Centre for Capacity Research
Advancing the science of capacity strengthening for sustainable development

Designing Research Capacity Strengthening (RCS) Components within Research Proposals

Tuesday 4th May 2021

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Session Outline

Training Objectives

How to approach writing the RCS section of proposals including:

1. Systematically planning RCS activities at three levels
2. Designing the activities with partners
3. Indicators for monitoring progress and collecting data against indicators
4. Reporting on research capacity strengthening achievements

Session Structure

- Three sections: definitions, design & implementation, evaluation
- 45 minute presentation + Q&A/30+ minute 'clinic'
- References for all presented information, listed throughout & at end

RCS - Definitions

Definitions of RCS

31/172 RCS papers since 2000 presented a definition*

25 different definitions, none cited by more than 3 papers

Our favoured definition:

*"the ongoing process of empowering individuals, institutions, organisations and nations to: define and prioritise problems systematically; develop and scientifically evaluate appropriate solutions and share and apply the knowledge generated"***

*Dean et al. Advancing the science of health research capacity strengthening in low- and middle-income countries: A scoping review of the published literature, 2000-2016. *BMJ Open.* 2017; 7e018718. https://bmjopen.bmj.com/content/7/12/e018718

**Lansang MA & Dennis R. Building capacity in health research in the developing world. *Bulletin of the World Health Organization. 2004 ; 82(10) : 764-770* https://apps.who.int/iris/handle/10665/72656
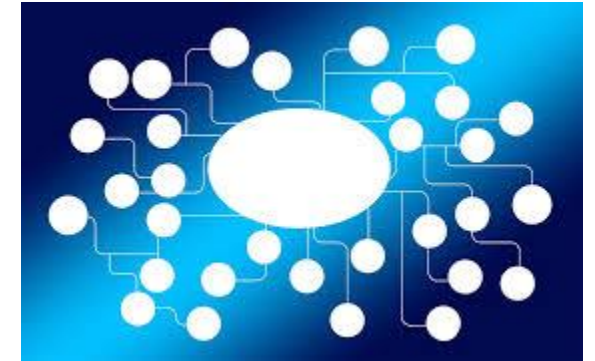
The 3 'levels' of RCS

1. Individual

2. Institution

3. Environment

- Postgraduate Scholarships
- Training/fellowships
- Learn by doing

- Curriculum development
- Centres of Excellence
- Good financial practice & research management standards

- Knowledge translation
- National/international networking
- National research funding

- Categories are not mutually exclusive
- Increasingly, funders seeking 'multi-level' RCS proposals

RCS in Research Proposals

Typically, three 'types' of RCS within research proposals

1. 'Primary' RCS = RCS is the primary objective of the research call, e.g. GCRF 'Growing Research Capacity' call

2. 'Embedded' RCS = RCS is secondary to a primary science objective, e.g. MRC 'Applied Global Health' call

3. '50/50' RCS = RCS is given equal weight to the science objectives, e.g. NIHR NCD Research Centre call

RCS is most often grounded within a development framework = greater research capacity drives population health and socio-economic development (ODA funded research). But can be grounded in other frameworks, e.g. science as a common good

Approach to RCS design, implementation and evaluation does not need to vary across the three 'types'; rather, the variance across types is more likely in scope/ambition. However, the RCS approach could potentially vary depending on the underlying framework.

'Self check' = Am I proposing to do something that I otherwise wouldn't if the need to demonstrate 'RCS' had not been included in the call?

RCS – Design & Implementation

Two Publications:

Pulford et al. **Guidance and conceptual tools to inform the design, selection, and evaluation of research capacity strengthening interventions**. *BMJ Global Health.* 2021; 6(3): e005153 https://gh.bmj.com/content/6/3/e005153

Bates et al. **A practical and systematic approach to organisational capacity strengthening for research in the health sector in Africa.** Health Research Policy and Systems. 2014; 12(11): https://health-policy-systems.biomedcentral.com/articles/10.1186/1478-4505-12-11

Publication One: Pulford et al 2021

- Paper posits that RCS design and/or selection should be informed by:
  - Overarching goal of the RCS initiative
  - Available resources (human, financial, physical)
  - Contextual constraints
- Yet, even considering these factors there will almost inevitably remain multiple & potentially diverse RCS intervention options to consider with limited empirical evidence to inform decision-making

- Three conceptual tools are presented to inform decision-making in this 'evidence poor' context:

1. **Configuration**—what activity, or combination of activities, would the RCS intervention(s) consist of, and to what degree would multiple activities be integrated?

