SCALING SCIENCE

Robert McLean

IDRC | CRDI

KT CANADA – Seminar Series – April 29 2021

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International Development Research Centre
Centre de recherches pour le développement international

Canada

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Declarations

- Former Evaluator at CIHR, chaired the Steering Committee of the CIHR KT Evaluation
- Senior Evaluation Specialist @ Canada's International Development Research Centre
- Fellow of the Integrated Knowledge Translation Research Network (Ottawa Hospital Research Institute)
- Executive Committee of SUCCEED; member of the RePOS Network (Université Laval)
- Acknowledgement to collaborator & co-author of scaling science, Dr. John Gargani

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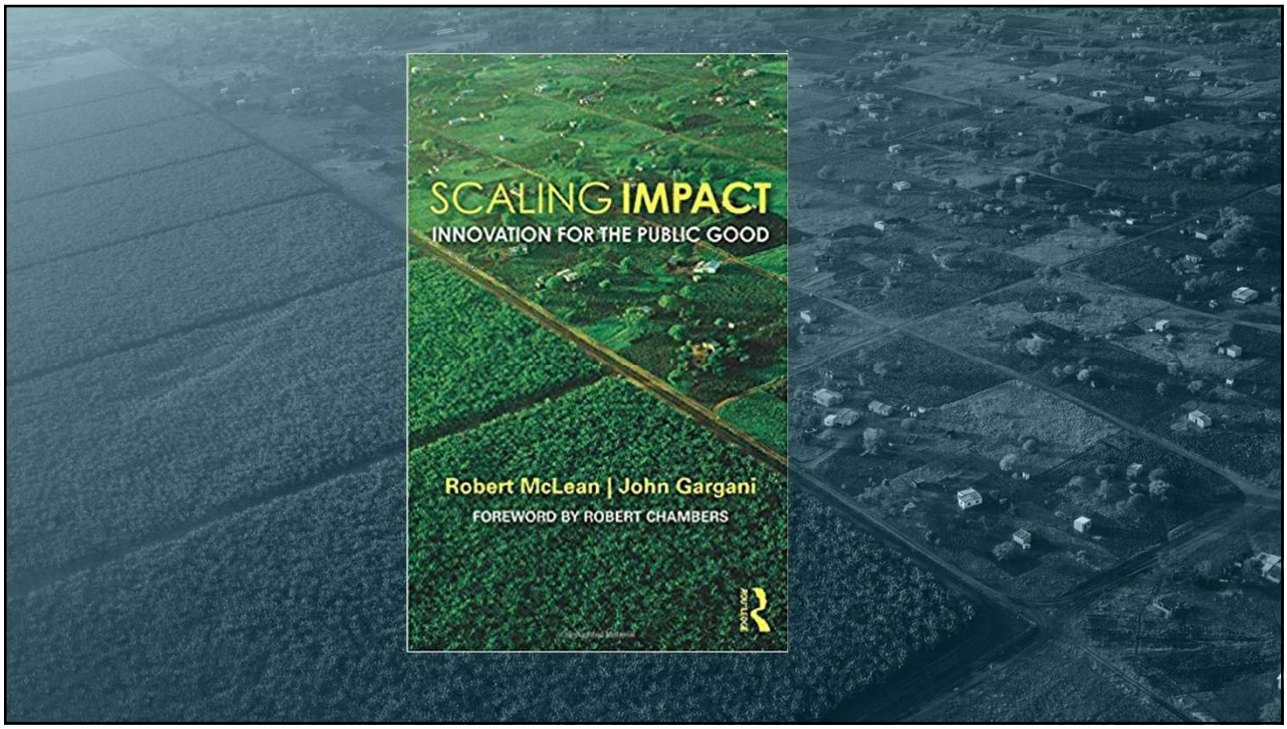
SCALING IMPACT
INNOVATION FOR THE PUBLIC GOOD
Robert McLean | John Gargani
FOREWORD BY ROBERT CHAMBERS

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FREE!
www.idrc.ca/scalingscience

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USER GUIDE
TO THE EDUCATION
SCALABILITY
CHECKLIST

WHAT IS THE PURPOSE OF THE ESC?

The ESC looks at the ease of scaling a particular education initiative, but not at the *desirability* or *appropriateness* of scaling.

It is possible, for instance, that an initiative has various characteristics that make it easy to scale, but doing so would increase educational inequality. The organizations that worked on creating this tool are certainly of the opinion that that would not be desirable. In that sense, the ESC is not meant to be "the" decision-making toolkit for investment.

USAID
FROM THE AMERICAN PEOPLE

GUIDE TO THE AGRICULTURAL SCALABILITY ASSESSMENT TOOL

FOR ASSESSING AND IMPROVING THE SCALING POTENTIAL OF AGRICULTURAL TECHNOLOGIES

World Health Organization EXPANDNET

Practical guidance for scaling up health service innovations

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Milat *et al. Implementation Science* (2015) 10:113
DOI 10.1186/s13012-015-0301-6

IMPLEMENTATION SCIENCE

SYSTEMATIC REVIEW Open Access

CrossMark

Narrative review of models and success factors for scaling up public health interventions

Andrew J. Milat[1,2*], Adrian Bauman[1] and Sally Redman[3]

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Milat *et al. Health Research Policy and Systems* (2020) 18:1
https://doi.org/10.1186/s12961-019-0494-2

Health Research Policy and Systems

RESEARCH Open Access

Intervention Scalability Assessment Tool: A decision support tool for health policy makers and implementers

Andrew Milat[1,2,3*†], Karen Lee[2,3†], Kathleen Conte[2], Anne Grunseit[2,3], Luke Wolfenden[2,4], Femke van Nassau[5], Neil Orr[6], Padmaja Sreeram[7] and Adrian Bauman[2,3]

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thebmj

BMJ 2019;365:l2068 doi: 10.1136/bmj.l2068 (Published 10 May 2019) Page 1 of 8

ANALYSIS

QUALITY IMPROVEMENT

Spreading and scaling up innovation and improvement

Disseminating innovation across the healthcare system is challenging but potentially achievable through different logics: mechanistic, ecological, and social, say **Trisha Greenhalgh** and **Chrysanthi Papoutsi**

