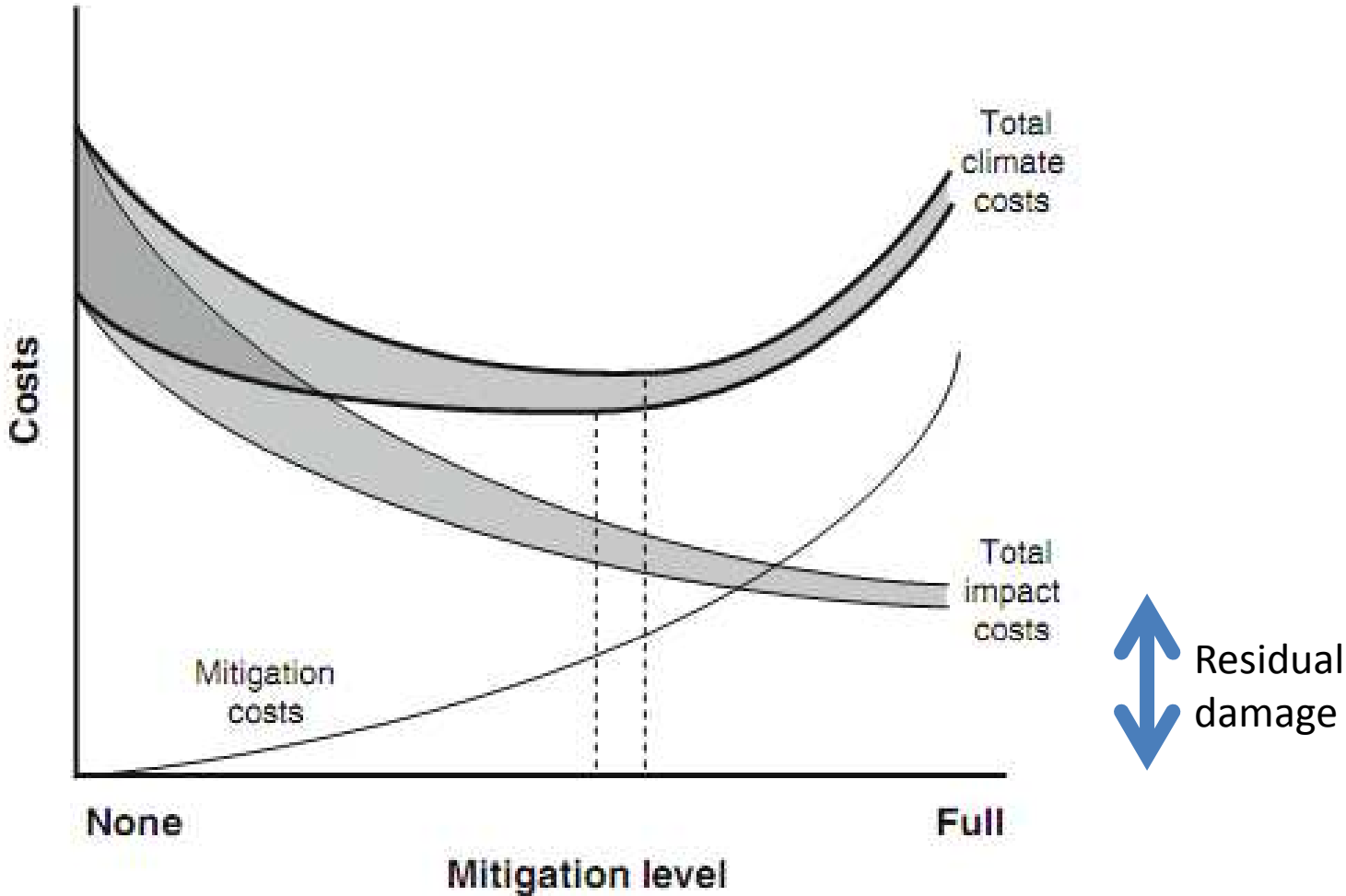
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# Limit to adaptation: the idea



When are losses following adaptation *intolerable*?

# Residual impacts after adaptation



# Adaptation Limits

- Related to actors' **objectives, values and needs**
- Both are linked to the **rate and magnitude** of climate change , in context of other risks
- Differ **across scales**
  - a limit for an individual is not a limit for a group or a system
- **Dynamic** and changes over time. Therefore need to be assessed within a given **time-frame**
  - For a social actor, a decision time-frame
  - For natural systems, the speed of phenotypic or genetic response

# Adaptation constraints

**Focus on PLANNING and IMPLEMENTATION of adaptation**

## *Definition*

- factors that make it harder to plan and implement adaptation actions

(i.e. not adaptation limits)