2. **Implementation complexity**—where various RCS intervention options exist then how complex would each intervention option be to implement relative to another?

3. **Anticipated impact**—what might the anticipated impact of alternative RCS interventions be?
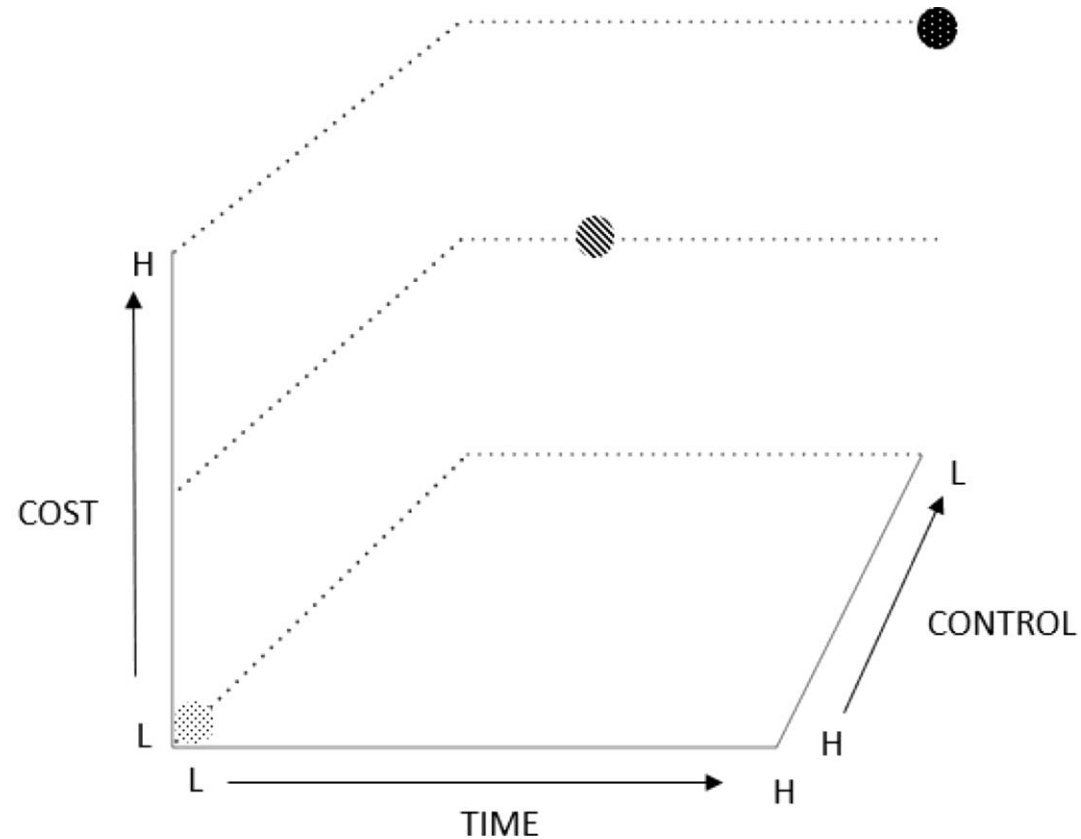
Tool One: RCS Configuration

Research capacity strengthening intervention activities and their potential configuration.

