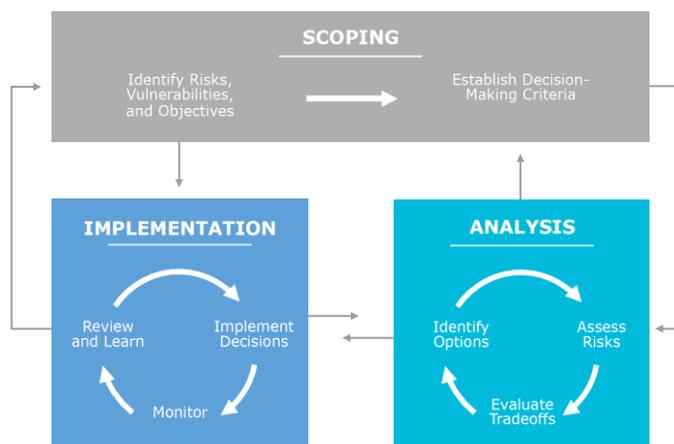# Adding knowledge and evidence:
Linking science and implementation

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AR5 regards adaptation as a process of iterative risk management:
Active feedback loops and learning at multiple scales

**But in practice, implementation is often decoupled
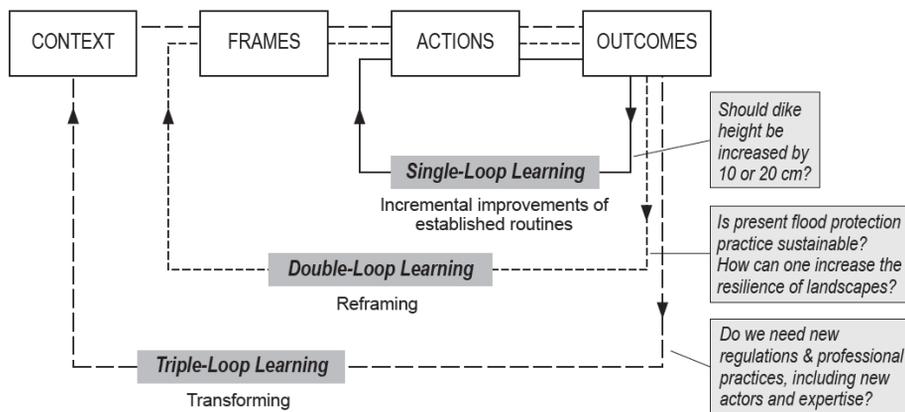from science – so how will learning happen?**

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Does it matter? Learning is essential for the different routes to scaling up

- From scaling up pilots to designing for scale
  - If we want to design for scale we will need to embed learning into the implementation cycle
- From removing barriers to scaling to scaling as barrier removal
  - Learning is essential for internal dynamics to drive growth
- Scale as a natural consequence of widespread adoption / diffusion of practice
  - Strategy is common, response is heterogeneous – learning essential to accommodate the variety in actors

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What kinds of learning might we want and need?

CONTEXT — FRAMES — ACTIONS — OUTCOMES

Single-Loop Learning
Incremental improvements of established routines

Should dike height be increased by 10 or 20 cm?

Double-Loop Learning
Reframing

Is present flood protection practice sustainable? How can one increase the resilience of landscapes?

Triple-Loop Learning
Transforming

Do we need new regulations & professional practices, including new actors and expertise?

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This may require us to re-think both science and implementation

- Re-thinking science
  - The process of research itself ought to foster implementation, by creating networks and partnerships between scientific, stakeholder & decision-making communities
- Re-thinking implementation
  - Enable learning to be built in to project design, so that the process of implementation strengthens the evidence base
  - Strengthening the knowledge base including institutional and human capacities, needs to be an integral part of the implementation process

Connections with tracking and M&E

- From an accountability-based focus to a learning-based focus
  - Indicators and tracking tools should permit testing the hypotheses in the theory of change and distinguishing between procedural failure and design failure – balancing the need for aggregation and comparability with the need to preserve contextual detail
- From post facto learning to learning while doing
  - Go beyond replication of "best practice" – designing for scale requires innovation and emergent practice, which means that M&E is an integral part of the implementation process and supports iteration and reflexivity
- From project-based M&E to M&E systems
  - Adoption & diffusion will require the actions to be undertaken by a wide variety of actors. Only a robust system for M&E will allow us to go beyond the silos of discrete projects

Figure 1. Fence-line contrasts of degraded *versus* intact subtropical thicket in the Eastern Cape, South Africa. (A) ~45 km NE of Steytlerville; (B) ~80 km SE of Steytlerville.

forests

Article

Prescribing Innovation within a Large-Scale Restoration Programme in Degraded Subtropical Thicket in South Africa

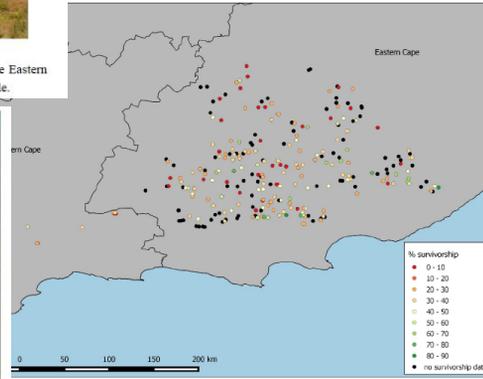Anthony J. Mills [1,*], Marius van der Vyver [2], Iain J. Gordon [3], Anand Patwardhan [4,5], Christo Marais [6], James Blignaut [7], Ayanda Sigwela [8] and Barney Kgope [9]
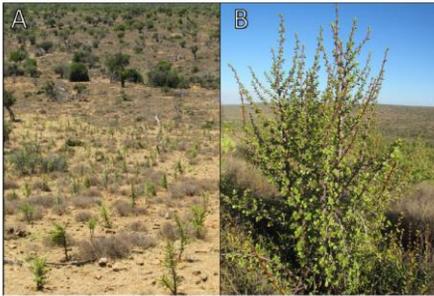
Figure 3. Spekboom cuttings planted into degraded thicket. (A) Newly planted cuttings; (B) A well-established cutting that has grown for several years subsequent to planting.

4. Location of the 331 plots within the large-scale restoration experiment conducted STRP in the Eastern Cape and Western Cape, South Africa. Different colours of circles denote average survivorship across all treatments in individual plots.

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