Managing Climate Risks

KIPA: International Conference on Conflict Management

From Environmental Challenges to Environmental Conflicts: New Opportunities for Global Cooperation

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Presentation Outline

Climate change as a risk

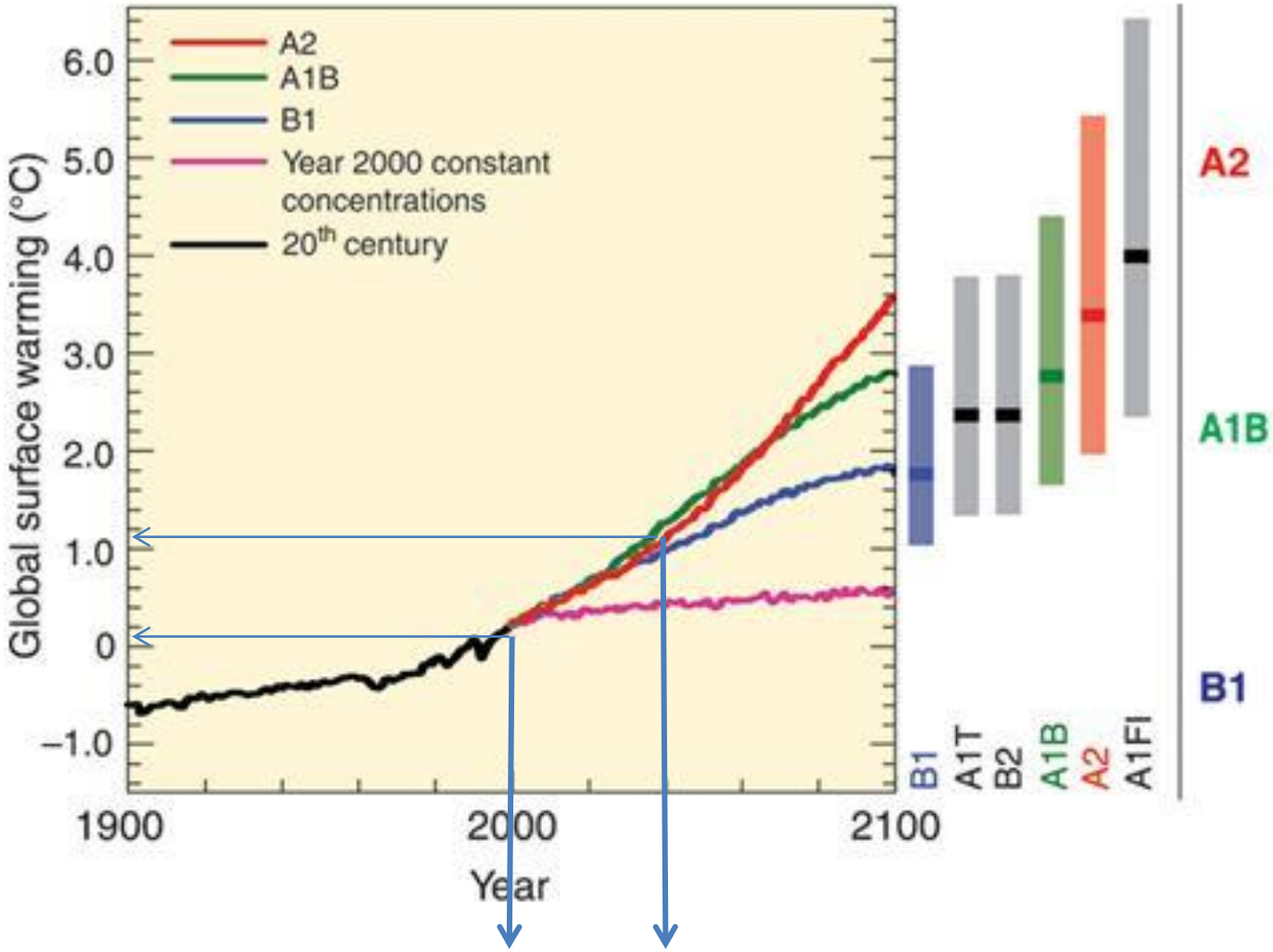
Climate change as a “Wicked Problem”

Post Normal Science

Post Normal Risk Management?

