

Evaluation of the RCA Medium Term Strategy 2018-23

Impact Evaluation Work to Date

Meeting of the Working Group on Coordination of the RCA MTS 2018-2023

30 July – 2 August 2018
Seoul Korea

What has the RCA WG MTSC done so far with respect to outcome/impact evaluation?

1. Attempt to apply OECD-DAC evaluation framework in a pilot project to evaluate outcomes and, if possible, impacts
 - This was not possible due to lack of readily available evidence
2. Attempt to apply Outcome Harvesting approach in a pilot project
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RCA Medium Term Strategy, 2018-2023

Vision: The RCA shall be recognized as an effective partner in providing nuclear technologies that enhance socio-economic wellbeing and contribute to sustainable development in the region.

Strategic Priorities

- Food and agriculture
- Human health
- Industry
- Environment (includes air pollution)
- Radiation safety
- Energy planning

Performance Indicators

- Ownership
- Soundness
- Sustainability
- Impact

Working Group, Coordination of MTS 2018-23

History

- Formed by RCA NRs, 2017
- Purpose: to coordinate activities to achieve effective implementation of the MTS
- Incorporates Human Resource Development
- Incorporates Resource Mobilisation
- Mid-term review of MTS effectiveness in 2020

Members

- Chris Daughney (NZE), Chair
- Mark Alexander (AUL)
- Mika Okoshi (JPN)
- Alum Dela Rosa (PHI)
- Syed Hossain, A.S.M Saifullah (BGD)
- Mi-kyung Han, Jae Eun Choi (ROK)
- Noriah Jamal (MAL)

Ex-officio members

- HyunKyoung Jeon, Soo Youn Hwang (RCARO)
- John Easey (RCA PAC Chair)