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Key messages

- Spread (replicating an intervention) and scale-up (building infrastructure to support full scale implementation) are difficult
- Implementation science takes a structured and phased approach to developing, replicating, and evaluating an intervention in multiple sites
- Complexity science encourages a flexible and adaptive approach to change in a dynamic, self organising system
- Social science approaches consider why people act in the way they do, especially the organisational and wider social forces that shape and constrain people's actions
- These approaches may be used in combination to tackle the challenges of spread and scale-up

Greenhalgh & Papoutsi 2019; https://doi.org/10.1136/bmj.l2068

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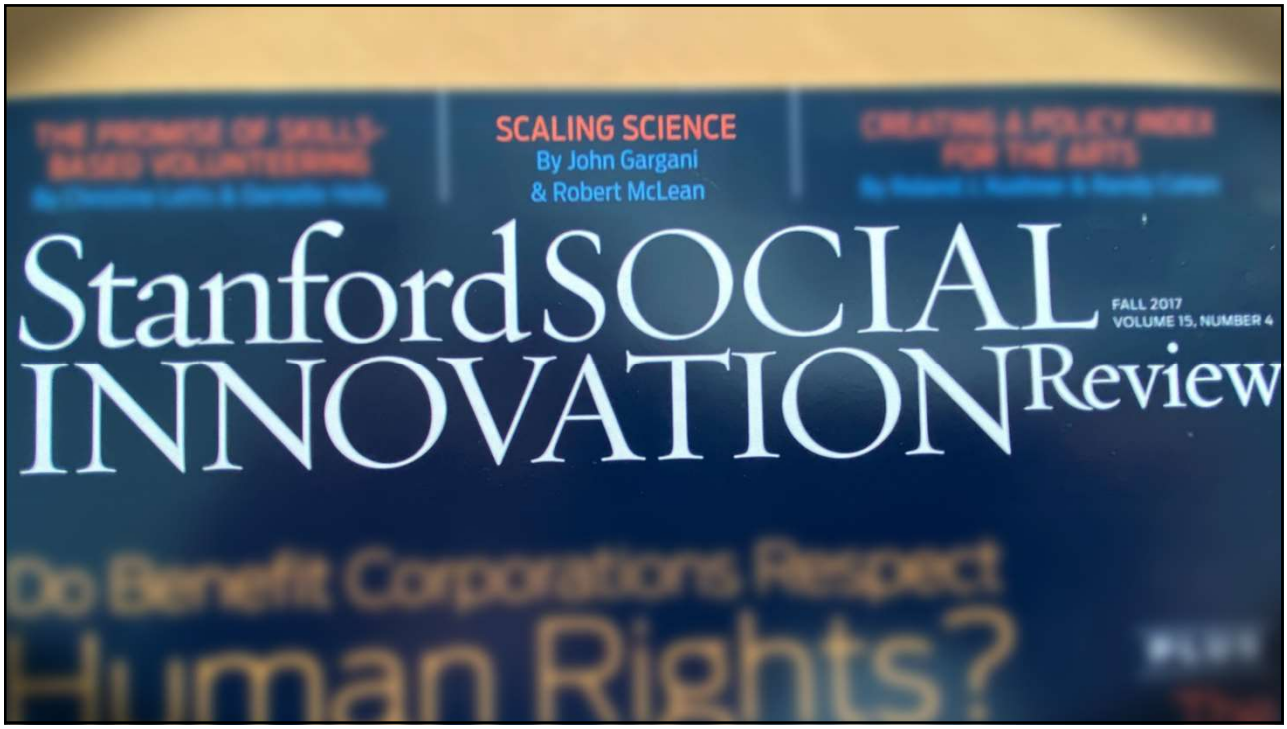

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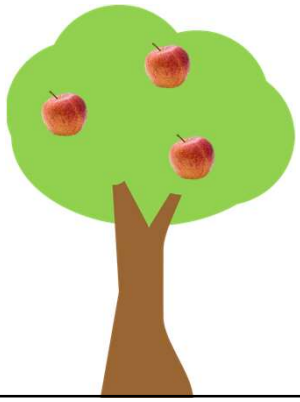
SCALING



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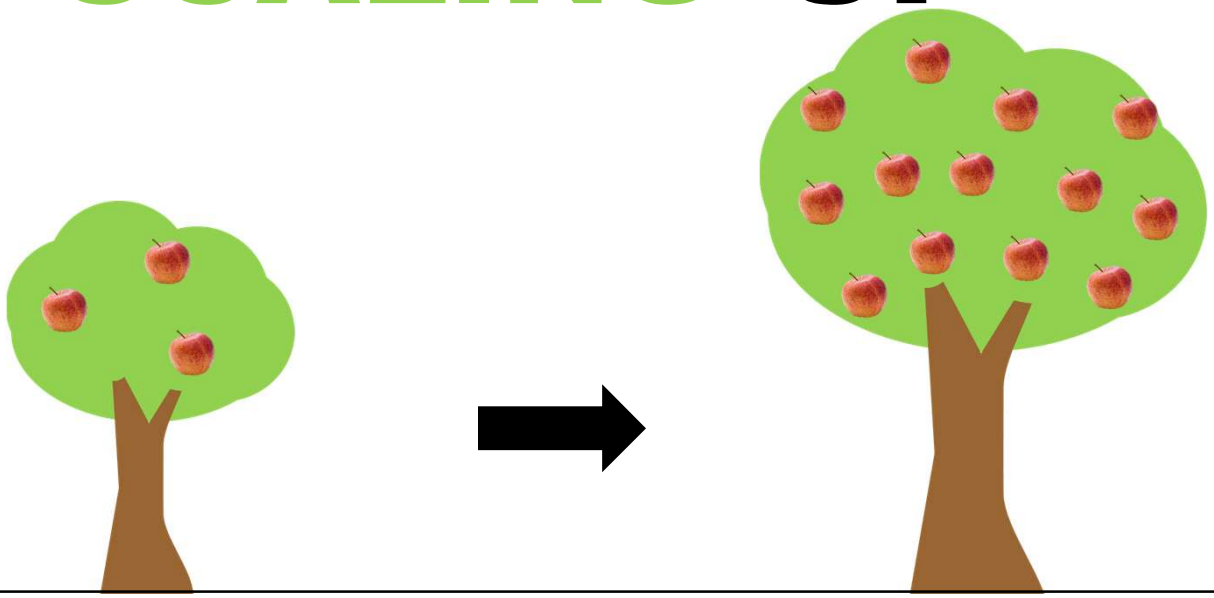
SCALING UP