Iterative Risk Management

Temperature Increase Projection (Source: IPCC, 2007)



Note: only 1°C rise 2000-2040. No climate agreement until 2020.
Little incentive for leaders to make difficult decisions.

Climate Change Risk

This is about addressing extremes as well as long term change

But there are huge uncertainties associated with climate change and many different views:-

It may not be happening
It might not happen as fast as some think
It may be already too late!

Ideally we would want “no regrets” adaptation solutions – that is solutions that work for a range of climate scenarios and offer co-benefits

Climate Change Risk

Low regret measures can include EWS, better land management etc – these will need to be done within a sustainable development context

Floating Dutch Homes

Climate Change Risk

Climate change is a wicked problem:-

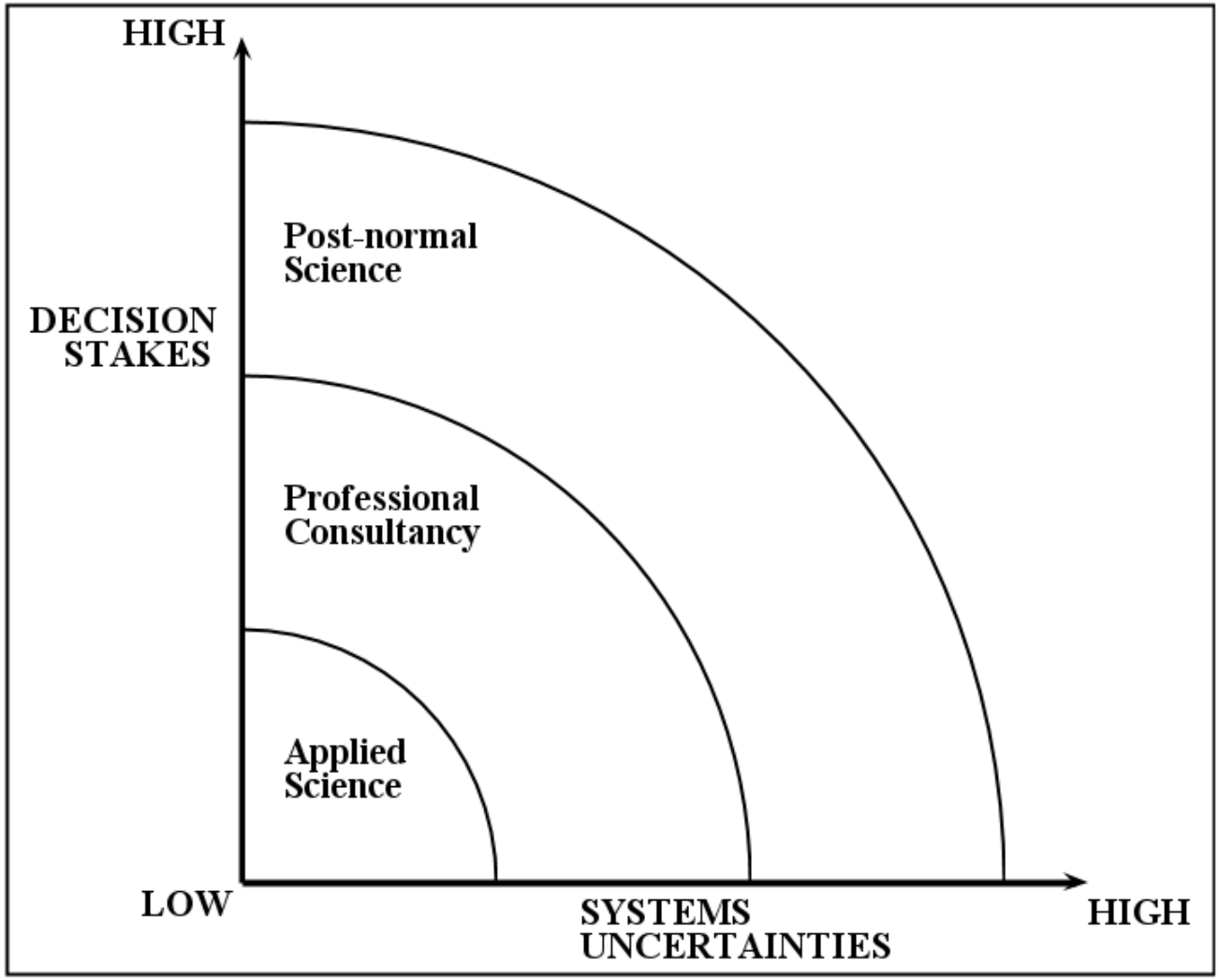
There is little opportunity to learn by trial and error or any exit point from the problem (Richey, 2007)