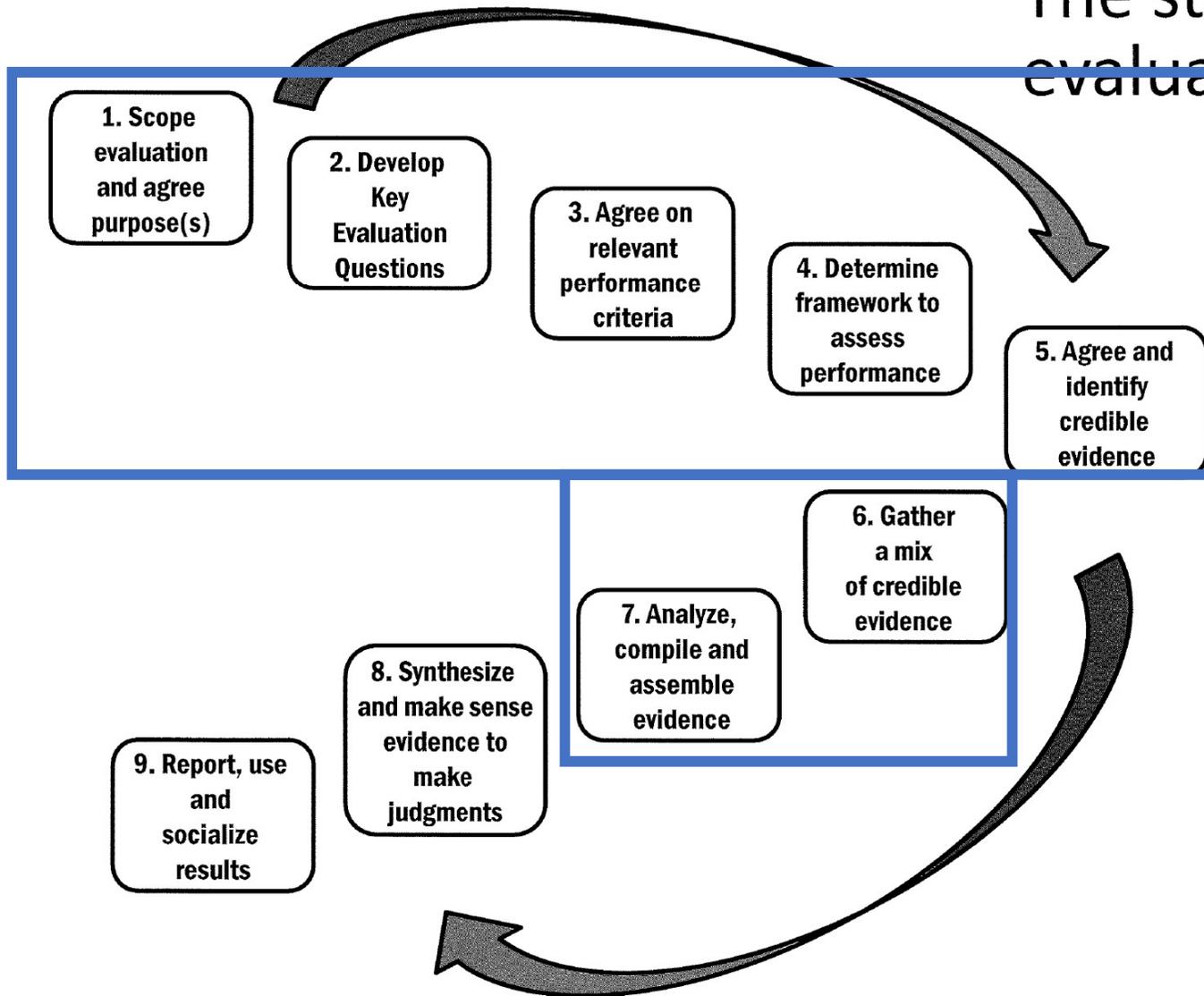
Evaluation

Systematic determination of the **quality, value or importance** of something (a project, initiative, programme, organization, etc.) in order to be better informed and maybe take action

Underpinned by collection of information & evidence about the inputs, activities and outcomes of the project, programme, organization, etc.

Key purposes are to determine **how well** something is doing or was done, **what its value** is or was, **how important** it was, and if it **worth doing more** of it.

The steps of evaluation



RCA MTS 2018-23 Performance Indicators

1.	Ownership
1.1	Degree of GPs' commitment to RCA Governance
1.2	Degree of GPs' commitment to implementation of their allotted portions of the RCA projects
1.3	Efforts made by GPs to provide additional support to RCA programme through EB or IK contributions
2.	Programme soundness
2.1	The RCA programme is in full alignment with the MTS
2.2	Alignment of RCA projects to national programmes in all participating recipient GPs
2.3	Well-identified and defined project outcomes and beneficiaries

3.	Programme Sustainability
3.1	Required financial resources available for the full implementation of the RCA activities
3.2	Required human resources available for the full implementation of the RCA activities
3.3	Required physical resources, nuclear and associated infrastructure available for the full implementation of the RCA activities
4.	Programme impact
4.1	Contribution of projects to overall sustainable development in the region, through assessable impacts in socio-economic development and environmental protection (in relation to SDGs)
4.2	The RCA programme is recognised as an effective partner contributing to achievement of socio-economic development and environmental protection for the region (in relation to SDGs)

RCA Generic Performance Levels

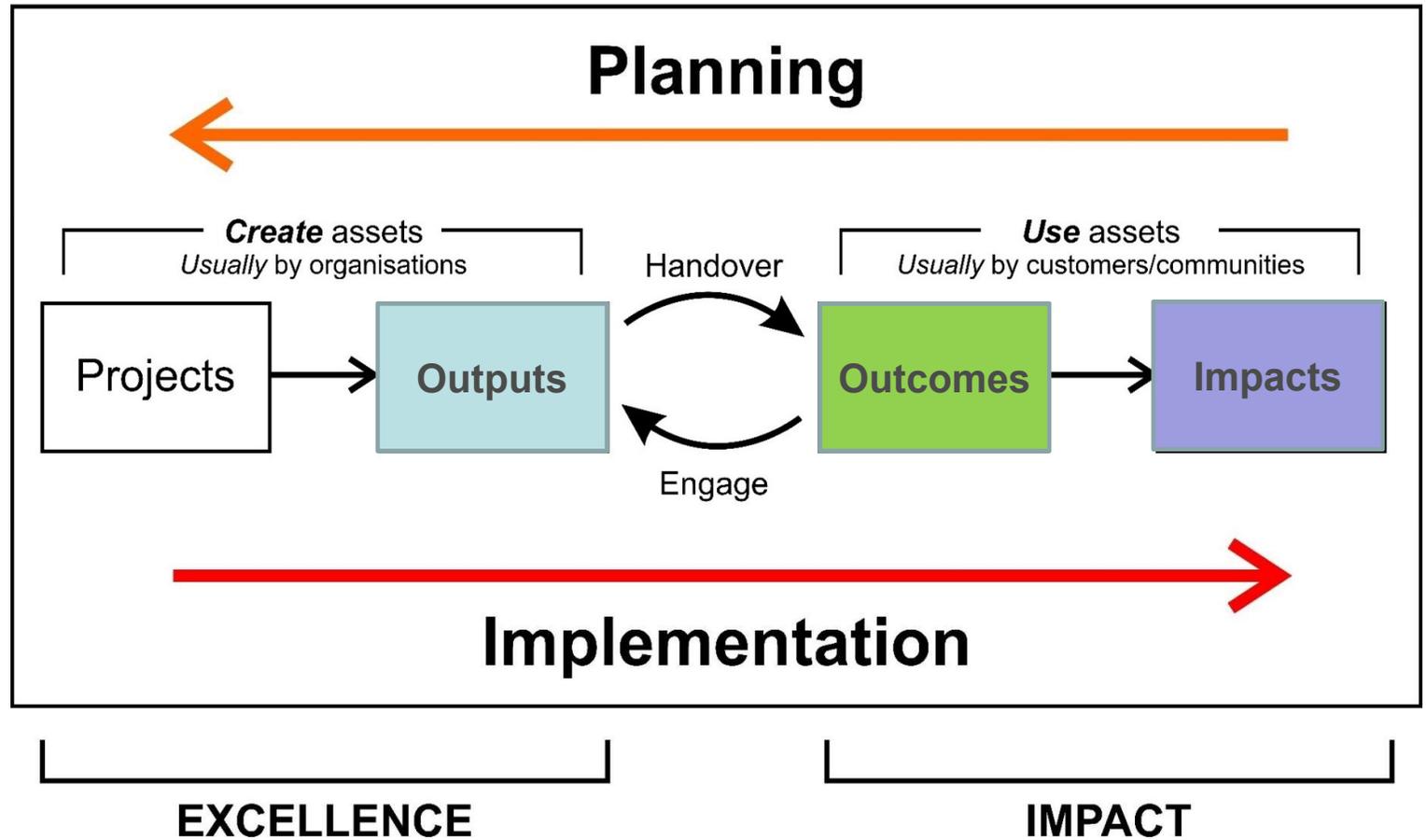
Excellent	Performance is clearly very strong or exemplary. The programme has completely met the needs of all key stakeholders, possibly exceeding expectations in some areas. Any gaps or areas for improvement are minor and are being managed effectively.
Very good	Performance is strong. The programme has substantially met the needs of key stakeholders. Any gaps or areas for improvement are not significant.
Good	Performance is consistent and the programme has mostly met the needs of key stakeholders. Some gaps and weaknesses and some areas for improvement are evident, although none are very serious and they are being well managed.
Adequate	Performance is inconsistent, although the programme has met at least some of the core (not just minor) needs of at least some key stakeholders. Important gaps are evident. Meets expected or minimum expectations / standards / requirements as far as can be determined.
Inadequate	The programme fails to meet the needs of key stakeholders, possibly with detrimental effects in relation to its objectives. Does not meet minimum expectations / standards / requirements.
Insufficient Evidence	Evidence is unavailable or of insufficient quality to determine performance.

