In brief: **Scaling Science**

Scaling Science is an approach for designing, managing, and evaluating research for impact. The objective is *scaling impact for the public good*.

The term 'Scaling Science' purposefully embraces two meanings:

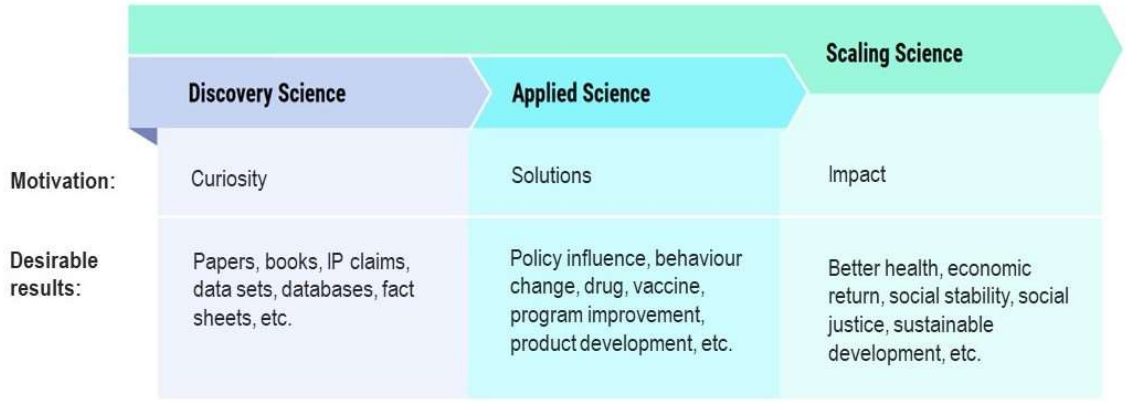
- First, it means scaling scientific research results to *optimize impacts*. That is, scaling the impacts of research in ways that balance the magnitude, variety, equity and sustainability of effects for the public good.
- Second, it refers to a systematic, critical, and principles-based science of scaling that will increase the likelihood that research and innovation will benefit society.

IDRC has a vested interest in both purposes. We encourage our funded researchers and our partners to strive for optimal impact, and to study and share their learning as they do.

Scaling Science in context

Scaling Science supplements the paradigms of 'discovery science' and 'applied science'.

Whereas discovery science is about the creation of new knowledge, and applied science investigates the conversion of that knowledge into action, scaling science is concerned with the optimization of the magnitude, variety, equity and sustainability of impacts.



For example, in the early phases of vaccine research, scaling considerations are useful in deciding what vaccine candidates merit discovery at all. In the later stages of vaccine distribution, scaling considerations can help in planning licencing schemes that ensure fairness and equity of access. In this sense, both discovery and applied science can benefit by embracing scaling thinking.

However, sometimes dimensions of impact – for example public health and economic return – are not directly aligned and require a justified balance. How we *justify, coordinate, and dynamically evaluate* the *optimal impacts* of research is the unique contribution of Scaling Science.

A typology of pathways to scale

There are many ways to scale impact. Following a review of projects, we developed a typology of some of the most prevalent. Researchers and innovators follow these pathways as they gather evidence and values to improve impacts. As they progress, they may be scaling up, out, deep, or in other ways. And as pathways are not mutually exclusive, they may follow more than one simultaneously or sequentially.

Pathway	Scaling is when research is used to…	For example …
Policy	… inform a new policy for public good, or perhaps influence the replication, adaptation or extension of the policy into new jurisdictions to amplify its impact.	… a research program uses evidence from one country that successfully implemented a tax on sugary drinks, to inform policy in another country to achieve a similar impact on public health.
Program	… design a program, improve an existing program's quality, change the program to fit a new context, or form partnerships with others to improve overall impact.	… evidence from a successful national centre of science excellence is used to establish similar centres in other countries within the region.
Behaviour, practice or skill	… design behaviour or practice change interventions - such as awareness campaigns, or evidence-based guidelines - and study the roll-out of these interventions for people and organizations.	… sharing results with communities of successful early antenatal visits encourages more pregnant women to visit a health care facility in first three months of pregnancy.
Product or technology	… produce new goods and services, make existing products/technologies more accessible, or optimize the value-chain underpinning a good or service like a fertilizer, software, vaccine, or internet platform.	… agricultural researchers work with farmers to develop a more nutritious variety of potato, and farming cooperatives help build the markets and supply chains to reach consumers equitably.
Methodology	… develop, re-orient, or otherwise optimize a way of knowing and/or doing that will generate social impact.	… users of a novel participatory research approach share the method with researchers in a neighbouring discipline, and thereby expand the benefits of stakeholder inclusion to a new field of practice.

As one contribution to the development of a science of scaling, an IDRC review suggests four guiding principles for scaling impact. These are introduced on the following page.