Human actions are leading to a series of “produced” unknowns:-

We can generalise about the type of threats we face but we cannot predict the “what” and the “when” (O’Brien et al, 2010)

Conventional scientific methods cannot provide sufficient data for robust policy making – climate change uncertainties and the interactivity between systems at micro, meso and macro scales militates against gathering enough empirical data for robust decision-making. Climate decision making falls into the Post Normal Science (PNS) domain.

Post Normal Science (PNS)



PNS: where facts are uncertain, values in dispute, stakes high and decisions urgent (Funtowicz and Ravetz, 1991)

Post Normal Science (PNS)

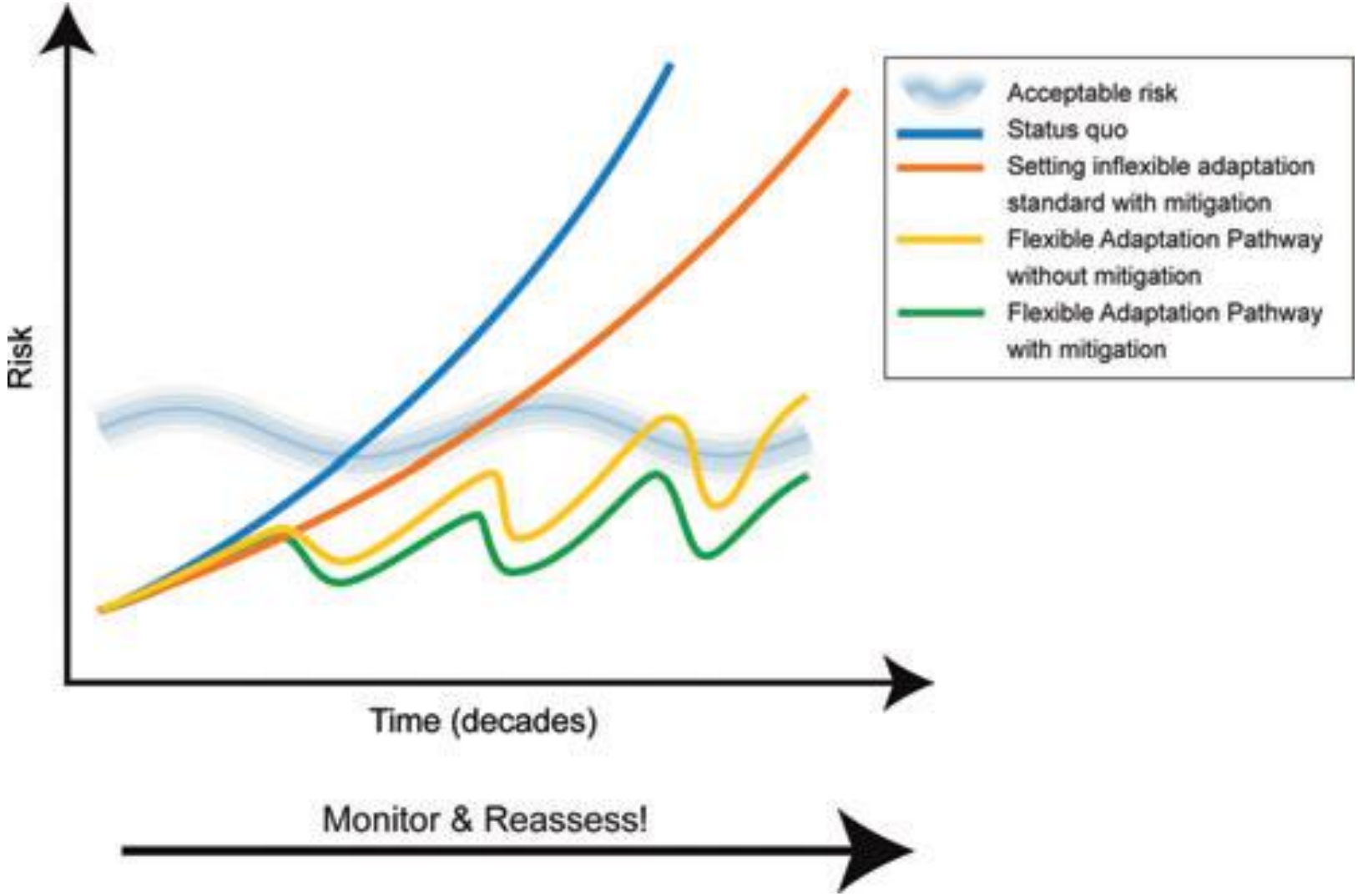
PNS can be used where there are differences of opinion and uncertainties and it is not possible to gather sufficient empirical data to resolve those differences