Pulford et al. BMJ Glob Health 2021;6:e005153
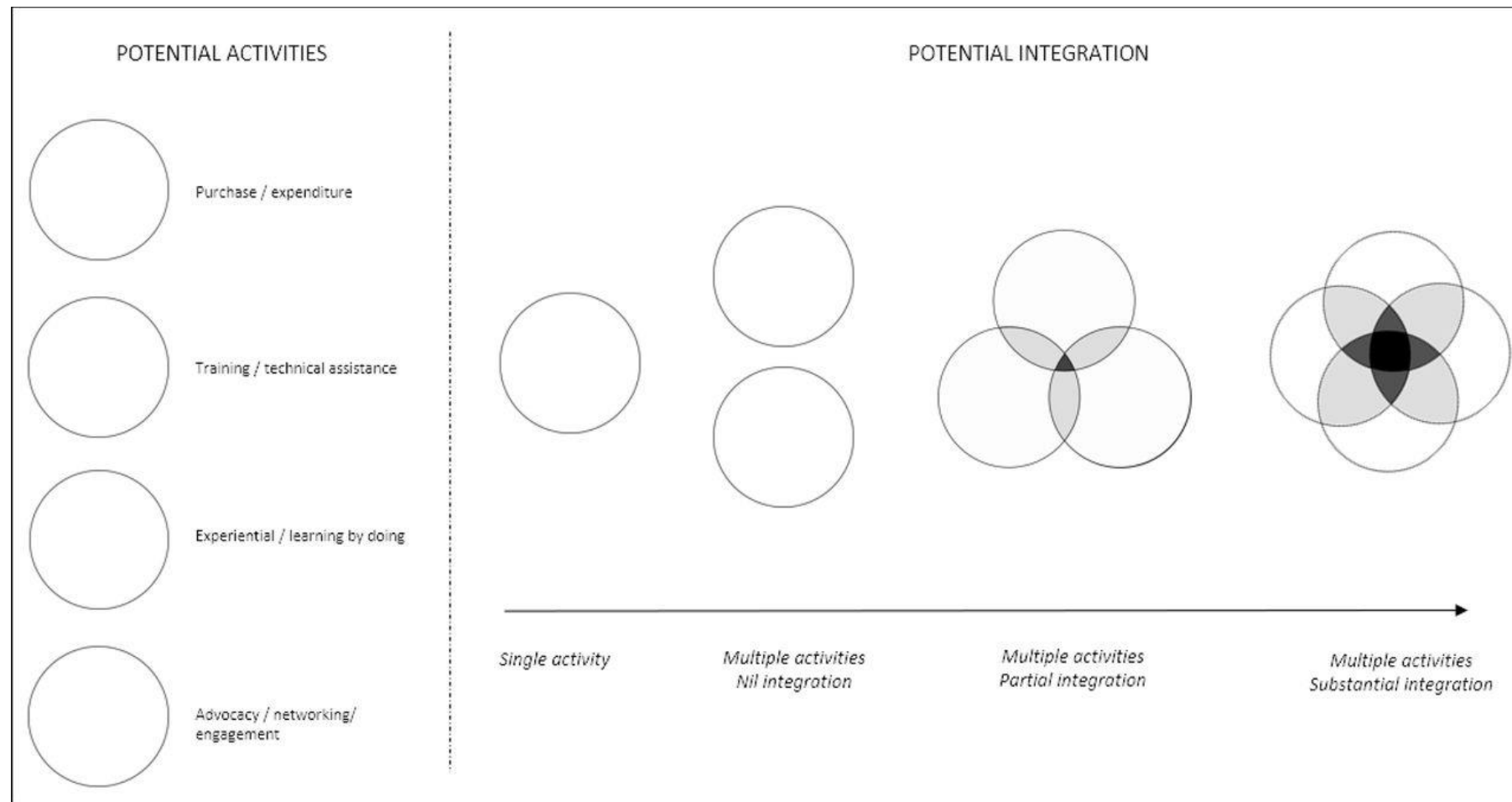
Tool Two: Implementation Complexity

Assessing the relative complexity of implementing a RCS intervention according to cost, time and control.