4. Programme impact				
PI	Performance Indicator	Targets for Excellent performance	Means of verification	Notes
4.1	Contribution of projects to overall sustainable development in the region, through assessable impacts in socio-economic development and environmental protection (cf SDGs)	<ol style="list-style-type: none"> By 2020, baseline for outcome/impact measure(s) is known. By 2023, detectable improvement (of any magnitude) against baseline. 	<ol style="list-style-type: none"> Scoring of Impact Cases collected through Outcome Harvesting procedure, to be completed by GCM 2019. Repeat scoring of Impact Cases, to be completed by GCM 2022. 	<p>This is a measure of actual outcomes or impact. Our biggest challenge is that we have no idea what the baseline is. Therefore, we simply set the target of determining baseline.</p> <p>We note that, by 2023, there may not yet be any measurable impacts for projects that have taken place in the 2018-23 period of the MTS.</p> <p>Therefore, this assessment will evaluate project outcomes (e.g. uptake of project outputs by end-users), in addition to attempting to measure impacts.</p>
4.2	The RCA programme is recognised as an effective partner contributing to achievement of socio-economic development and environmental protection for the region (cf SDGs)	<ol style="list-style-type: none"> By 2020, baseline is known for perceived value of RCA programme by stakeholders in the region. By 2023, detectable increase (of any magnitude) against baseline. 	<ol style="list-style-type: none"> Perception Survey of RCA stakeholders by GCM 2019. Repeat Perception Survey of RCA stakeholders by GCM 2022. 	<p>This is a measure of GPs perception of potential impact. The RCA Vision states ‘the RCA will be recognised as an effective partner...’ so tracking the effectiveness of the MTS requires tracking of ‘recognition’</p> <p>In addition, it’s really hard to measure actual impact, so a good complementary measure is to determine GPs perception of potential impact.</p> <p>WG MTSC will need to design and implement RCA Stakeholder Perception Survey by GCM 2019.</p>

Benefit = Positive Impact

Organisations run **P**rojects to create **R**esults (assets, knowledge etc) that people **U**se to create **B**enefits

How are impacts generated?



What are impacts?

Impact: Positive* and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.