Climate change mitigation and adaptation are such a problem

Managing climate risk (adaptation) means dealing with huge uncertainties

The multiple facets of climate change hazards, impacts, and adaptation strategies, as well as the uncertainty associated with each, preclude a single approach that will be effective in all instances (Yohe and Liechenko, 2010).

Iterative Adaptation



Flexible adaptation and mitigation pathways. Adapted from City of London, "The Thames Estuary 2100 Plan," April 2009 in Yohe G. Leichenko R., 2010

Post Normal Science (PNS)

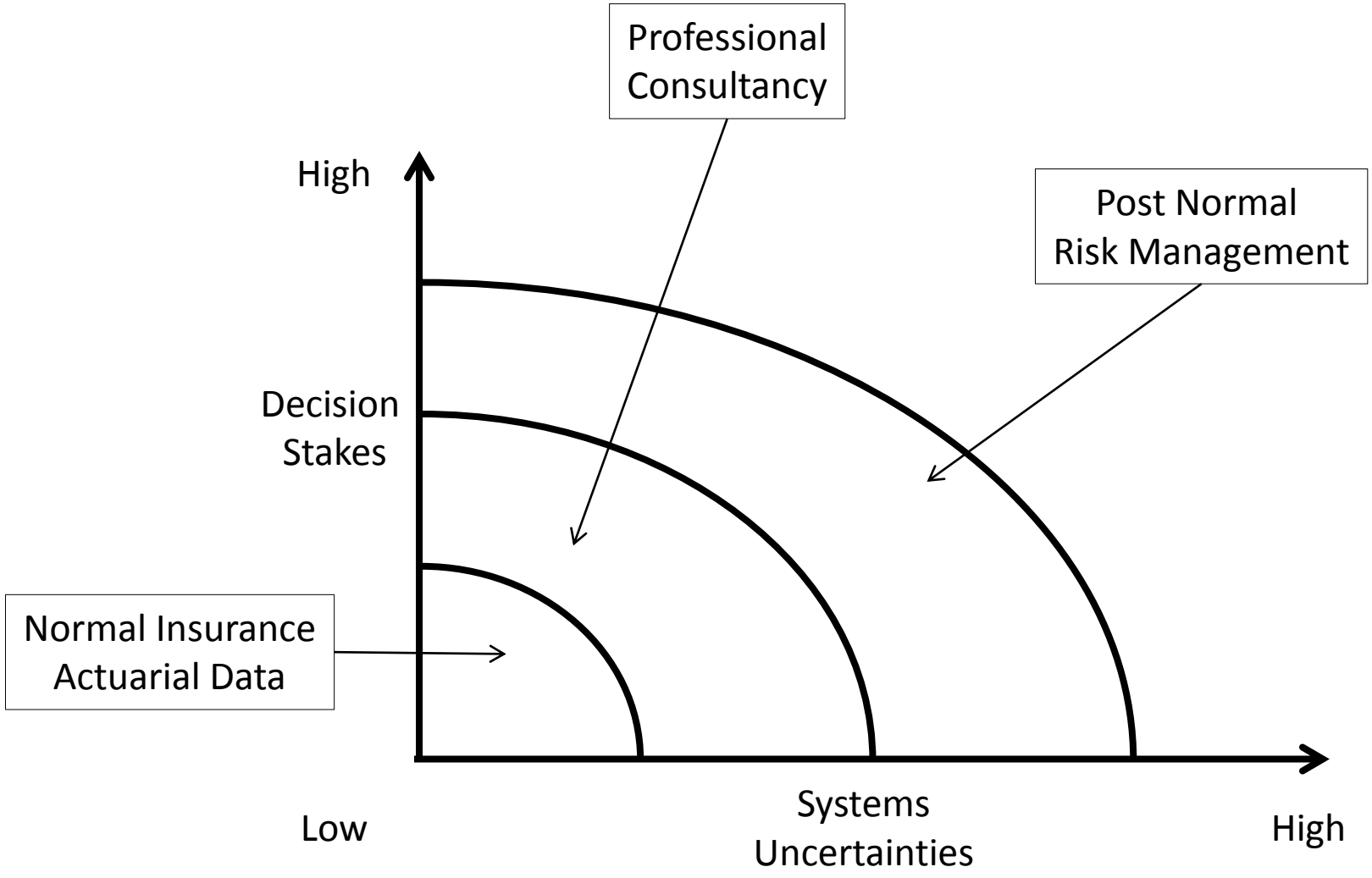
IPCC AR4 makes it clear that both mitigation and adaptation should be subjected to an iterative risk management process that takes into account climate change damages, co-benefits, sustainability, equity and attitudes to risk (IPCC, 2007)