Least Difficult
Low cost
Low time
High control

Medium Difficulty
Medium cost
Medium time
Medium control

Most Difficult
High cost
High time
Low control

Pulford et al. BMJ Glob Health 2021;6:e005153

Tool Three: Anticipated Impact

RCS interventions plotted by configuration, implementation complexity and anticipated impact.

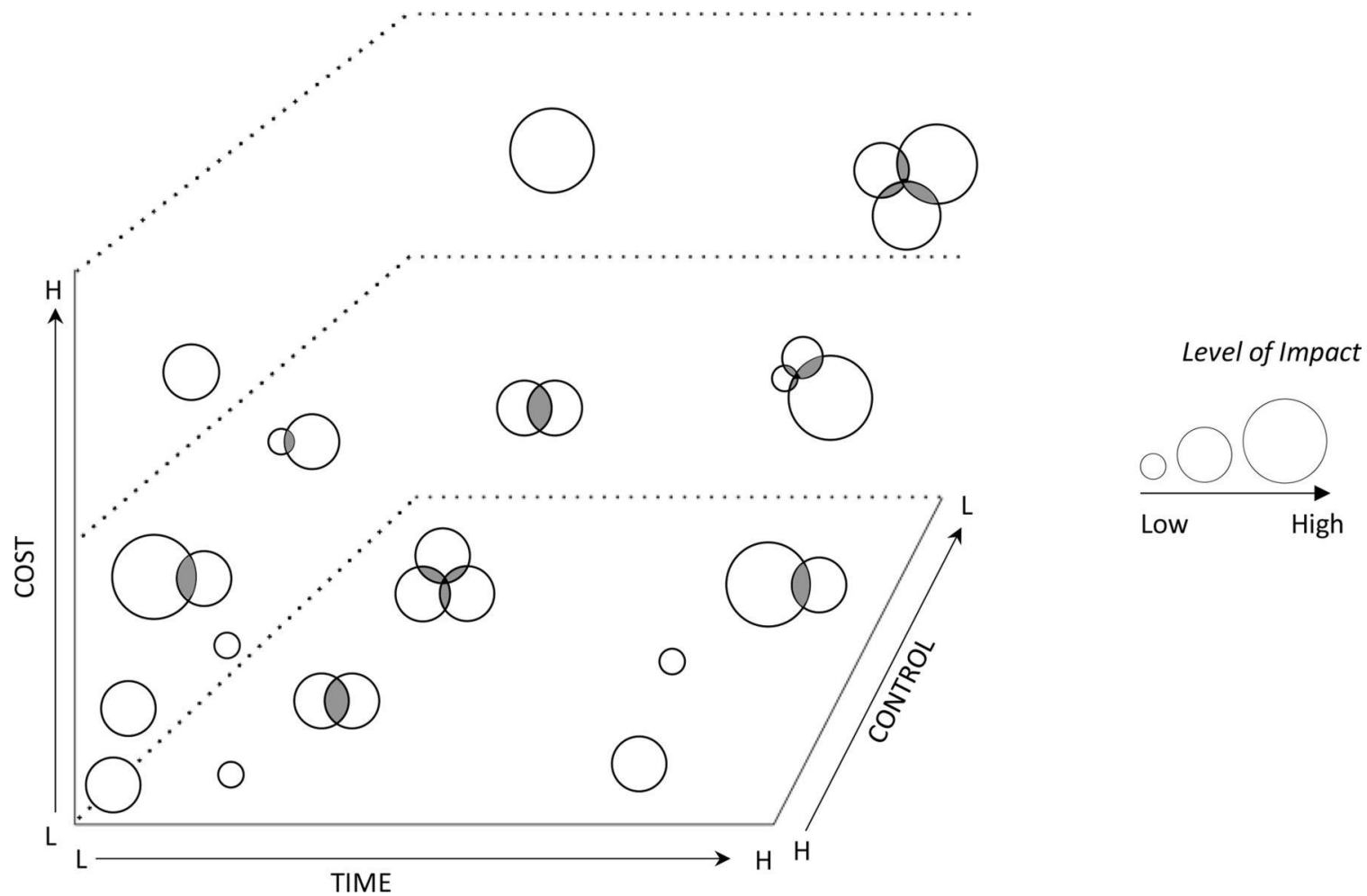# Paper Two: Bates et al 2014

5-stage process for successful research capacity strengthening[1]
Generic and transferable (countries, institutions, research disciplines)

