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Photo: Monk saki monkey by Helen Jeans

## Key concepts in climate change

# LEARNING TO ADAPT AND TRANSFORM

### Introduction

The natural world is being transformed by local and global drivers of change. This is leading to increased uncertainty for decision-makers at all levels.

Drivers of global environmental change such as the rapid expansion of illegal wildlife trade, mining and changes in land use create their own complex challenges. Climate change worsens existing threats and brings new challenges of its own.

Advanced learning processes including reflexivity, double and triple-loop learning, transformative learning, learning by doing, social learning and anticipatory learning can help societies address these environmental and social challenges<sup>1, 2</sup>.

### Change and uncertainty

Current environmental and social crises are characterised by continuous change and uncertainty. Change is described as 'complex, non-linear and in many cases irreversible'<sup>1</sup>, such that the

‘future will not be some new stable equilibrium’<sup>3</sup>. Drivers and their impacts interact synergistically so that their combined impact is cumulative<sup>4</sup> and difficult to forecast<sup>5</sup>. Change is also sometimes abrupt and unexpected<sup>6</sup> – for example, climate change may cause more extreme and widespread weather events to occur more often<sup>5</sup>.

Uncertainty will also be persistent<sup>3</sup>. Science may be able to reduce uncertainties relating to climate change and its impacts, as well as the role of tipping points and how feedbacks in the Earth’s system operate<sup>3</sup>. But research is less likely to reduce uncertainties about technological, cultural, economic and social change<sup>5</sup>. In some cases, advances in scientific understanding *increase* uncertainty about the future, as the implications of unappreciated processes such as ice-sheet dynamics become clearer<sup>3</sup>.

### Business as usual is insufficient

In the context of uncertainty and continuous change, business as usual is insufficient as it doesn’t address:

- the need to move beyond technical responses or one-off, small adjustments to existing practices that perpetuate unsustainable development trajectories<sup>1,7</sup>
- path dependency that locks society into structures, policies and technologies that make the effort to shift to a new path too great<sup>5</sup>
- the opportunity for society to be proactive and to exploit the possibilities of achieving multiple social and environmental benefits<sup>5</sup>
- the ‘real adaptive challenge’ that questions the assumptions, beliefs, values, commitments, loyalties and interests that have created the structures, systems and behaviour that contribute to anthropocentric climate change, social vulnerability and other environmental problems<sup>1</sup>.

Also, business as usual accommodates rather than contests change. By doing this, it weakens people’s capacity to be change agents, able to consciously create a future that’s characterised by equity and sustainability through processes of deliberate transformation<sup>1</sup>.

### Learning processes

#### Reflexivity

Reflexivity is the capacity to consider critically – and break away from – our existing routines, assumptions, values, frames, norms and interests<sup>8</sup>. It has a quality of open-mindedness that includes the capacity to take in multiple perspectives and viewpoints including those that challenge prevailing norms and interests<sup>1</sup>. Reflexivity creates opportunities for new ways of thinking and acting at individual, group, organisational and network levels<sup>8</sup>.

Reflexive learning can explore blind spots in current thinking. This facilitates transformational responses and approaches to climate change adaptation<sup>9</sup>. Reflexivity can generate the ‘new questions and

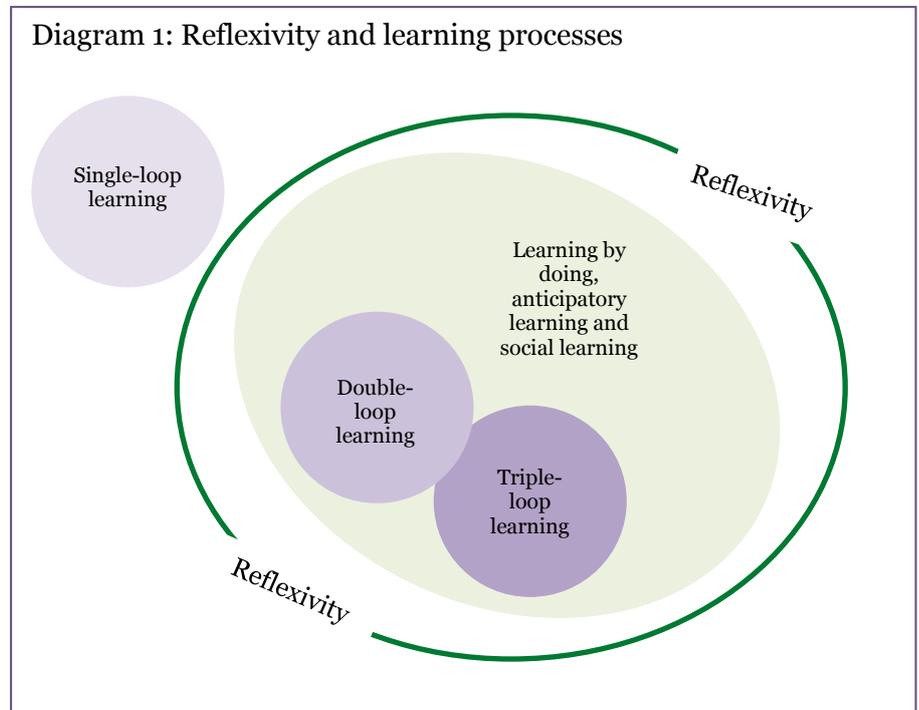
Not only adaptations to current conditions and in the short term, but how to achieve transformations toward more sustainable development pathways is one of the great challenges for humanity in the decades to come.<sup>16</sup>



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bolder answers' required for deliberate transformation. But it may call for a deep enquiry into the very structures by which society and science make 'meaning'<sup>1</sup>.