# Adaptation limits

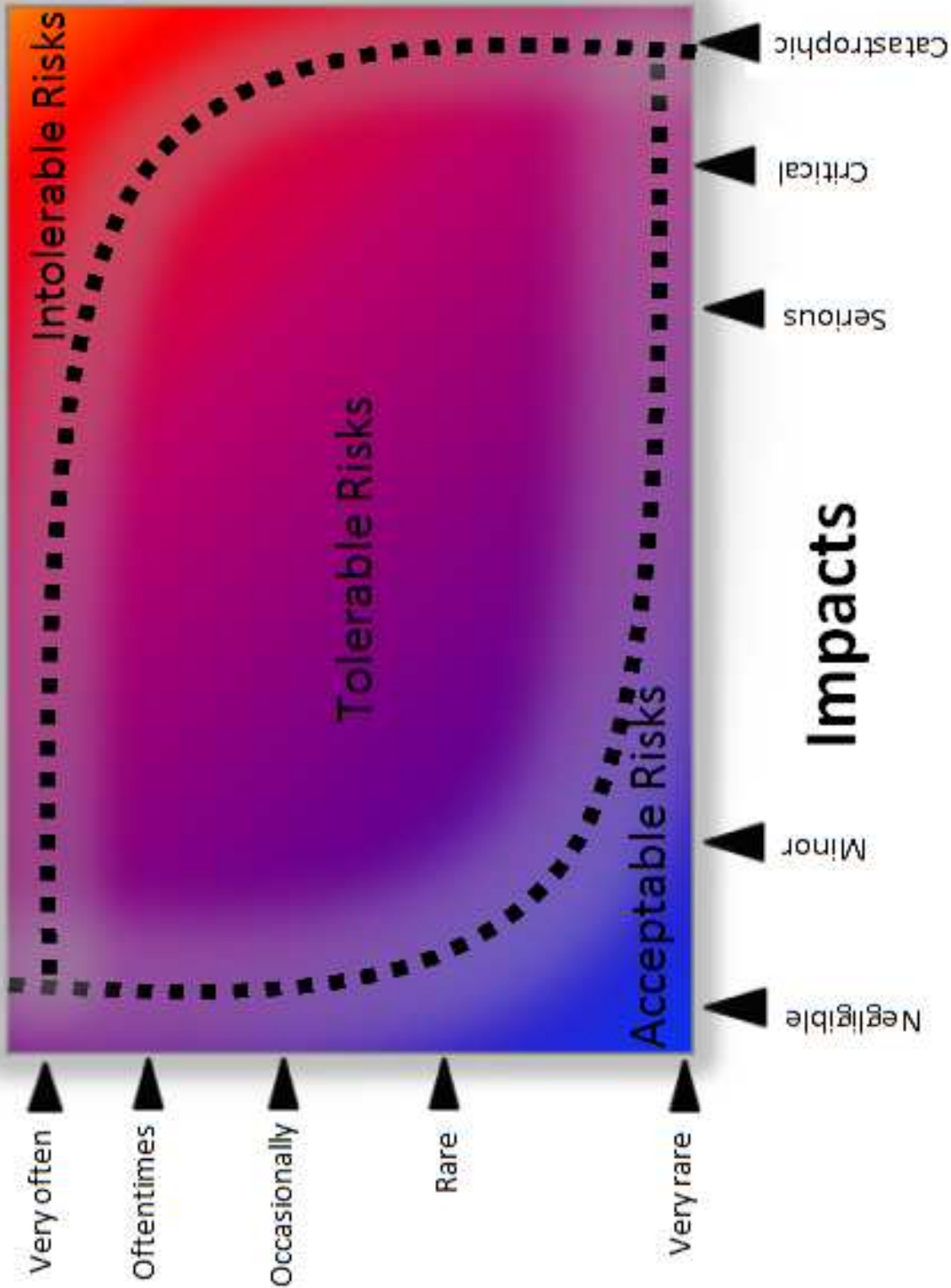
## Focus on adaptation OBJECTIVES

### *Definition*

- the point at which an actor is unable to secure objectives from **intolerable risks** through adaptive action

At a limit there are three options:

1. Accept escalating losses
2. Change objectives (role of values and norms)
3. Transformative responses



# Soft and hard limits

**Soft Limit** – Options are **not currently available** to avoid intolerable risks

**Hard Limit** – **No adaptive actions are foreseeable** that avoid intolerable risks



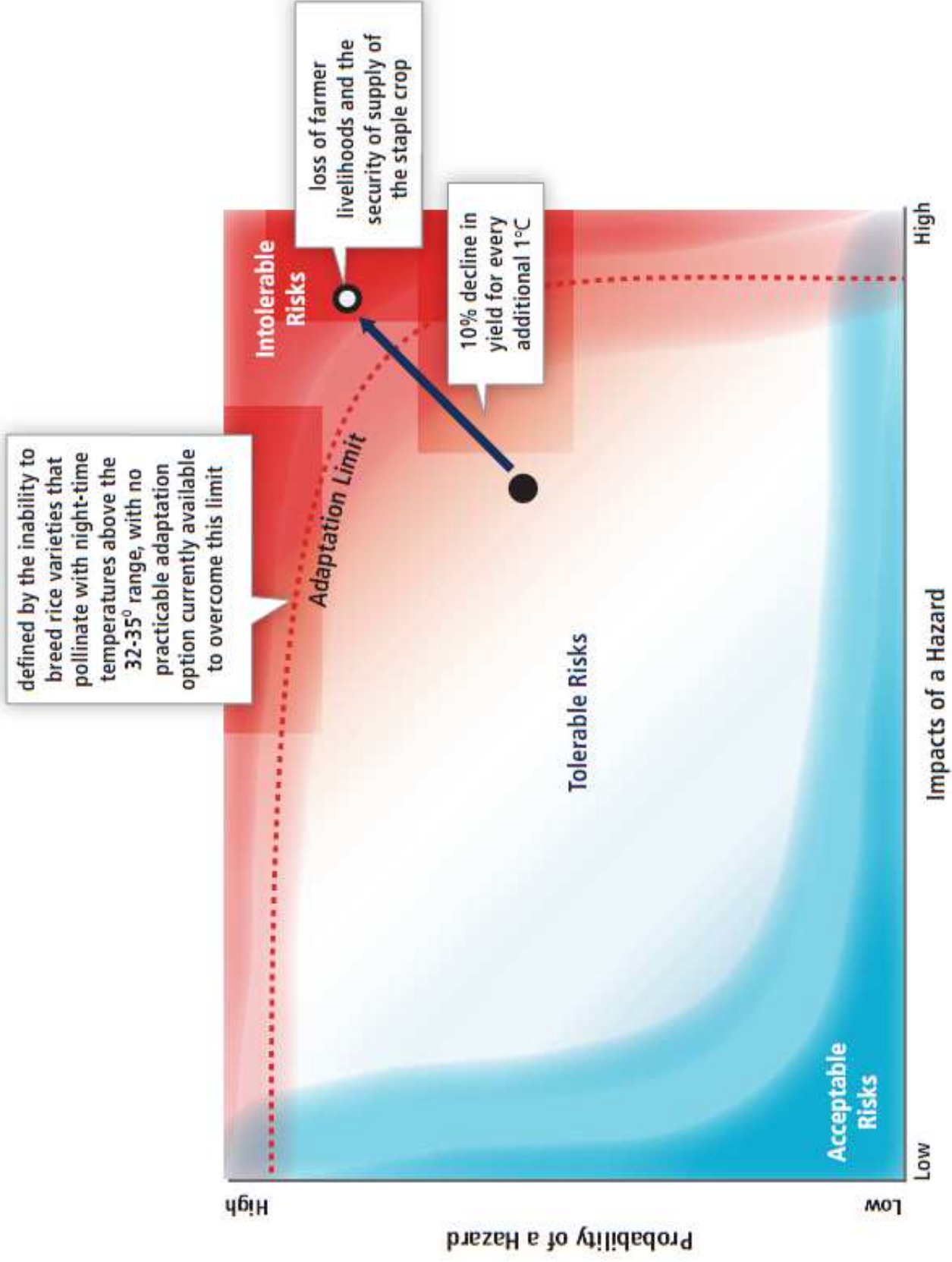
# Example 1: Rice

**Rice:** Threshold temperature of 26°C (at night) during flowering and pollination. 10% decline in yield for every 1°C (with a limit at 32-35°C). Experienced in Bangkok region during 2011 rice growing season.

***Objective:*** To produce rice as a staple

***Intolerable risk:*** Loss of farmer livelihoods and security of supply of staple crop

***Hard limit:*** Inability to breed rice varieties that pollinate above 32-35°C



## Example 2: Coastal communities

**Sense of place:** 31 native villages in NW Alaska threatened by coastal erosion as a result of permafrost melt and increased exposure to wave action. Infrastructure cannot be (economically) maintained

**Objective:** Maintain a way of life in a traditional area

**Intolerable risk:** Losing a way of life in a certain place

**Limit:** From the **villagers'** perspective, no available options to maintain infrastructure as the basis for traditional ways of life

# Limits and 'key vulnerabilities'

- Key vulnerabilities as they affect people emerge as a result of adaptation limits
- Key vulnerabilities tend to be seen as:
  - climate-driven
  - affecting global and regional systems
- Actor-centred, risk-based approach to adaptation limits suggests **a more fine-grained analysis** of key vulnerabilities needed

# Governance at the limits

- Monitoring and early warning
- Supporting transformative adaptation
- Tort and compensation
- Disaster risk reduction
- Humanitarian assistance