As we learn more about more about different aspects of climate change we will need to re-evaluate approaches

An effective climate change policy is an iterative one that considers and incorporates this new learning at regular intervals
(Yohe G. Leichenko R., 2010)

This also applies to managing climate risk

Post Normal Climate Risk Management?



Post Normal Climate Risk Management and Uncertainties

Typically there are 2 approaches:-

1) Bound the uncertainty
2) Reduce the effects of uncertainty

First option involves normal scientific study; reduce uncertainty through data collection, research, modelling, simulation techniques, and so on

As climate change is a wicked problem it is very unlikely that issues can be resolved sufficiently for policy making

Policymakers will therefore have to revert to the second option; that is to manage uncertainty by integrating uncertainty directly into policymaking

Post Normal Climate Risk Management and Uncertainties

Effective climate risk management - actions to both reduce and transfer risk needed.

Integrated approaches - both hard and soft measures
(including individual and institution capacity building and ecosystem based responses)

Must be informed by indigenous knowledge and tailored to specific local circumstance

Example: - Korean response to Woomyon Montain Landslide, Seoul 2011

Multi-stakeholder Task Force – findings:-

Rock dam building programme – GIS, historical data for site location
Early Warning System – sensors linked Emergency Services
Community based landslide response – use of local knowledge on dangerous areas
Ecological – use of deeper rooted trees and shrubs – improve stability