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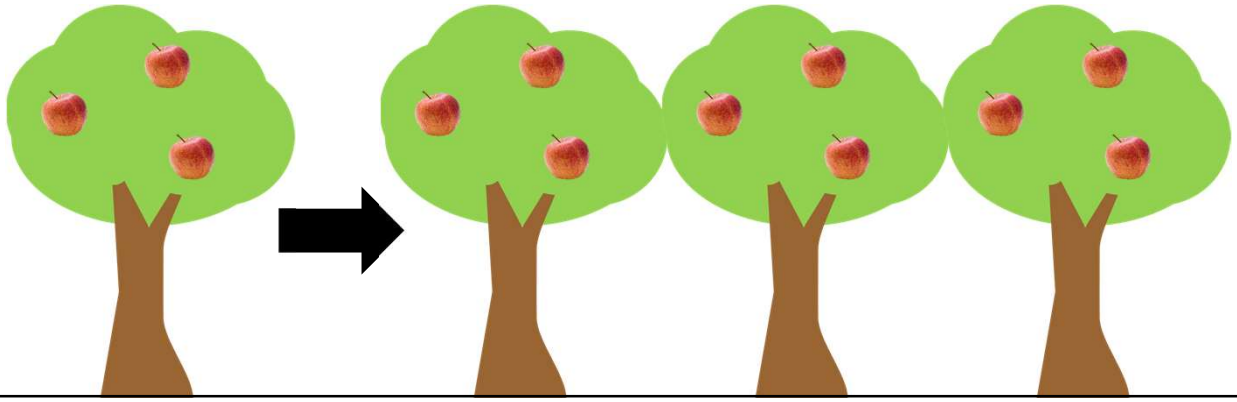
SCALING OUT



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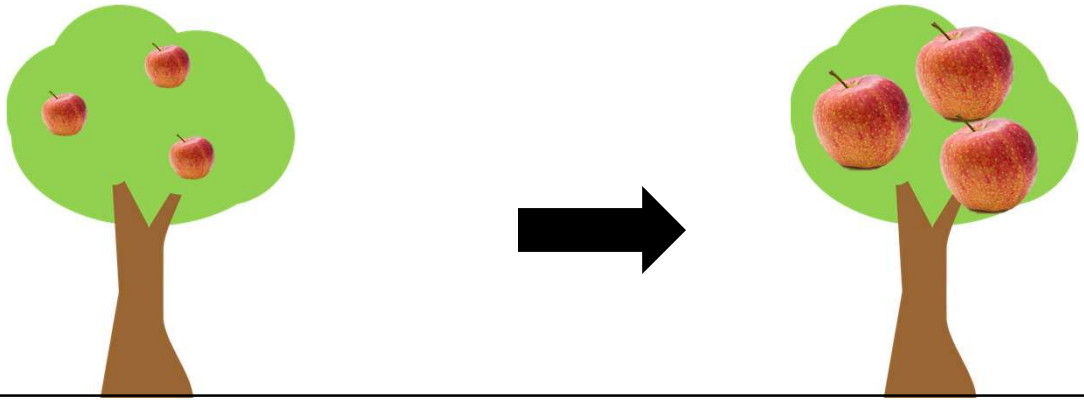
SCALING DEEP



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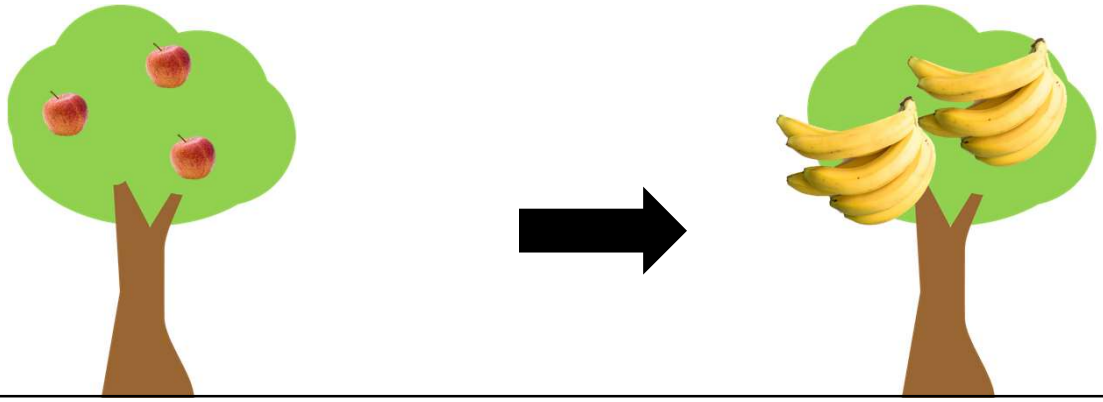
SCALING