Jointly define the goal of the RCS project

Describe the 'optimal' capacity needed to achieve the goal (to create a benchmark)

Determine existing capacity; identify gaps compared to the benchmark

Devise and implement a locally-owned action plan to remedy the gaps

Learn through doing; revise the plan and indicators regularly

[1]Bates I, Boyd A, Smith H, Cole DC. (2014) A practical and systematic approach to organisational capacity strengthening for research in the health sector in Africa. *Health Research Policy and Systems* 12:11

RCS - Evaluation

Two Publications:

Pulford et al. **Measuring the outcome and impact of research capacity strengthening initiatives: A review of indicators used or described in the published and grey literature**.*F1000Research* 2020, 9:517. https://f1000research.com/articles/9-517/v1

Khisa et al. **A framework and indicators to improve research capacity strengthening evaluation practice**. African Population Health Research Centre & LSTM. June 2019. https://www.gov.uk/dfid-research-outputs/a-framework-and-indicators-to-improve-research-capacity-strengthening-evaluation-practice

Paper One: Pulford et al 2020

No. of RCS indicators by type
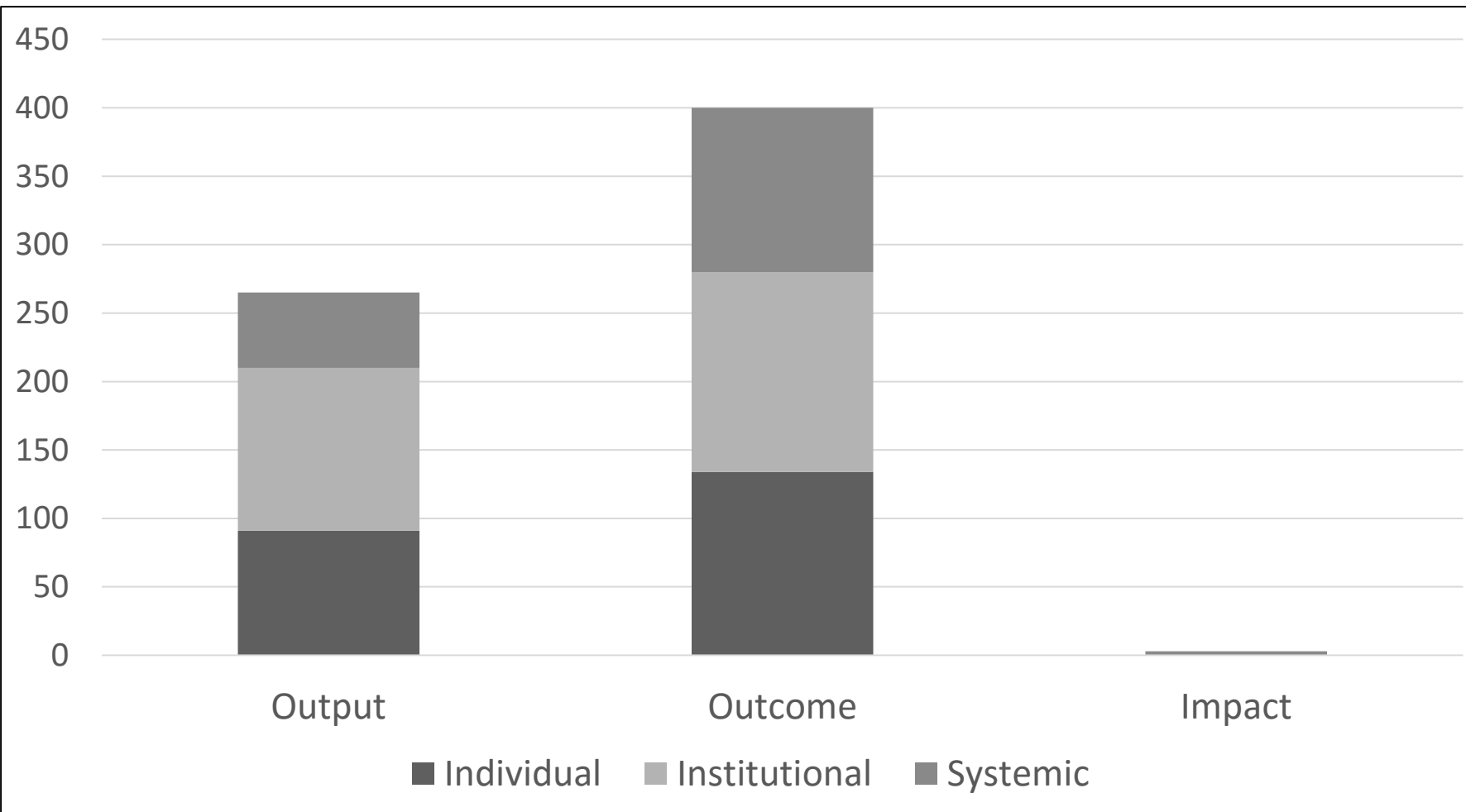
- **32** Publications/reports included in review