OECD 2002

(Definition now adopted across UN)

** I am using the word **Benefits** for positive impacts*

17 Sustainable Development Goals (UN)



THE SUSTAINABLE DEVELOPMENT GOALS

- | | | |
|---|---|--|
| 1. End poverty in all its forms everywhere | 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all | 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development |
| 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture | 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation | 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss |
| 3. Ensure healthy lives and promote well-being for all at all ages | 10. Reduce inequality within and among countries | 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels |
| 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all | 11. Make cities and human settlements inclusive, safe, resilient and sustainable | 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development |
| 5. Achieve gender equality and empower all women and girls | 12. Ensure sustainable consumption and production patterns | |
| 6. Ensure availability and sustainable management of water and sanitation for all | 13. Take urgent action to combat climate change and its impacts | |
| 7. Ensure access to affordable, reliable, sustainable and modern energy for all | | |

www.guttmacher.org

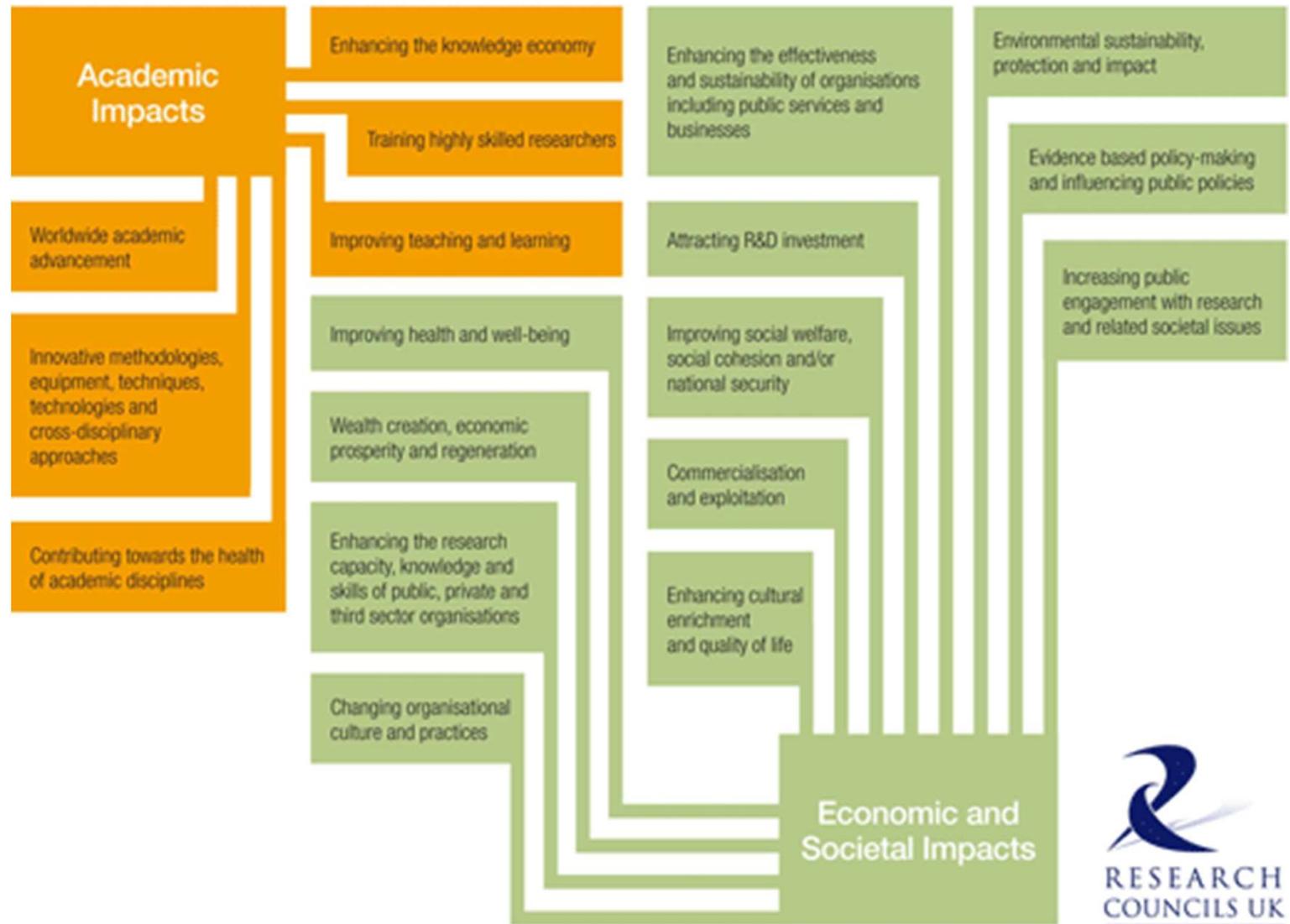
Types of impact

NZ NSSI 2015

ECONOMIC	ENVIRONMENTAL	HEALTH & WELLBEING	SOCIAL
New/improved products and services	Reduced or mitigated environmental impact	Improved population health and health status for disadvantaged groups	Increased knowledge of and interest in science
Reduced operating costs or commercial risk	Reduced or mitigated environmental risk	Reduction in health maintenance costs	Understanding of and resilience to real or perceived communal risk
New job opportunities	Improved condition of an environmental asset	Early detection and mitigation of health risks	Stronger social and infrastructure systems and improved techniques for delivery of public services
Improved business and industrial processes	Better understanding of the environment, and characterisation and management of natural capital	Improved wellbeing through development of human and social capital, and removal of institutional barriers	
Value extraction from existing science			
Improvements in public policy advice			
VISION MĀTAURANGA			
Indigenous innovation: economic growth through distinctive R&D	Taiao: sustainability through iwi and hapū relationships with land and sea	Hauora/Oranga: improved health and social wellbeing	
Mātauranga – explore indigenous knowledge for science and innovation			