As systems change



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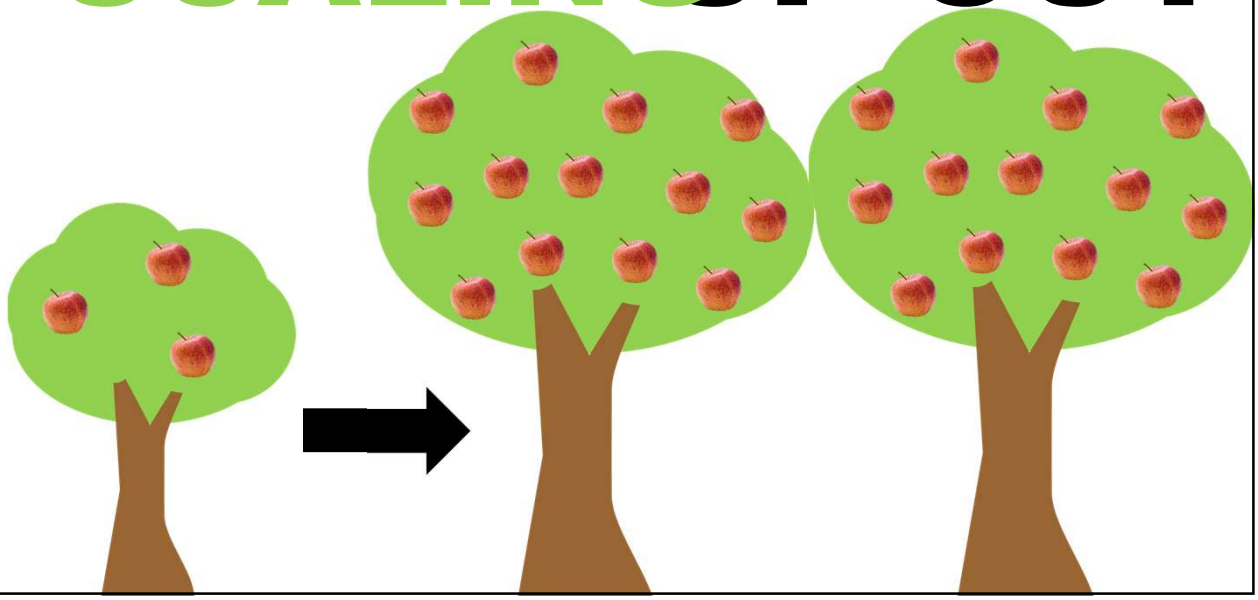
SCALING UP + OUT



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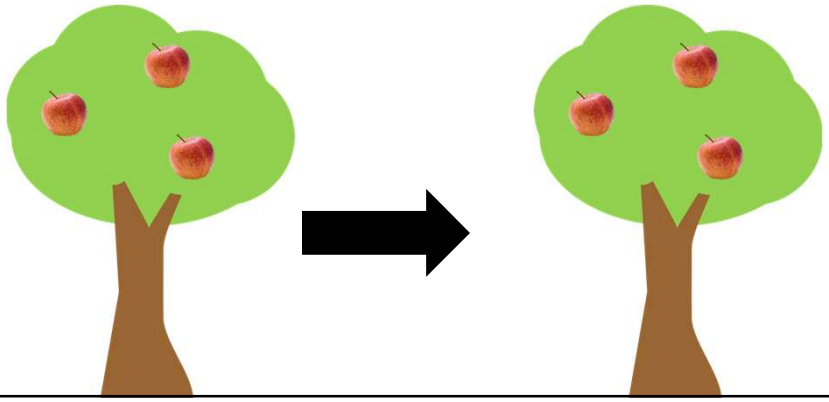
SAME SCALING



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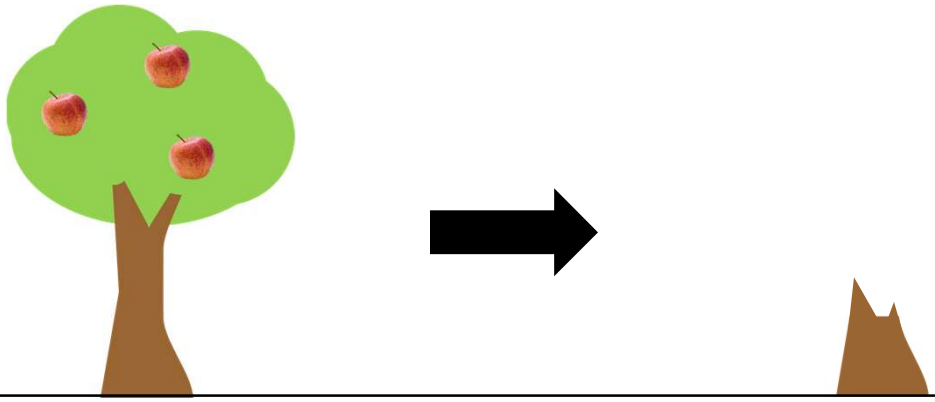
DE SCALING



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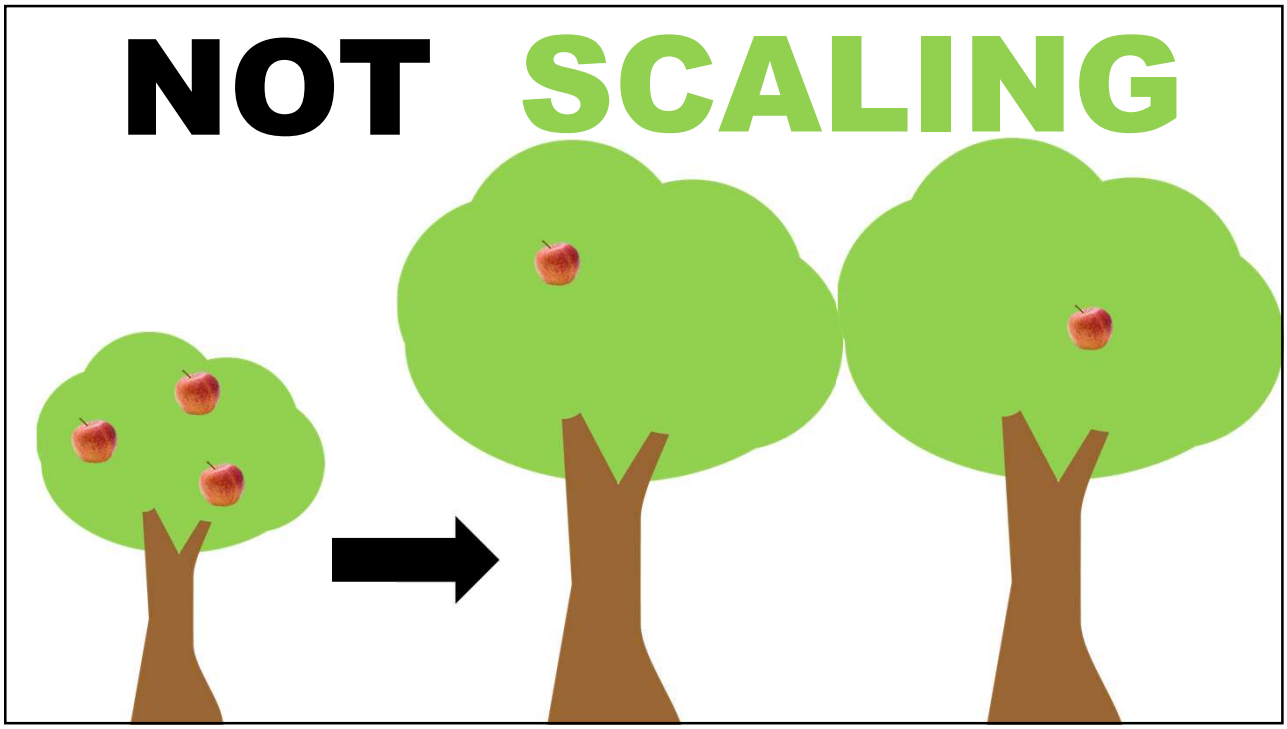