Reflexivity is integral to double and triple-loop learning, social learning, anticipatory learning and learning by doing – as shown in diagram 1.



### Single-loop learning

Single-loop learning (also called incremental learning) is about doing the same thing more efficiently, or 'doing things right'<sup>2</sup>. Because it doesn't question what's being done, it's problematic in the context of continuous, dynamic change and abrupt or rapid change<sup>2</sup>. It is insufficient to fully address the real adaptive challenge because it doesn't reveal underlying ways of thinking, mental models or theories of change. This doesn't mean that small or incremental changes are invalidated: rather reflexivity supports incremental learning by revealing non-obvious barriers to change and identifying actions that are essential to protect or discard<sup>10</sup>.



### Double-loop learning

Double-loop learning asks if the right thing is being done. In particular, it questions whether current goals and strategies are appropriate<sup>2</sup>. Corrective actions can be made after the situation being addressed has been reframed and different goals have been identified. Data is used to promote critical thinking and challenge underlying mental models of what works and why<sup>2</sup>.

### Triple-loop learning

Triple-loop learning is also called transformative learning. Triple-loop learning questions beliefs, values and assumptions including

those underpinning perceptions of the problem concerned and the goals and strategies designed to address it. It includes examination of social structures, cultural norms, and dominant value structures<sup>2</sup>. Triple-loop learning can transform ‘our very visioning’<sup>12</sup> including beliefs and assumptions about the future<sup>10</sup>.

### Social learning

There are different traditions of social learning, but broadly it is learning that takes place between individuals when their divergent interests, norms, values and constructions of reality meet in an environment that’s conducive to meaningful interaction<sup>8</sup>. Engaging in concerted action in a social learning context enables stakeholders to develop a broader and deeper understanding of the issue and ways to address it than simple knowledge transfer<sup>11</sup>. Social learning can take place in groups and organisations and among networks of actors and stakeholders including ‘virtual’ online networks. And the meaningful interaction among people of different interests, values, etc. can facilitate double and triple-loop learning<sup>13</sup>.

If actors from different sectors are involved, social learning can address the problem of path dependency. That’s the problem caused when fragmented responsibilities, narrow mandates and closed decision-making processes fail to consider and address the complex and interlinked impact that decisions made in one sector have on other sectors<sup>5</sup>. Open learning environments and deliberative participation involving multiple stakeholders help reduce uncertainty and enable synergies and trade-offs to be understood and negotiated<sup>5</sup>.

Trans-disciplinary approaches, especially those that recognise and address the complex dynamics of social ecological systems, support deliberative transformation<sup>1,7</sup>.

### Anticipatory learning

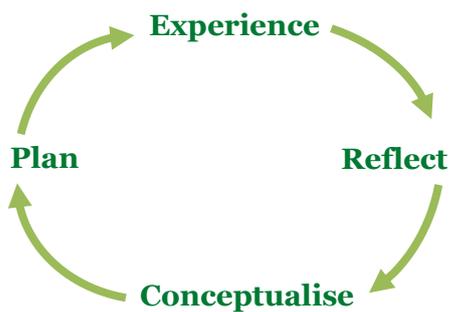
Climate change requires anticipatory and forward planning rather than simple reaction<sup>5</sup>. However decisions made about what to do in the present are influenced by how we define and construct the future and may be limited by our current assumptions and ways of thinking. Reflexivity and advanced learning approaches can help us to envisage different perspectives of the future that have ‘profound implications for what we do in the present’<sup>10</sup>.

An anticipatory learning framework comprising five elements has been proposed. These elements are lessons learned from the past (memory); the monitoring and analysis of trends to anticipate future events; planning for surprises and uncertainties through experimentation and scenario planning; identifying and measuring capacity for putting anticipatory planning into action; and tools to support adaptive decision-making<sup>14</sup>.



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The most resilient social-ecological systems are characterised by their capacity to learn and adjust<sup>2</sup>



### Learning by doing

Learning by doing – or cyclical learning – enquires into real-world problems through four interconnected stages: experiencing, reflecting, conceptualising and planning<sup>15</sup>. The planning stage puts learning that’s been generated through reflection and conceptualisation into action. Then the four-stage cycle is repeated to address changing circumstances and to incorporate new insights and practices. Reflection may generate single, double or triple-loop learning such that new plans may incrementally improve action or may radically reframe goals, strategies or the problem itself.

Processes of iterative learning by doing can build resilience and enhance adaptive capacity rather than targeting adaptation in the distant future<sup>9</sup>. Reflection in the iterative learning process provides space to develop and test theories and strategies under ever-changing conditions<sup>9</sup>. Individual and collective empowerment can emerge through such learning processes. These can potentially be scaled-up to trigger transformation<sup>9</sup>.

Action research – a methodology that pursues practical change and knowledge creation at the same time through cyclical learning – can develop social and institutional learning that supports adaptation to climate and environmental change<sup>2</sup>.

### Promoting the use of advanced learning processes

It will take more than an adjustment of ‘exterior’ institutional and organisational frameworks to develop the skills and capacity needed for advanced learning processes. It requires experimental and unconventional processes that challenge ‘interior’ personal assumptions and beliefs, too<sup>10</sup>. At WWF, we’re piloting initiatives that are designed to support the wider use of advanced learning processes within our programmes.

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Written by Helen Jeans, WWF-UK with contributions from John Colvin, Emerald Network Ltd.

**FOR MORE INFORMATION**

Please contact Helen Jeans: [hjeans@wwf.org.uk](mailto:hjeans@wwf.org.uk)



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 Tel. +41 22 364 9111 Fax +41 22 364 0332. For contact details and further information, please visit our international website at [www.panda.org](http://www.panda.org)