Types of impact

RCUK 2014



Recognised challenges in impact evaluation

- **Project outputs need to be adopted to create impact**
 - The people that drive the intervention are not the same people who create the impact
- **Long time from intervention to impact**
- **Achievement of one impact may have required many different interventions**
- **One intervention may lead to many different impacts**

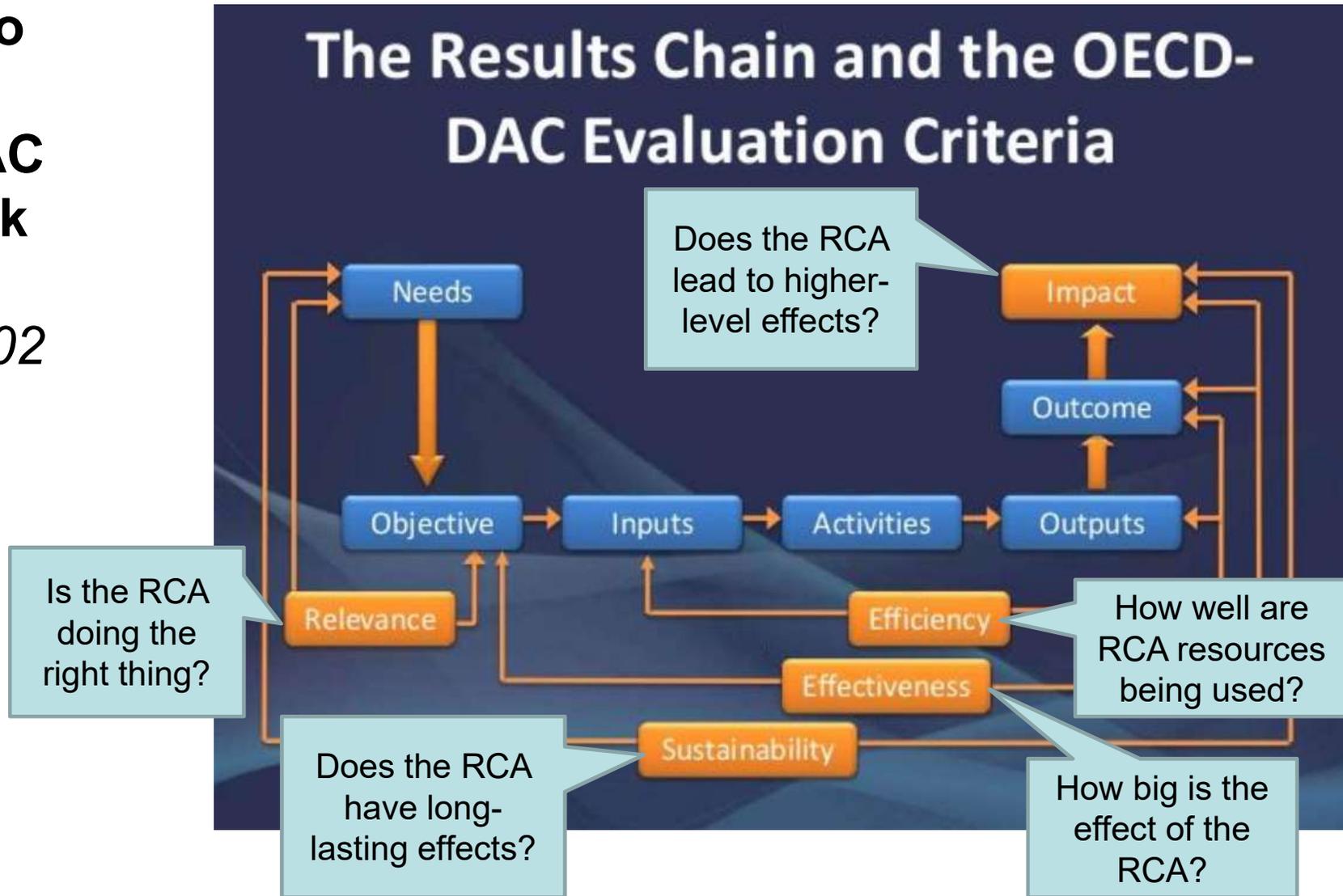
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Attempt to apply the OECD-DAC framework