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any and all

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What matters is

Scaling Impact

23

Δ Mindset

24

How does this relate to Implementation Science & Knowledge Translation?

25

Psychiatry Research 283 (2020) 112376

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Review article

Implementation science: What is it and why should I care?

Mark S. Bauer[a,b,*], JoAnn Kirchner[b,c]

[a] The Center for Healthcare Organization & Implementation Research (CHOIR), Veterans Affairs Boston Healthcare System, and the Harvard Medical School, Boston, MA, USA
[b] The Department of Veterans Affairs Quality Enhancement Research Initiative (QUERI) for Team-Based Behavioral Health, Little Rock AR & Boston MA, USA
[c] The Central Arkansas Veterans Healthcare System, and the University of Arkansas for Medical Sciences, Little Rock, AR, USA

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Research to public health impact
Version 1.0

Bauer & Kirchner 2019
https://doi.org/10.1016/j.psychres.2019.04.025

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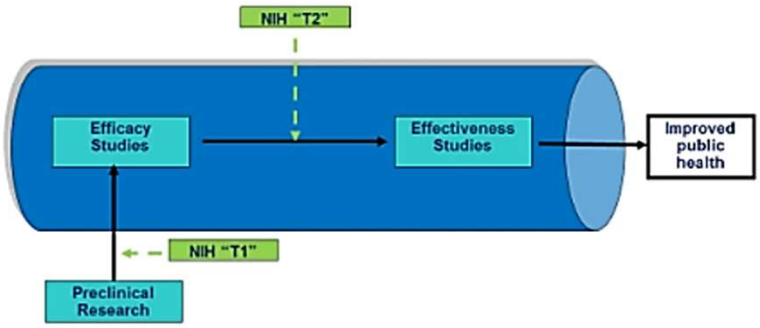
Research to public health impact
Version 2.0



Bauer & Kirchner 2019
https://doi.org/10.1016/j.psychres.2019.04.025

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Implementation Science, from *Implementation Science*:

"...the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practice into routine practice and, hence, to improve the quality and effectiveness of health services."

- Eccles & Mittman, 2006
https://doi.org/10.1186/1748-5908-1-1

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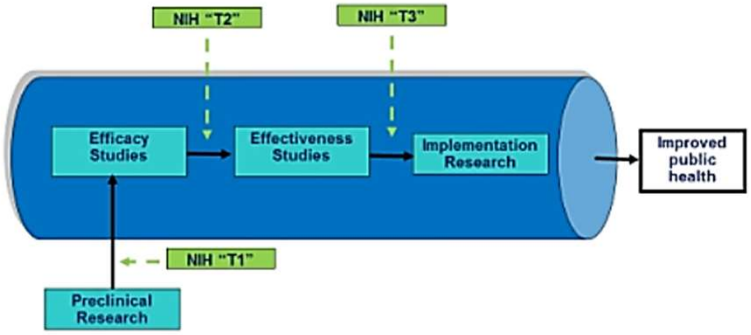
Research to public health impact
Version 3.0



Bauer & Kirchner 2019
https://doi.org/10.1016/j.psychres.2019.04.025

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Improved
public
health

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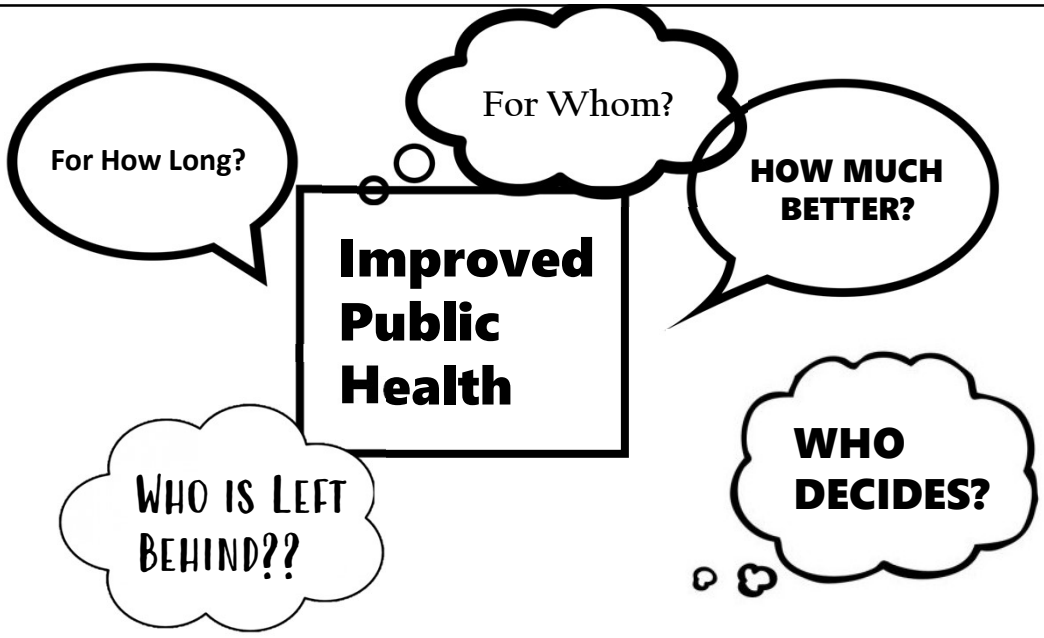
For How Long?
For Whom?
HOW MUCH BETTER?
Improved Public Health
Who is Left Behind??
WHO DECIDES?

