Cyber Capacity Building Impact Evaluation:
Bringing Solutions to Life

Road to GC3B Geneva 2025

Outcomes Accra

In the "Accra Call" of the Global Conference on Cybersecurity Capacity Building (GC3B) in Accra/Ghana in November 2023, the global CCB community committed to "accelerate efforts to improve the measurement of cyber capacity building results [….] by actively and systematically integrating methodologies and good practices from the international development field".

This call was supported by two events organised at the conference by the Cybersecurity Capacity Centre for Southern Africa (C3SA), the University of Oxford Global Cyber Security Capacity Centre (GCSCC), Integrity and Royal Holloway University London (RHUL), in support of the Global Forum on Cyber Expertise's Strategy and Assessments Working Group (GFCE WG)[1]:

- A panel discussion *"Driving impact: making the case for better evaluation of CCB"*[2], making the case for CCB actors to invest resources in IE; and
- A complementing practitioner workshop's (*"Improving CCB Evaluation Practice - Knowledge Sharing and Community Building")*, whose purpose was to build a community of practice to foster collaboration between the different actors and to identify lessons, tools, and solutions for better CCB evaluation and metrics.

In both sessions, members of the CCB and International Development (ID) communities identified the strong need for more knowledge, research, and action on what works and doesn't work in CCB and on what the solutions could be. Participants included representatives from governments, international/regional organisations, implementers, private sector, academia, and civil society, based in Africa, Americas, Asia, Europe, and the Pacific. The sessions and their interactive format were seen as an important starting point to focus efforts on the issue, and many stakeholders expressed interest to stay involved and contribute to future work. Several institutions already expressed interest or have already committed to providing resources for this work.

The panel and workshop were both informed by a working paper *"Evaluating the Impact of Cybersecurity Capacity Building"* by the GCSCC and RHUL, that had been shared with panellists, participants and the GFCE WG for comment before the conference. The paper was seen as providing the community members with a problem statement and outline of potential pathways for solutions. This initial feedback, the upcoming comments by the GFCE WG as well as the conference findings will be incorporated into a new version of the

[1] Following organisations contributed to the planning and delivery of the sessions:
Blacksmiths Group, Carnegie Endowment of International Peace, Cyber Czar, Cyber4Dev, GFCE, GIZ, Global Partners Digital, Government of North Macedonia, Instituto Brasileiro de Ensino, JICA, KPMG UK, Michigan State University, NetHope, Oceania Cyber Security Centre (OCSC)/Monash University, Organization of American States (OAS), Royal United Services Institute for Defence and Security Studies (RUSI), Tecnológico de Monterrey, Tel Aviv University, UK FCDO, UNIDIR, and World Bank.

[2] https://www.youtube.com/watch?v=u_ar0i7InlY

paper that will be published and promoted in 2024 to create additional awareness in the CCB and ID communities regarding the topic and the project.

The purpose of this note is to set out how the outcomes of Accra can be taken forward to the next GC3B in Geneva in 2025.

Our Road to Geneva 2025

To make tangible progress on the Accra Call we propose a programme of work to build on the outcomes of the November 2023 GC3B, with the aim of presenting concrete progress on this issue at the next GC3B which will take place in Geneva in 2025, hosted by the Swiss Government. The two-year time frame until then provides a unique opportunity to build upon on the momentum of the GC3B in Accra and to bring solutions to life.

Our ambition can be described across four main areas:

- Theory – Our understanding of how CCB is expected to work.
- Data – Understanding what data can be used to measure theory and context.
- Methodology – Understanding how to use theory and data to make evaluative judgements.
- Use – Case studies on the use of evaluation evidence to systematically improve CCB policy and practice.