OECD 2002



Pilot using OECD-DAC evaluative approach

- **40th NRM endorsed a feasibility study on impact evaluation**
 - Use OECD-DAC impact evaluation framework
 - Test application to one RCA thematic area as an example
 - Evaluate progress towards stated objectives of the project, using SDGs indicators as potential metrics
 - Report on if/how the project could have been designed differently to facilitate impact evaluation, e.g. better baseline data and impact indicators
- **Pending results of the pilot study, incorporate appropriate features into Project Designs for 2020/21 to facilitate future impact evaluation**

Pilot impact assessment on air particulate matter projects

Aim to determine whether readily available project information could be used to conduct an assessment of project outcomes (not necessarily long-term impacts)

No.	Title	Years
RAS8082	Isotopic and Related Techniques to Assess Air Pollution (Joint UNDP/RCA)	1999 – 2002
RAS7013	Improved Information about Urban Air Quality Management	2003 – 2007
RAS7015	Characterization and Source Identification of Particulate Air Pollution in the Asian Region	2008 – 2012
RAS7023	Supporting Sustainable Air Pollution Monitoring Using Nuclear Analytical Technology	2012 – 2015
RAS7029	Assessing the Impact of Urban Air Particulate Matter on Air Quality	2016 – 2019

Pilot impact assessment on air particulate matter projects

Aim to determine whether readily available project information could be used to conduct an assessment of project outcomes (not necessarily long-term impacts)

Could I obtain documents that would tell me about project outcomes or impacts?

- **Final Project Design documents** (including LFM and WP) were not readily available!
 - Projects prior to 2010 were not available through PCMF
 - PCMF versions did not seem to be the same as were submitted to NRs
- **Project presentations made at NR meetings** were available since RCARO started to archive them
- **PPARs** are not readily available
- **RCA Annual Report** is available
- **RCARO success stories** can be found for some projects through website

- But I was able to obtain many of these because the long-term LCC has his office just down the hall from mine!

Says very little about the longer-term impact, the pathway to achieving that impact, or the means of verification that it has been achieved!!

Pilot impact assessment on air particulate matter projects

Design Elements	Narrative Description	Indicators	Means of Verification
Overall Objective	Improved understanding of human health, visibility and cultural heritage objects	Improvement in source reduction of fine particulate matter related to health issues (also applies to cultural heritage objects) and visibility by the end of project.	New Data on fine particulate matter and visibility available at end of project.
Outcome (Specific Project Objective)	<ol style="list-style-type: none"> 1. Assessment of impacts of local industries, coal burning for power production, manufacturing, motor vehicles etc. on fine particle urban air sheds using nuclear analytical technologies. 2. New Relationships between fine particle composition (Black Carbon, sulphates, nitrates, soil and others) and light scattering and visibility established. 3. Impacts of fine particulate matter pollution on cultural heritage objects identified. 	<ol style="list-style-type: none"> 1. Anthropogenic sources of fine air particulate matter identified and information shared with end-users. Information disseminated at national seminars. 2. Reports on relationships by national project coordinators by end of project. 3. Reports by national project coordinators by the end of project. 	<ol style="list-style-type: none"> 1. National databases on fine particulate matter and end-users initiated. Also national seminars organized. 2. Relationships between sources and light scattering and visibility established at training courses. 3. Results of nuclear analytical techniques reported by national project coordinators at the end of project.

RAS7029 LFM

Country	external user industrial engagement increase	influence in the decision/policy making to revise or update air quality guideline values	NAT facility, capability and capacity building
AUS	Y	N	Y
BANGLADESH	Y	N	Y
China	Y	Y	Y
India	Y	N	Y
NZ	Y	N	Y
Indonesia	Y	Y	Y
Malaysia	Y	Y	N
Mongolia	Y	Y	Y
Myanmar	N	N	N
Pakistan			
Philippines	Y	Y	N
Republic of Korea	Y	N	Y
Sri Lanka	Y	N	N
Vietnam	Y	N	Y
#of Yes	12	5	9

Seems to be good uptake and outcomes, but the information from the report is not sufficiently detailed or independently verifiable.

Impact Assessment Pilot should switch to Outcome Mapping method

Box 1 Outcome Mapping

Outcome Mapping (OM) was first introduced by Sarah Earl, Fred Carden and Terry Smutylo from the International Development Research Centre (Earl et al., 2001). It focuses on outcomes as defined as changes in behaviour, relationships, activities and actions, and in doing so recognises early changes and progress towards higher-level goals. OM differs from conventional logic models by recognising that different actors affected by activities exist in different environments, and it is explicitly designed for non-linear, systemic change processes (Young et al., 2001; Jones and Hearn, 2009). It does not try to attribute outcomes but rather explores plausible contributory links between interventions and behaviour changes, therefore allowing for complex and non-linear relationships between activities and results.