For further details on Scaling Science, including how we hope you'll contribute to its co-development, visit: www.idrc.ca/scalingscience

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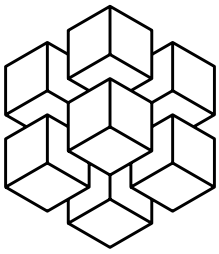
scaling science

Four guiding principles for scaling impact



1. Justification

- → Scaling is a choice that must be justified.
- → The choice is made by the balance of evidence alongside values.
- → The choice to scale is shared.

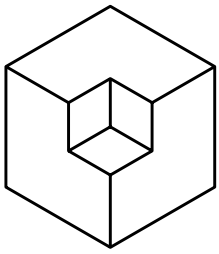
To make the principle of justification practical, it begins with the question "why scale?" The answer should include:

- Technical evidence that scaling will produce positive impacts that outweigh negative impacts; and
- A description of the values (including whose) that inform the decision to scale.

These responses can help you articulate a value proposition as a basis for decision-making about scaling. Sometimes, however, it is better not to scale.

Scientific evidence can help you understand whether an innovation *can* scale. But the values of those impacted will inform whether an innovation *should* scale.

Articulating both evidence and values can help you enlist various stakeholders in the scaling process since they can see the justification for the scaling efforts. Doing so encourages participation and stakeholder endorsement.



2. Optimal Scale

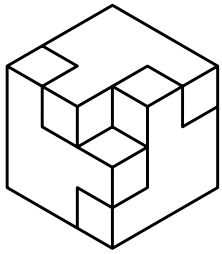
- → More is not necessarily better.
- → Scaling produces a collection of impacts.
- → Impact at optimal scale balances dimensions of magnitude, variety, equity, and sustainability.

Optimality challenges the "bigger is better" logic of scaling.

Simply because a solution works at a local level doesn't mean that implementing it nation-wide or beyond will multiply the benefit. Likewise, if a solution proves ineffective at a local level, we cannot automatically conclude it won't produce desirable impacts at broader scales.

Determining optimal scale requires ongoing considerations of the trade-offs between magnitude, sustainability, equity, and variety of impacts. For example, improving efficiency for hospital visits may not always correlate with better patient outcomes; just like technological innovation in agriculture may or may not mean concomitant benefits for the environment.

Optimality also raises the question of who defines this 'right' scale. Numerous stakeholders, including researchers, funders, and beneficiaries, may all have different views. Considering different perspectives, and setting out a process to determine optimal scale that stakeholders endorse is key to successfully scaling impact.



3. Coordination

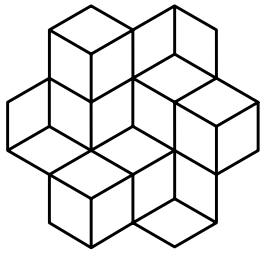
- → Scaling occurs in complex systems.
- → Complexity requires a flexible scaling process.
- → Coordination connects an evolving set of actors to the scaling process.

Coordination refers to the need to plan and adapt for the many actors involved in bringing impact to scale. This principle reminds researchers that scaling takes place in complex systems and that complexity demands a flexible scaling process.

Accordingly, coordinating a scaling journey requires a strong understanding of the system in which one operates, while acknowledging that unintended impacts are possible and therefore require ongoing monitoring. This includes, for example, the understanding and accommodation of gender dimensions when coordinating with various actors in your scaling effort.

Coordination implies that researchers consider the wider range of initiators, enablers, competitors, and impacted. These groups may affect, or be affected, by scaling in ways that alter intended impacts.

Such broad engagement may occur within a single project, or as a part of a longitudinal series of coordinated research projects and activities are coordinated to work together. At the same time, organizations may use a 'portfolio approach' to coordination, whereby they syndicate projects or innovations for greater impact from the portfolio, than would be produced by the individual parts.



4. Dynamic Evaluation

- → Scaling is an intervention that can be evaluated.
- → Scaling generates dynamic change.
- → Dynamic evaluation is a stance that is held before, during, and after scaling.

Because scaling generates dynamic change, it necessitates dynamic evaluation. It can use a collection of tailored learning strategies to examine how scaling transforms a holistic concept of impacts – assessing the magnitude, variety, equity, and sustainability of change.

Dynamic evaluation goes beyond asking whether impact was achieved at a certain date, and instead asks how, why, under what conditions the impact was achieved, and how this might change over time and place.

Dynamic evaluation is not a method, it is a stance. It aims to measure the collection of impacts of scaling as an intervention. Not just the impact of the innovation or research at a single level of scale. This implies a body of tools for rounding rapid learning cycles that can be used strategically before, during and after scaling and the choice of tools relies on the judgement of those involved in the scaling system.

Learn more:
www.idrc.ca/scalingscience

Source: McLean & Gargani (2019) Scaling Impact - Innovation for the Public Good