THEORY – our understanding of how CCB is expected to work and meet its objectives

CCB practitioners and evaluators should develop a common understanding of the existing CCB evaluation evidence base, what CCB interventions exist, and the ways in which interventions lead to measurable beneficial impact. Effective CCB policies and programmes critically depend on a clear understanding of how they are expected to improve cybersecurity, reduce crime, and promote development. The range of CCB policies and programmes that have been used to date is broad. Even the features of similar policies and programmes, like those delivering cyber hygiene campaigns or law enforcement training, can be quite different. It is important that the sector develops a clear understanding of what CCB evaluation evidence exists and how CCB interventions are expected to work, drawing on and bringing together existing CCB frameworks and practices such as the CMM, SIM3 or NIST, while taking account of how CCB will need to evolve to adapt to emerging technology and emerging technology risk.

2025 Vision: The CCB community has a common understanding of the CCB evaluation evidence base, and describes and explains CCB policies and programmes, and how they are expected to work, in sufficiently comparable ways.

Proposed initiatives to achieve this vision:

1. Typology development: *Develop typologies to improve the consistency through which CCBs policies and programmes are defined and explained. Clear typologies for who is being targeted, with what intervention, to achieve what outcome(s), is a standard practice in evidence synthesis. It enables comparison across interventions and provides an initial understanding of where investments are being made and what evidence exists. Projects can be linked to more than one part of a typology; something we expect is quite common in the CCB sector. As a result, these typologies can also indicate the extent to which policies and programmes target multiple populations, use more than one intervention, or seek change across multiple outcomes. Importantly, these typologies do not need to be used in a restrictive way. We understand that even similar interventions are designed and implemented differently. Instead, these typologies would provide a basic*

means for categorising policies, programmes, and related evidence. We propose following the population-intervention-outcome (PIO) format for developing typologies (but other formats exist)[3]:

- **Populations targeted typology:** Develop and agree a list of relevant population groups that could be targeted by CCB policies and programmes – for example, citizens, law enforcement agencies, government officials, cyber criminals.
- **Interventions typology:** Develop and agree a set of CCB interventions that account for all possible activities that could be delivered to build cyber capacity.
- **Outcomes typology:** Develop and agree an outcomes typology for CCB interventions, that covers all expected outcome and impact changes that are expected through CCB delivery. This typology should also consider changes at different levels (e.g. individual, enterprise, institution, sector, nation, region) and build consensus around criteria for success (outcomes and impact) with clear links to national development, economic or social goals (largely addressed by the SDGs) and other higher level security goals. Finally, this typology is concerned with how these outcomes are measured, which is discussed below.

Key output: Web-based typologies for population, intervention, and outcomes[4]

2. Evidence and gap map: *Conduct a systematic evidence and gap map of the CCB evaluation literature. This map would ideally undertake a systematic search of the academic and grey evaluation evidence of CCB interventions. The search could include process, impact and economic/Value for Money evaluations and evaluations using a range of evaluation designs. This map would make existing evidence more accessible to practitioners and evaluators that are interested in designing, delivering, or evaluating CCB policies and programmes. This map should directly map and catalogue evidence using the typologies defined above.*

Key output: Online evidence and gap map, using a tool like the EPPI Map Reader.[5]

3. Theory of Change development: *Gathering and organising existing evidence consistently using typologies is a useful starting point for CCB practitioners and evaluators. But existing evidence and experience still needs to be interrogated to develop, test and update theories of change. Theory of Change development processes can take time and many practitioners may be designing similar interventions.*

To make theory development processes more effective and efficient, we propose identifying a few common groups of interventions and developing more general theories of change. These more general theories could document key theory of change features, including intervention design features, relevant assumptions or risks, critical dependencies, typical causal pathways, and timescales to impact. They could also link to relevant existing evidence. By having access to general theories, practitioners can base decisions on the best available evidence and develop contextually relevant theories more efficiently.

A common approach to developing general theories and review evidence is a systematic review. Rapid reviews, or other theory development processes could also be considered. Existing tools and frameworks exist to support more general theory development. One such as example is middle-range theory.[6]

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[3] This building on the PICOs format commonly adopted in the medical and social sciences. For example, see Cochrane (nd). PICO Ontology. Available at: https://linkeddata.cochrane.org/pico-ontology. Date accessed: 09/01/24.