Post Normal Climate Risk Management and Uncertainties

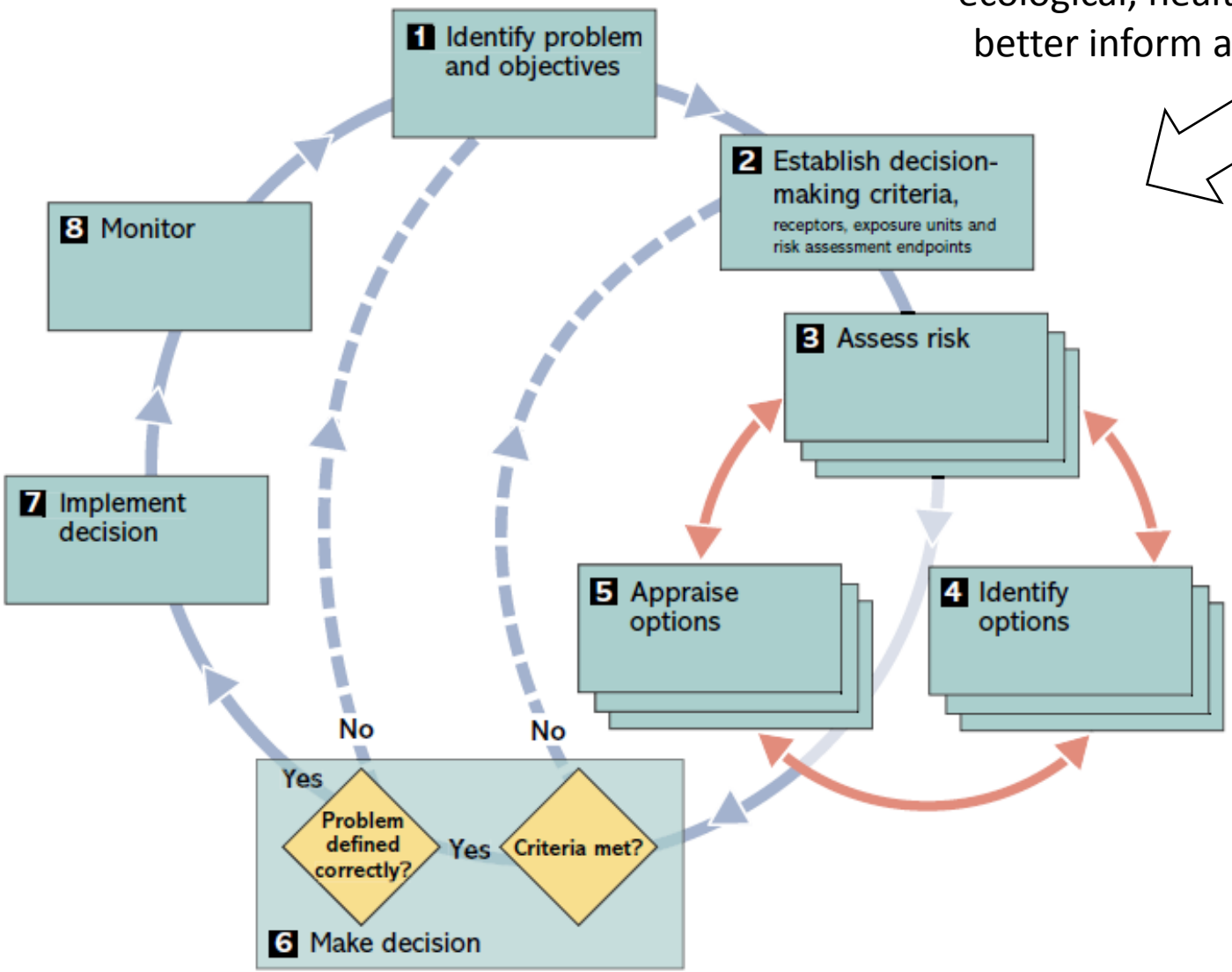
Multi-hazard risk management - provides opportunities to reduce complex and compound hazards - must ensure that risk reduction for one hazard does not increase risk from other hazards, in the present and future

Technology transfer and cooperation is needed – we need to learn from each other
Both scientific and local knowledge is important
Participation is essential
Appropriate and timely risk communication is critical