- **668** Indicators extracted

- **34%** individual
- **38%** institutional
- **21%** systemic

Quality of Outcome Indicators (N=400)

Focus	No	Quality Measure				All 4 Quality Measures Evident
		Implied %	Defined %	Sensitive to change %	Time-Bound %	%
Bibliometrics	31	100	42	29	6	3
Collaboration Activities	**53**	100	13	9	0	0
Infrastructure	5	100	20	0	0	0
Knowledge Translation	39	100	18	18	0	0
Recognition	11	100	27	18	0	0
Research Funding	25	100	56	40	12	12
RMS	**97**	100	7	7	1	1
Skills/Knowledge	**62**	100	27	0	21	0
Other	77	100	19	19	1	1
Total	**400**	**100**	**21**	**13**	**5**	**1**

E.g. of 4 * indicator
"Completed research projects written up and submitted to peer reviewed journals within 4 weeks of the course end"

Indicator Examples: Individual Level

Excerpt from 'Table 1. Number of individual level outcome indicators by category and sub-variant'

Category	Variant	Number	Example Indicator
Bibliometrics	Peer-reviewed publication	5	Number of articles published in peer-reviewed journals
	Publication	13	Number of conference papers
	Reference	3	Citations
	Quality	6	Publications with impact factor indexed in WoS
Collaboration Activities	Engagement	10	Evidence of contribution/membership to networks
	Establishment	4	Development of sustainable research collaborations
	Experience	1	Attitudes/behavior are conducive to working effectively in partnership towards development goals
Knowledge Translation	Dissemination	4	Applied dissemination of findings
	Influence	5	Evidence of influence on local strategy & planning
Recognition	Appointment	2	Editor of international/national conference proceedings
	Awards	3	Number of awards/type of awards
	Reputation	3	Invitations to speak at meetings

Full list of retrieved indicators from all three RCS 'levels' listed in: Pulford et al 2020. *F1000Research* 2020, 9:517.