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Moving from discovery to impact

	Discovery Science	Applied Science	Scaling Science
Motivation	Curiosity	Solution to a problem	Impact
Means	Objectivity	Utilization focus	Principled innovation
Audience	Academic community	Immediate knowledge users	Range of initiators, enablers, competitors, and impacted who may bring or block impact at optimal scale
Results	Validity	Validity + action	Validity + action + optimal impact

Impact at Optimal Scale

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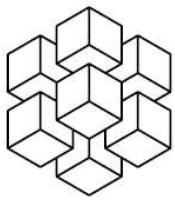
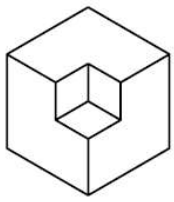
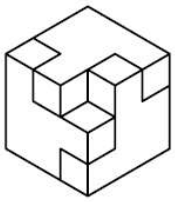
The science of scaling: A principles-based approach



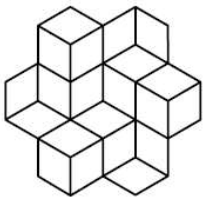
1. Justification



2. Optimal Scale



3. Coordination



4. Dynamic Evaluation

«Scaling impact is a coordinated effort to achieve a collection of impacts at optimal scale that is only undertaken if it is both morally justified and warranted by the dynamic evaluation of evidence.»

McLean & Gargani 2019

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Shared Decision Making Knowledge Translation

Web site :
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Our mission

Providing health professionals and their patients with the necessary skills to promote shared decision-making throughout the healthcare continuum.

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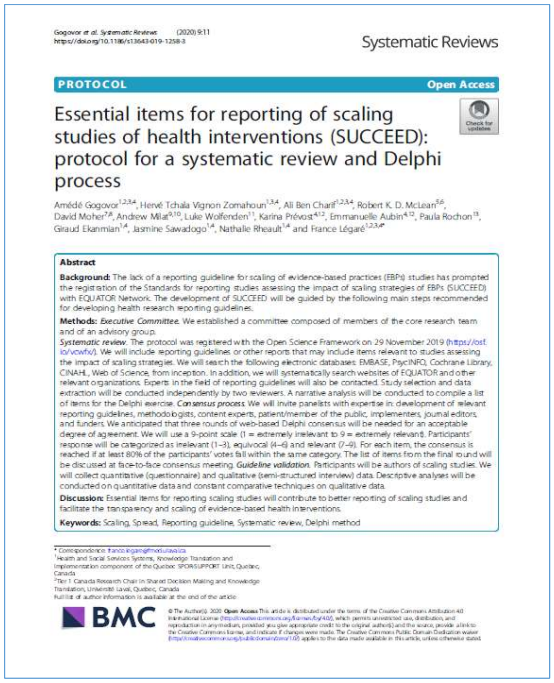

Gogovor et al. Systematic Reviews (2020) 9:11
https://doi.org/10.1186/s13643-019-1258-3

Systematic Reviews

PROTOCOL Open Access

Essential items for reporting of scaling studies of health interventions (SUCCEED): protocol for a systematic review and Delphi process

Amédé Gogovor[1,2,3,4], Hervé Tchala Vignon Zomahoun[1,3,4], Ali Ben Charif[1,2,3,4], Robert K. D. McLean[5,6], David Moher[7,8], Andrew Milat[9,10], Luke Wolfenden[11], Karina Prévost[4,12], Emmanuelle Aubin[4,12], Paula Rochon[13], Giraud Ekanmian[1,4], Jasmine Sawadogo[1,4], Nathalie Rheault[1,4] and France Légaré[1,2,3,4*]

Abstract

Background: The lack of a reporting guideline for scaling of evidence-based practices (EBPs) studies has prompted the registration of the Standards for reporting studies assessing the impact of scaling strategies of EBPs (SUCCEED) with EQUATOR Network. The development of SUCCEED will be guided by the following main steps recommended for developing health research reporting guidelines.

Methods: *Executive Committee.* We established a committee composed of members of the core research team and of an advisory group.

Systematic review. The protocol was registered with the Open Science Framework on 29 November 2019 (https://osf.io/vcwfx/). We will include reporting guidelines or other reports that may include items relevant to studies assessing the impact of scaling strategies. We will search the following electronic databases: EMBASE, PsycINFO, Cochrane Library, CINAHL, Web of Science, from inception. In addition, we will systematically search websites of EQUATOR and other relevant organizations. Experts in the field of reporting guidelines will also be contacted. Study selection and data extraction will be conducted independently by two reviewers. A narrative analysis will be conducted to compile a list of items for the Delphi exercise. *Consensus process.* We will invite panelists with expertise in: development of relevant reporting guidelines, methodologists, content experts, patient/member of the public, implementers, journal editors, and funders. We anticipated that three rounds of web-based Delphi consensus will be needed for an acceptable degree of agreement. We will use a 9-point scale (1 = extremely irrelevant to 9 = extremely relevant). Participants' response will be categorized as irrelevant (1–3), equivocal (4–6) and relevant (7–9). For each item, the consensus is reached if at least 80% of the participants' votes fall within the same category. The list of items from the final round will be discussed at face-to-face consensus meeting. *Guideline validation.* Participants will be authors of scaling studies. We will collect quantitative (questionnaire) and qualitative (semi-structured interview) data. Descriptive analyses will be conducted on quantitative data and constant comparative techniques on qualitative data.

Discussion: Essential items for reporting scaling studies will contribute to better reporting of scaling studies and facilitate the transparency and scaling of evidence-based health interventions.