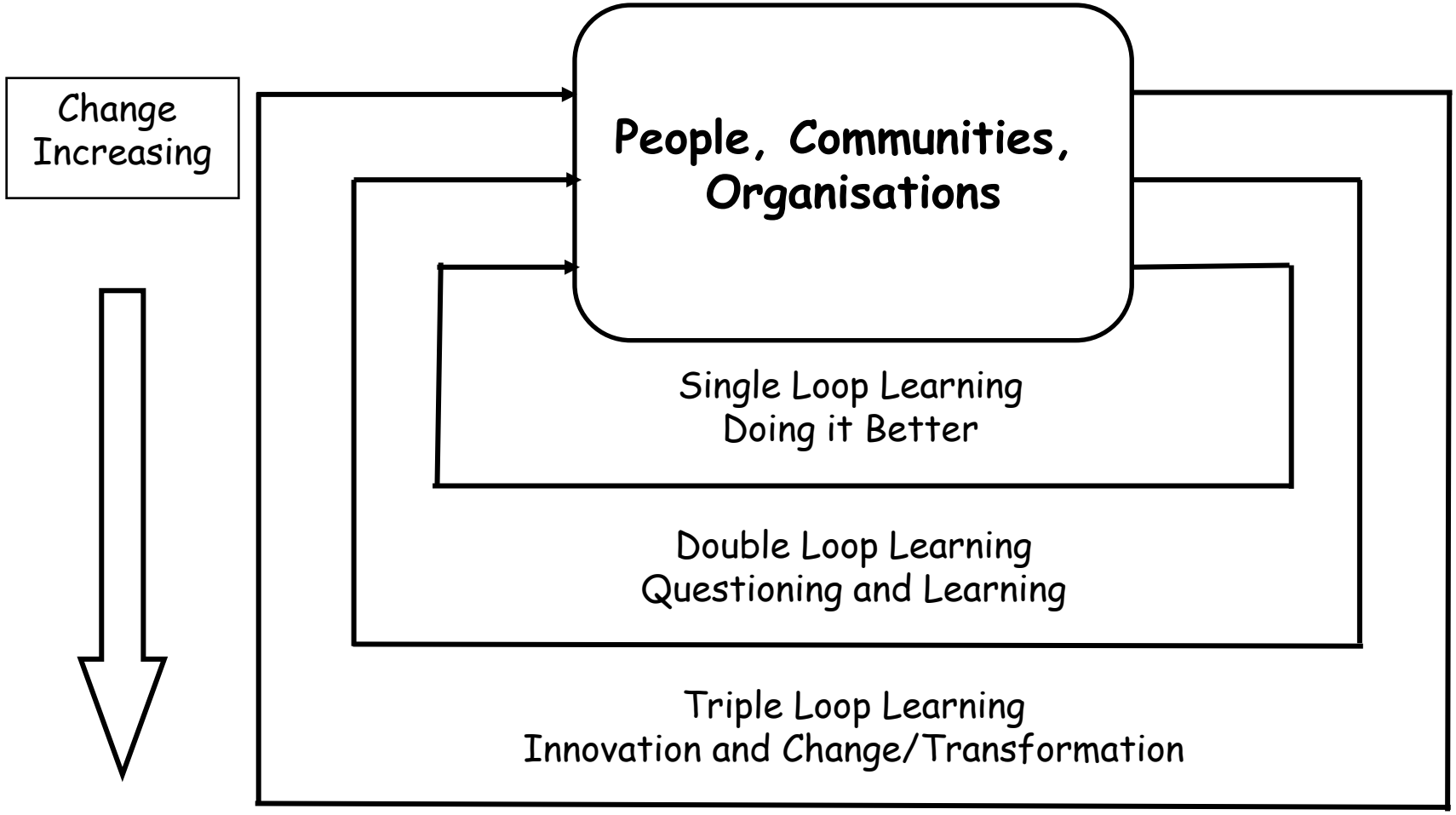
Adaptation efforts benefit from iterative risk management strategies because of the complexity, uncertainties, and long time frame associated with climate change

UKCIP Risk Assessment Model

On going climate, vulnerability, Socio-economic, topographical ecological, health, etc research to better inform assessment tool



Shifting to the Second and Third Loops: We must always be prepared to learn



Concluding Comment

UNFCCC will only finance “known” climate change – that is technological solutions that can be universalised – rather than “unknown” climate variability.

Climate variability is the biggest threat facing us at present.

Globally the greatest challenge is adaptation but the solutions are not universalist; they are local.

Interventions are difficult to plan and programme because of the contradictions within global markets, between market driven growth and environmental quality and because we do not know which adaptations are most cost-effective.

This is not a message of defeat, it is a measure to build a social science that can tackle post normal science in a post modern inquiry.

Thank You

Any Questions?

References

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