[4] As implemented by online evidence repositories like the 3ie Development Evidence Portal. For example, see: 3ie (2021). A classification of interventions and outcomes for international development evidence. Available at: https://www.3ieimpact.org/blogs/classification-interventions-and-outcomes-international-development-evidence. Date accessed: 09/01/24.

[5] For example, see Jain et al. (2022). Available at: https://youthendowmentfund.org.uk/wp-content/uploads/2022/04/Map-21-Apr-22-2.html. Date accessed: 09/01/24.

[6] For example, see: White (2023). The use of middle-level theory in CEDIL-funded research studies. Available at: https://cedilprogramme.org/publications/middle-level-theory-cedil-research. Date accessed: 09/01/24.

Key possible outputs: a systematic review (dependent of the results of the EGM); a toolkit of high-level Theory of Change models covering the breadth of potential CCB interventions with more detailed worked examples of summary visuals and narrative theories for 2-3 common interventions.

DATA - Understanding what data can be used to measure theory and context

Collating and categorising data sources and measures will enable more effective measurement for each intervention type. Building consensus on what CCB evaluation evidence exists and how CCB policies and programmes are expected to work using theories of change is a key first step. The next step involves collecting data to monitor and evaluate these theories. A range of data and measures exist to support theory of change measurement in this sector, from survey tools, administrative data, open-source data, industry assessment tools and assessments, and unstructured text data. But it is not always clear which data and measures should be used to assess which intervention, what the costs involved are, and whether some measures work better for assessing specific interventions. By making data and measures easier to access and understand, and data gaps more obvious, CCB evaluation will be more effective and efficient. This work will take account of how emerging technology can enhance ways in which data can be used to support evaluation (such as via the application of machine learning or new ways to extract sharable insight from otherwise unsharable data sets).

2025 vision: The CCB community uses data in a consistent and comparable way to monitor and evaluate outcomes and has jointly identified key data gaps that require international and national coordination to address.

Proposed initiatives to achieve this vision:

1. CCB Frameworks and outcome measures database: *A database of CCB frameworks and measures used to conceptualise and approximate CCB outcome change. Using the outcomes typology discussed above, develop an online outcome measures database that collates and critically appraises measures that have been used to measure, or could be useful in measuring, CCB outcomes. This could include primary and secondary quantitative and qualitative measures (including rubrics, checklists, and other assessment tools), and document and explain various types of administrative or operational data, such as those created through the delivery or assessment of CERTs and SOCs, or the use of event management systems. The database could also indicate where data sources require additional permissions or costs, importantly highlight where different approaches are needed by country, intervention, or some other factor, and appropriate measures that should be used to control for other factors like political context, instability, or economic performance. Collating outcome measures in this way will make it more efficient for practitioners to use evidence to inform CCB monitoring and evaluation strategies.*

Key output: Online outcome data and measures database.

2. Proportionate alignment of outcome measurement: *Advocate for consensus on how key outcomes are measured.*

Some outcomes could benefit from more consistent measurement and reporting. Comparison across studies and interventions will be more achievable and successful when outcome measures are more consistently collected and used for monitoring and evaluation. For example, data on cybercrime incidents that is not defined or classed in the same way across institutions or countries is harder to compare than incident data that follows the same data collection and processing conventions.

While we acknowledge that consistency in outcome measurement is not always proportionate, realistic, or desirable, we proposed engaging the CCB community to identify areas where consistency is beneficial and advocating for consistent measurement of policies and programmes in these cases. Where changes are needed, we propose providing advisory support on data collection, processing, storage or use as needed or appropriate and sharing resources and guidance to guide more consistent measurement.

Key outputs: Research papers and guidance on measurement of specific outcomes; participatory processes to build consensus on outcome measures; advocacy activities to align outcome measurement where appropriate and ensure data source sustainability; case studies on outcome measurement use; new data learning events.