Example from REF2014, undertaken by RCUK

Institution: University of Cambridge
Unit of Assessment: UoA1
Title of case study: Evidence based imaging – Impact of Body CT and MRI in clinical practice.
1. Summary of the impact (indicative maximum 100 words) Computed tomography (CT) and Magnetic Resonance Imaging (MRI) have revolutionised the practice of medicine by providing improved diagnostic accuracy resulting in improved clinical management and outcome. The evidence-based medicine approach developed by Professor Dixon and his team contributed to the timely evaluation of these technologies. Several of his studies proved improved outcome measures, including reduced mortality, shorter in-patient stay and enhanced diagnostic confidence. Examples include: CT of patients with acute abdominal problems and possible large bowel disease; CT for suspected pulmonary embolism; MRI for lumbar spine disease; MRI for knee and shoulder problems. These informed radiological guidelines adopted across Europe.
2. Underpinning research (indicative maximum 500 words) Professor Adrian K Dixon (Department of Radiology, University of Cambridge, UGC Funded, tenured since 1979, Professor since 1994) and his team have been at the forefront of introducing new Body CT and MRI techniques into the UK for the last three decades. His main research contribution has been to pioneer the rigorous evaluation of evolving imaging techniques in patients, wherever possible by randomised trials comparing the effectiveness and cost effectiveness of the novel imaging against the existing conventional management pathway. He also pioneered the development of image guided interventional techniques.
<u>Technology Assessment</u> In 1995 Dixon developed templates for assessing technical efficacy, diagnostic impact, clinical

<https://www.odi.org/sites/odi.org.uk/files/resource-documents/12155.pdf>

Outcome Harvesting – Reporting template for RAS7029 distributed to NPCs prior to Final Coordination Meeting

An Outcome is a change or benefit to:

- the behaviour, activity, capacity, performance,
- of an organisation, community, individual, or constituency
- in any geographic or political locale whether local, national, regional or global.

Examples of Project Outcomes include:

- modifications to policies, adoption of new or modified organisational procedures, improved condition of an environmental asset, commercialisation of a new product or service, improved sustainability or efficiency of an organisation, etc.

Note that Outputs are different from Outcomes, which are different from Impacts

- For example: an Output might be a source apportionment database, which could lead to a near-term Outcome that a new policy is created to reduce air particulate matter emissions from certain sources, which could lead to the longer-term Impact of reduced mortality from air particulate matter pollution

Please list Outcomes even if they relied partially on activities undertaken in a previous RCA project or any other aligned regional, national or local project

Outcome Harvesting – Reporting template for RAS7029

<p>Outcome description: In 2-3 sentences, summarise the observable change in the behaviour, capacity, performance, relationships, activities or actions that resulted from this project, and its significance.</p>	
<p>Who: Be as specific as possible about the individual, group, community, organisation or institution that changed or benefited.</p>	
<p>When: Be as specific as possible about the date the change occurred and how long the change is likely to last or endure.</p>	
<p>Where: Specify the political or geographic locale where the change occurred, e.g. locally, nationally, regionally and/or globally.</p>	
<p>Project’s contribution: In 2-3 sentences, explain the specific contribution of the project to the outcome you’re describing, and which specific project activities and/or outputs led to the outcome</p>	
<p>Means of verification: Provide publications, web pages, letters of support and/or other evidence that allows the outcome to be independently verified.</p>	

Outcome Harvesting – RAS7029 – Example Mongolia

Outcome description	By the result of study “PM pollution baseline Establishment of Ulaanbaatar City” Stove change program started as main measure to reduce air pollution of UB city, as main pollution source (91% of PM2.5) was household stoves. PM2.5 pollution was reduced 30%, decreasing every year, in spite of that number of households were increasing 30%
Who:	165 000 stoves were changed by improved low emission high performance stoves in households
When:	Stove change program was 2011-2015
Where:	Ulaanbaatar city residential households, which heat the dwellings by stoves and coal
Project’s contribution:	RCA project help to identify pollution sources and its apportionment using RCA techniques and support, RRU was helping to analyse filters for the first year, Identifications and apportionment of pollution sources were made by the RCA project techniques
Means of verification:	the WB report: Air Quality Analysis of Ulaanbaatar Improving Air quality to Reduce Health Impact 2011, www.worldbank.org/eapenvironment

Outcome Harvesting – RAS7029 – Example Malaysia

Outcome description	<ol style="list-style-type: none"> 1. Because of our actively involved in this project our institution always referred for PM 2.5 level 2. Increased the use NAT in various type of environmental sample for research, environmental monitoring, quality of product
Who:	<ol style="list-style-type: none"> 1. Department of Environment (DOE), Meteorological Department 2. Students, lecturers, researcher
When:	<ol style="list-style-type: none"> 1. During haze episode (between May- October) 2. Throughout the year
Where:	<ol style="list-style-type: none"> 1. Department of Environment (DOE), Department of Meteorology 2. Universities, stakeholder, company etc
Project's contribution:	<ul style="list-style-type: none"> • Through this project we produce database and numbers of research paper. These paper have been cited by many researchers, students including stake holder, regulator etc • Every year Malaysian Nuclear Agency organises events to promote the product and services of the agency to customers, stakeholders, students as well as researchers/staff of the agency.
Means of verification:	<p>Knowledge Management Day, 26 Sep, 2018 (poster presented attached and weblink provided)</p> <p>Technology Preview & Showcase and Seminar R&D, 30 Oct-2 Nov, 2018 (poster presented attached and weblink provided)</p>