Keywords: Scaling, Spread, Reporting guideline, Systematic review, Delphi method

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Full list of author information is available at the end of the article

BMC

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"Scaling might be considered one of the ultimate phases of knowledge translation.

Whereas KT is concerned with the conversion of research into action,
"scaling" is how we optimize the magnitude, variety, equity, and sustainability of research-informed actions."

https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-019-1258-3

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Research Square

Preprints are preliminary reports that have not undergone peer review. They should not be considered conclusive, used to inform clinical practice, or referenced by the media as validated information.

Evidence on Scaling in Health and Social Care: Protocol for a Living Umbrella Review

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Karine V. Plourde
Universite Laval
Ali Ben Charif
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Amédé Gogovor
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Francesca Katherine Brundisini
Universite Laval
Robert K.D. McLean
International Development Research Centre
Andrew Milat
NSW Ministry of Health
Nathalie Rheault
Quebec SPOR SUPPORT Unit
Luke Wolfenden
University of Newcastle
Hervé Tchala Vignon Zomahoun
Quebec SPOR SUPPORT unit

Protocol

Keywords: Scaling, spread, scalability, implementation science, scaling science, knowledge translation, health and social care, living review, umbrella review

Pre-print:
https://www.researchgate.net/publication/350145778_Evidence_on_Scaling_in_Health_and_Social_Care_Protocol_for_a_Living_Umbrella_Review

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IKT
Research Network

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Graham *et al. Implementation Science* (2018) 13:22
DOI 10.1186/s13012-017-0700-y

Implementation Science

STUDY PROTOCOL Open Access

Moving knowledge into action for more effective practice, programmes and policy: protocol for a research programme on integrated knowledge translation

Ian D. Graham[1*], Anita Kothari[2], Chris McCutcheon[3] and On behalf of the Integrated Knowledge Translation Research Network Project Leads

Abstract

Background: Health research is conducted with the expectation that it advances knowledge and eventually translates into improved health systems and population health. However, research findings are often caught in the know-do gap: they are not acted upon in a timely way or not applied at all. Integrated knowledge translation (IKT) is advanced as a way to increase the relevance, applicability and impact of research. With IKT, knowledge users work with researchers throughout the research process, starting with identification of the research question. Knowledge users represent those who would be able to use research results to inform their decisions (e.g. clinicians, managers, policy makers, patients/families and others). Stakeholders are increasingly interested in the idea that IKT generates greater and faster societal impact. Stakeholders are all those who are interested in the use of research results but may not necessarily use them for their own decision-making (e.g. governments, funders, researchers, health system managers and policy makers, patients and clinicians). Although IKT is broadly accepted, the actual research supporting it is limited and there is uncertainty about how best to conduct and support IKT. This paper presents a protocol for a programme of research testing the assumption that engaging the users of research in phases of its production leads to (a) greater appreciation of and capacity to use research; (b) the production of more relevant, useful and applicable research that results in greater impact; and (c) conditions under which it is more likely that research results will influence policy, managerial and clinical decision-making.

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IKT
Research Network

Scaling science and integrated knowledge translation: An interview with Rob McLean

Posted on January 25, 2021 KTR Contributor

What is scaling science? How does it relate to integrated knowledge translation (IKT)? To answer these questions, we talked with Rob McLean, an IKTRN member, recent PhD graduate from Stellenbosch University (under the supervision of members Jimmy Volmink and Ian Graham), and co-author of the new book *Scaling Impact: Innovation for the Public Good*. In this book, McLean details the results of an integrated knowledge translation project that retrospectively reviewed over 200 research projects funded by the International Development Research Centre (IDRC). In this project, McLean worked with IDRC, a Canadian research funder, to co-produce a novel, evidence-based approach for generating more meaningful research impact – Scaling Science.

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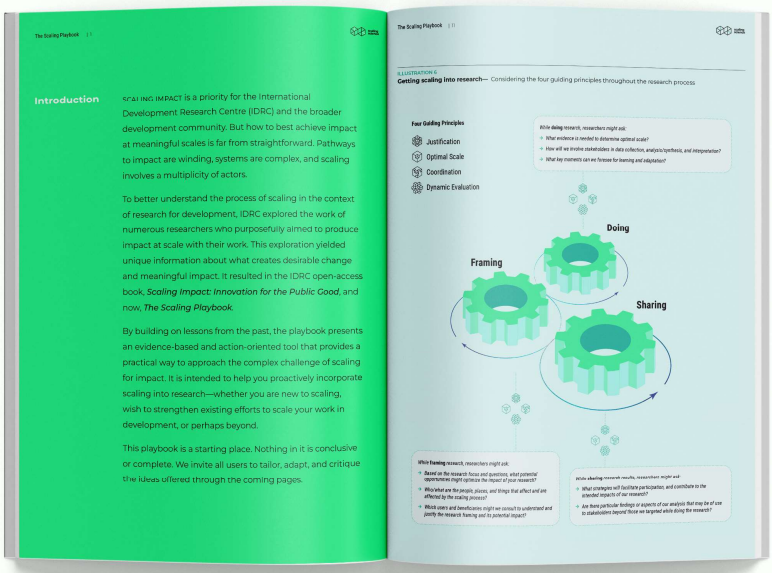
IDRC's Scaling Playbook



The Scaling Playbook | 1

Introduction

SCALING IMPACT is a priority for the International Development Research Centre (IDRC) and the broader development community. But how to best achieve impact at meaningful scales is far from straightforward. Pathways to impact are winding, systems are complex, and scaling involves a multiplicity of actors.

To better understand the process of scaling in the context of research for development, IDRC explored the work of numerous researchers who purposefully aimed to produce impact at scale with their work. This exploration yielded unique information about what creates desirable change and meaningful impact. It resulted in the IDRC open-access book, *Scaling Impact: Innovation for the Public Good*, and now, *The Scaling Playbook*.

By building on lessons from the past, the playbook presents an evidence-based and action-oriented tool that provides a practical way to approach the complex challenge of scaling for impact. It is intended to help you proactively incorporate scaling into research—whether you are new to scaling, wish to strengthen existing efforts to scale your work in development, or perhaps beyond.