Paper Two: Khisa et al 2019
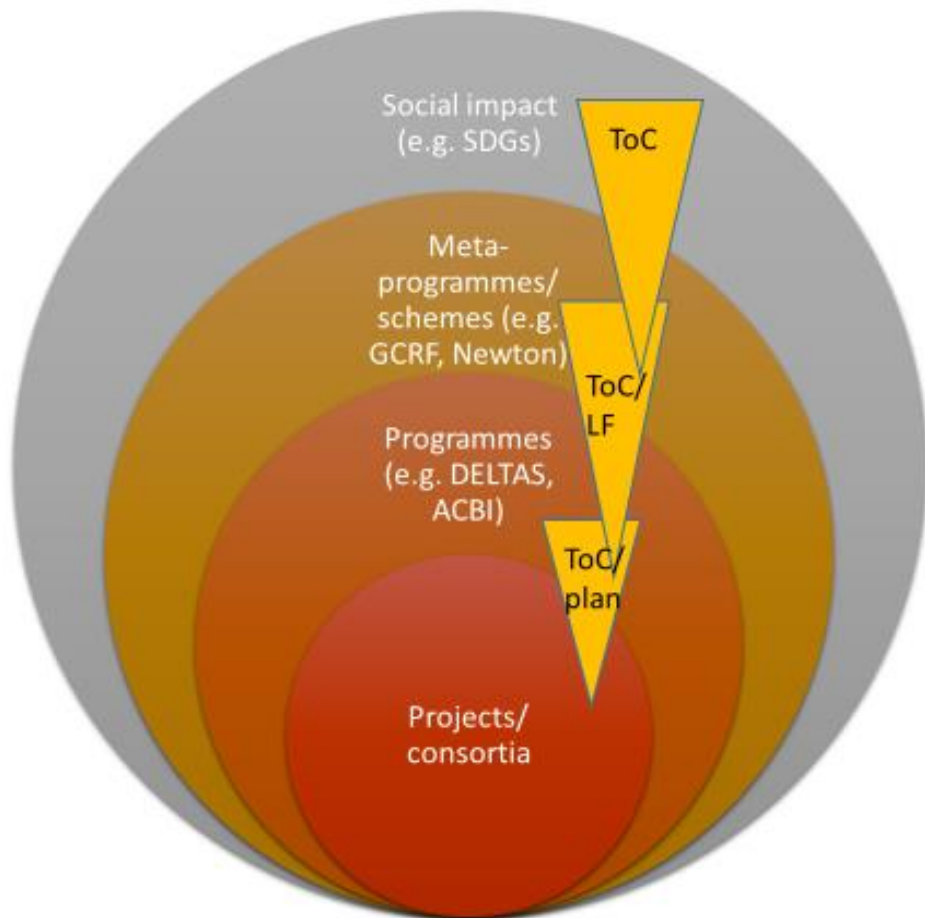
To develop RCS evaluation **framework**......

- Initial draft based on collation/harmonisation of components of RCS evaluation frameworks from literature and our experience
- Iteratively adjusted to incorporate RCS indicators
- Revised and validated through workshops and key informant interviews (RCS funders and implementers)

To identify **indicators** for each component of the framework......

- Collate indicators used for RCS evaluations from literature (24 papers) and 35 RCS programme documents
- Expand and validate indicators through workshops and key informant interviews
- Map indicators onto RCS evaluation framework

Setting appropriate outcome/impact measurement expectations

Nested ToCs

The RCS benefit 'flow'

Khisa et al. A framework and indicators to improve research capacity strengthening evaluation practice. APHRC & LSTM, June 2019.
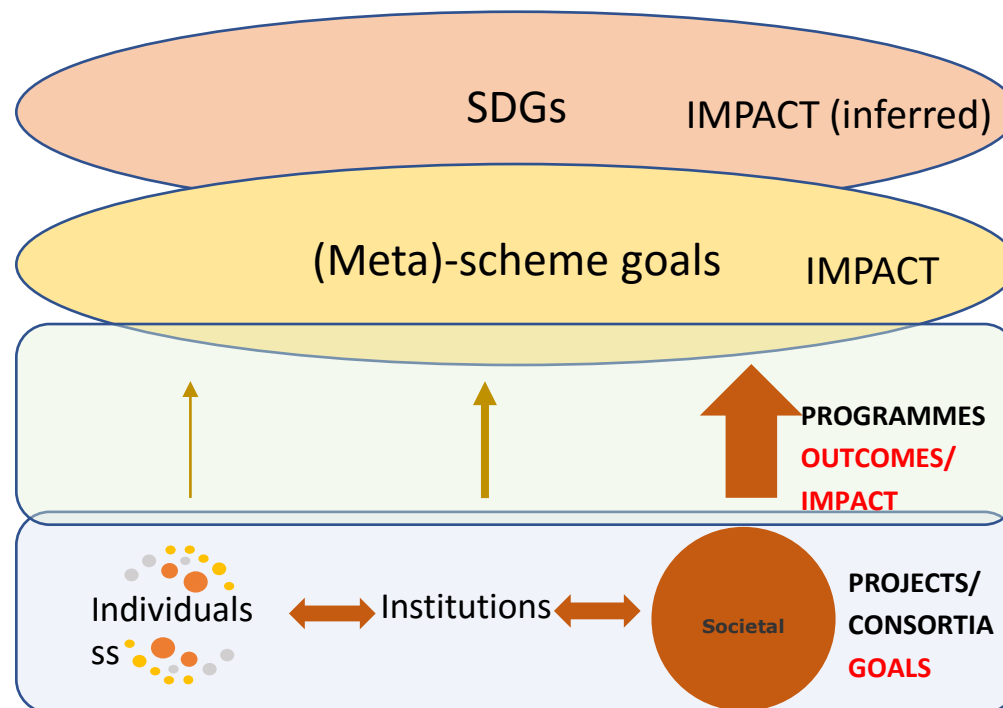
RCS evaluation framework