Outcome Harvesting – RAS7029 – Example Vietnam

Outcome description	Through participating in the project, capability of the INST in air pollution studies has been improved greatly. International relationship in the region has also enhanced strongly, especially in assistance and sharing knowledge and experience in the field.
Who:	Scientific staffs of the INST-VINATOM and students of the HUS (Hanoi University of Science)
When:	Research output at the INST has been disseminated through seminars, conference presentations as well as annual report
Where:	At the INST-VINATOM and the HUS in Vietnam
Project's contribution:	VIE full database has been submitted to the project data coordinator (including elemental concentration and source apportionment results). Results of the contract with the MOST for characterising PM1 and PM2.5 have been submitted to the MOST and VINATOM
Means of verification:	The contract with the MOST for characterising PM1 and PM2.5 funding by the MOST; (web link provided)

A**B****C****D if possible**

[**Time Period**], [**Organisation(s)**] has [**Action or Change**], in part because of [**Project Contribution**]

A

- In 2001,
- Since 1998,
- From 2003 to 2006,

B

- the New Zealand Ministry for the Environment
- the Gunman Prefecture Environmental Protection Agency

has/have

C

- Started to consider using NATs for monitoring APM.
- Contributed funding to operate 5 APM monitoring stations.
- Set a new standard of X for APM for PM2.5 in Dhaka.
- Adopted a new methodology for measuring APM.

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'One sentence' outcome examples - Bangladesh

- During 2016-2018, the Bangladesh Department of Environment and Forest has started to use ambient source apportionment data from this RCA project for policy decisions to assess possible reduction of indoor air pollution
- During 2016 to 2018, University of Stanford, USA has utilized for ten years source apportionment database from Dhaka for health impact studies related to air pollution
- During 2016 to 2018, funding has been provided by International Centre for Diarrheal Disease Research, Bangladesh (ICDDR, B) and Infrastructure Development Company Limited, Bangladesh (IDCOL) to extend research into indoor air pollution related to smoke and fine particle pollution

‘One sentence’ outcome examples - China

- During 2016-18, Chinese Ministry of Environment and Chinese Institute of Atomic Energy (CIAE) have established a joint laboratory for air particulate matter, APM analyses in Beijing.
- During 2016-18, the Chinese Ministry of Environment and the Chinese Ministry of Science and Technology for APM research have provided increased funding from the Prime Minister's Fund for air pollution research and monitoring, and air pollution research is now a national priority
- In 2018, the Chinese National Research Center for Environmental Analysis and Measurement has been provided with a reference material of air particulate matter, which will be analyzed and certified by nuclear analytical techniques.

‘One sentence’ outcome examples - Indonesia

- Since 2008, National Nuclear Energy Agency of Indonesia and Ministry of Environment and Forestry, Indonesia, have increased the funding and in-kind contributions for operational sites from 2 to 17 across the archipelago
- From 2016-2018, the Ministry of Environment and Forestry, Indonesia, has now developed an Air Pollution Index using the data provided by the project
- Starting in 2019, the Indonesia national government has selected the air pollution research at BATAN as a national research priority, resulting in an increase to the research budget.

Summary points from the pilot evaluation of RAS7029

- Most NPCs were not familiar with the distinction between project outputs, outcomes and impacts.
- If reporting is undertaken remotely, NPCs are unlikely to fill out the outcome reporting template in the same way or to the same standard.
- Means of verification were often not reported for every outcome.
- Reported outcomes varied in their 'distance' from the project outputs, e.g. whether next-users or end-users were affected.
- Some reported outcomes may lead to significant socio-economic or environmental impacts (e.g. more efficient stoves in MON)
- Discussing and refining outcomes at a Final Coordination Meeting allows harmonisation of level of detail, and identification of regional benefits.

Questions to inform future work

- Should outcome reporting be remotely by template or at a Final Coordination meeting?
- Can ‘target outcomes’ be drafted during Kick-Off Meeting?
- What criteria can be robustly applied to measure ‘distance’ of reported outcomes from the project outputs?
- What criteria can be robustly applied to usefully categorise the types of outcomes reported?
- Can the reported outcomes be ranked or scored so that the impact of a project can be compared across GPs or through time?
- How could the Outcome Harvesting procedure be modified to capture or even emphasise regional impacts as well as GP-specific impacts?