This playbook is a starting place. Nothing in it is conclusive or complete. We invite all users to tailor, adapt, and critique the ideas offered through the coming pages.

The Scaling Playbook | 11

ILLUSTRATION 6

Getting scaling into research— Considering the four guiding principles throughout the research process

Four Guiding Principles

- Justification
- Optimal Scale
- Coordination
- Dynamic Evaluation

While doing research, researchers might ask:

- What evidence is needed to determine optimal scale?
- How will we involve stakeholders in data collection, analysis/synthesis, and interpretation?
- What key moments can we foresee for learning and adaptation?

Doing

Framing

Sharing

While framing research, researchers might ask:

- Based on the research focus and questions, what potential opportunities might optimize the impact of your research?
- Who/what are the people, places, and things that affect and are affected by the scaling process?
- Which users and beneficiaries might we consult to understand and jointly the research framing and its potential impact?

While sharing research results, researchers might ask:

- What strategies will facilitate participation, and contribute to the intended impacts of our research?
- Are there particular findings or aspects of our analysis that may be of use to stakeholders beyond those we targeted while doing the research?

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What the 'Scaling Playbook' provides:

1) Intro to what we are learning about scaling at IDRC

2) Elaborates the complementarity of "scaling science" to "knowledge translation"
   - *What* makes it different
   - *Why* it matters

3) Practical & evidence-based tool, in the form of a series of guiding questions to address scaling at different stages of a research process
   - *How* researchers might act on it

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Example worksheets from the Playbook
(Putting evidence into practice)

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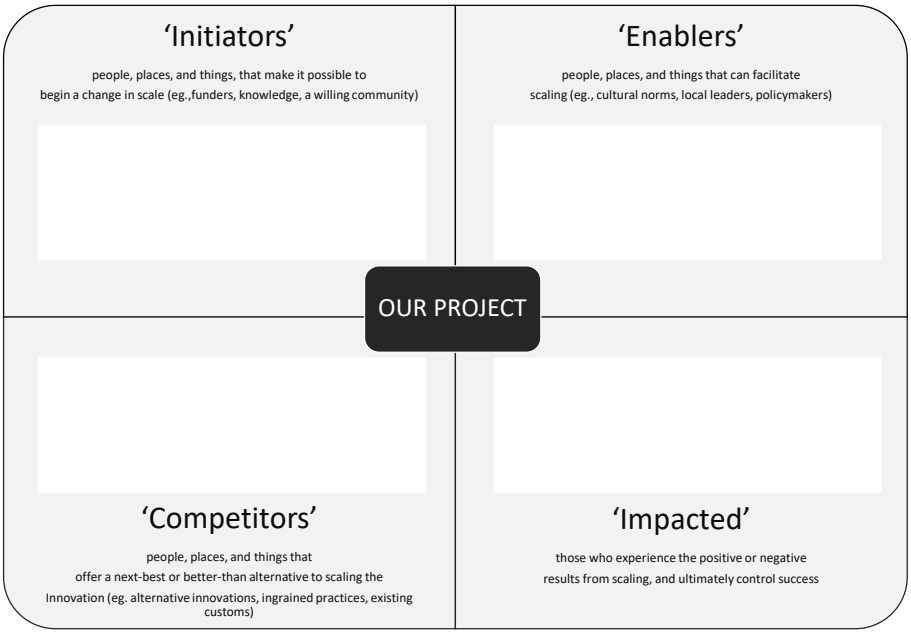
Coordination - *Mapping the 'Scaling System'*



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Building a multi-dimensional understanding of impact for 'optimal scale'

Dimension	How would you describe "optimal" for each dimension?	What evidence will you collect to gauge this impact?	What other stakeholder(s) should you consult, & why?
Variety (e.g. health outcomes; environmental outcomes; financial benefit; for who?)			
Magnitude (e.g. number of people served; quality of change; local, regional, national coverage?)			
Equity (e.g. do some sub-groups fare better than others? Who wins? Who is left behind?)			
Sustainability (e.g. are impacts durable? Why? Why not? How can strength be built?)			

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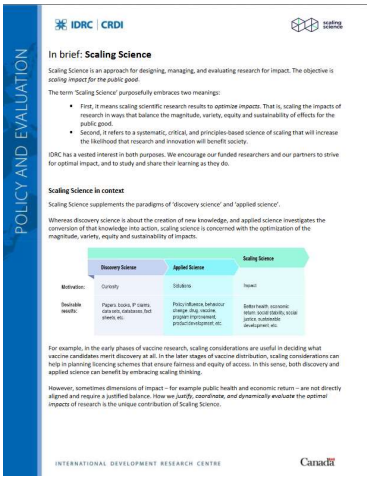
Resources: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POLICY AND EVALUATION

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.

	Discovery Science	Applied Science	Scaling Science
Motivation:	Curiosity	Solutions	Impact
Deliverable results:	Papers, books, IP claims, data sets, databases, fact sheets, etc.	Policy influence, behaviour change, drug, vaccine, program improvement, product development, etc.	Better health, economic return, social liberty, social justice, sustainable development, etc.

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.

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

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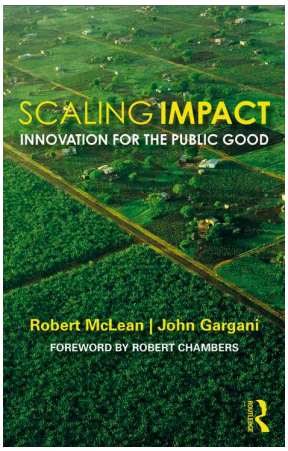
InBrief
2 min summary of Scaling Science @ IDRC



Routledge Book
Deep dive into principles, pathways, and a framework for scaling science. Uses 5 Cases Studies.

Visit:

www.idrc.ca/scalingscience

for more tailored materials…

- Translations to French & Spanish
- Articles and blogs for different audiences
- Reports and videos from the scalingXchange (soon!)
- And more…

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SCALING SCIENCE

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THANK YOU!!

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