Provision and quality of training for research team	**Individual level**
Recognition of research leadership/esteem	
Career trajectory	
Provide/support career pathways for research team	**Institutional level**
Internationally competitive research and grants	
Research environment – finance, library, IT, labs etc	
National: research councils/research productivity	**'Societal' level**
International: networks/ collaborations	
Research impact and user engagement	

Examples of indicators: individual level

Provision and quality of training for research team	Quality of graduates from RCS programmes (e.g. technical capability, critical thinking skills, confidence, empowerment, scientific, employability) appropriate for career stage
	Individualised training needs assessments conducted and reviewed
Recognition of research leadership/esteem	Increase in confidence and empowerment to take leadership positions
	Able to create and/or manage multi-disciplinary teams
Career trajectory	Evidence of progressing in chosen career
	# networks and collaborations joined or initiated

Examples of indicators: institutional level

Provide/support career pathways for research team	Transparent, equitable promotion criteria and processes, and career progression
	Mentoring scheme (inter-generational) available and effective
Internationally competitive research and grants	Consistent, quality research productivity (grants, publications, patents, start-ups, commercialisation)
	Ability (or on a trajectory) to support the 'research pipeline' from basic science to community/ behavioural change/ industry uptake
Research environment – finance, library, IT, labs etc	RCS strategic plan, with funding, implemented and monitored
	% of budget spent on strengthening research systems

Examples of indicators: 'societal' level

***National*: research councils/research productivity**	Ability to manage transparent, efficient and competitive processes for allocating national research funds
	Research productivity (funds, publications, patents) + trends
***International*: networks/ collaborations**	Research hubs – number, diversity, esteem, infrastructure
	International mentorship
Research impact and user engagement	Research-influenced policies
	Innovations that impact on society

Useful References

- Pulford J, Price N, Amegee Quach J & Bates I. Measuring the outcome and impact of research capacity strengthening initiatives: A review of indicators used or described in the published and grey literature [version 1; peer review: 3 approved] *F1000Research* 2020, 9:517. https://f1000research.com/articles/9-517/v1

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- Cooke J, Gardois P, Booth A. Uncovering the mechanisms of research capacity development in health and social care: a realist synthesis. *Health Res Policy Syst.* 2018;16(1):93. https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-018-0363-4

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- Bates et al. A practical and systematic approach to organisational capacity strengthening for research in the health sector in Africa. *Health Res Policy Syst.* 2014; 12(11): https://health-policy-systems.biomedcentral.com/articles/10.1186/1478-4505-12-11

- Boyd et al. Frameworks for evaluating health research capacity strengthening: A qualitative study. *Health Res Policy Syst.* 2013; 11(46): https://health-policy-systems.biomedcentral.com/articles/10.1186/1478-4505-11-46

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