EVALUATION ANALYSIS METHODS - Using theory and data to make evaluative judgements in CCB

Building consensus and providing guidance on when certain evaluation methods are useful will improve the quality and comparability of the CCB evidence base. An established set of methods exist to evaluate policies and programmes. These approaches cater to process, impact, and economic evaluation. They go beyond data collection and seek to make evaluative judgements about an investment, policy, or programme. These approaches have been largely developed in the social sciences and health sectors and their application to CCB interventions is not as mature. By developing and sharing applied research, guidance, and best practices, we will build consensus about when certain evaluation methods are more or less likely to produce useful, valid, credible, and timely insights of CCB interventions.

2025 vision: There is consensus on the most appropriate evaluation approaches to use for each type of intervention in a given context and at a certain scale.

1. ***Publish "Evaluating the Impact of Cybersecurity Capacity Building".*** Publish the GCSCC research with the findings from expert interviews, the evidence from the GC3B sessions and the feedback from the GFCE Strategy and Assessments Working Group.

Key outputs: Report; Report events

2. Analysis and case studies on applying evaluation methods to CCB. *Practical research and guidance on which methods to use to robustly estimate the effects of CCB programmes. This research could consider large sample size (large-N) statistical, and small sample size (small-N) non-experimental evaluation methods.*

Key outputs: CCB-specific: evaluation methods guidance, case studies, anonymised and simulated examples of case study data and analysis (including analysis scripts).

EVALUATION USE – Using evaluation evidence to systematically improve CCB policy and practice

Advocating for and illustrating how using CCB evaluation evidence can improve policies and programmes will increase demand for high quality CCB evaluation evidence. Producing high quality CCB evaluation evidence is not useful unless practitioners can easily access and interpret it to inform their own work and decision making. We propose documenting examples of the uptake and use of CCB evaluation evidence to illustrate the benefits of investing in CCB evaluation, and advocate for further investment in CCB evaluation.

2025 vision: Multiple examples of the uptake and use of CCB evaluation evidence have been documented. These examples have been used to guide evaluation commissioner and practitioner investment decisions and evaluator uptake and use strategies.

1. Demonstrate uptake of IE by the global CCB community. *Document case studies or examples of evidence use. These examples will be structured against a set of common criteria or questions that make it easy for practitioners and evaluators to understand how evidence was used and what resources were needed to enable effective evidence uptake and use*.

Key outputs: Online CCB evidence uptake and use database.

2. Get CCB community commitments to invest resources in advancing IE in CCB. *Advocacy to increase financial commitments to fund CCB evaluations or research into CCB theory, data collection or evaluation analysis methods.*

Key outputs: Financial commitment secured to support CCB evaluation or research.

3. Identify institutional home(s) for data and guidance. *Most of the proposed initiatives above involve the production of specific outputs. To make these outputs accessible, we propose building consensus with the CCB community on where data, resources and guidance should be stored online.*

Key outputs: Meetings/workshops; online repositories (ideally already set up and managed elsewhere).

Leadership and delivery

This research work will continue to be undertaken by the University of Oxford Global Cyber Security Capacity Centre (GCSCC), Integrity and Royal Holloway University London (RHUL), in support of the Global Forum on Cyber Expertise (GFCE) Strategy and Assessments Working Group and in collaboration with members of the CCB and ID communities.

It is, however, unlikely that all the proposed outputs of this work can be delivered without material and/or financial contribution from other stakeholders. Over the next few weeks will be seeking to establish how the work can be scaled up and down and seeking to secure sufficient resources to take the minimum feasible level of work forward.

Further consultation with stakeholders is also required to establish the best way to sustain and maintain the various key outputs of this project, including where data sets, typologies and toolkits should be given an enduring home, and how their ongoing curation can be paid for. We will seek to address this as we refine the work in the lead up to Geneva 2025.

The overarching aim of this phase of the work is to deliver to the Geneva GC3B a set of practical evaluation tools and viable institutional and financial proposals for their ongoing development and sustainment.