Is biosecurity doing a good job in keeping invasive pests out?

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Catalyst for the project

In the face of multiple incursions, how healthy is the biosecurity system? How confident are we that it works?

Senate estimates question

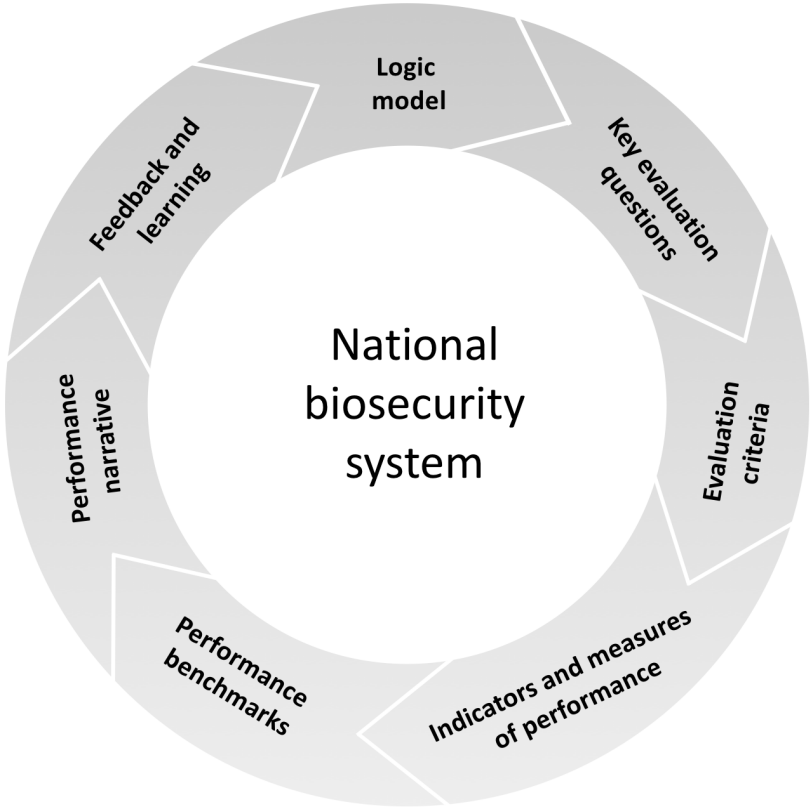
Project objectives

- Develop a rigorous performance evaluation *framework* that can be used repeatedly to evaluate the health of the biosecurity system at the *national* level against agreed *performance criteria* and using appropriate *performance indicators*

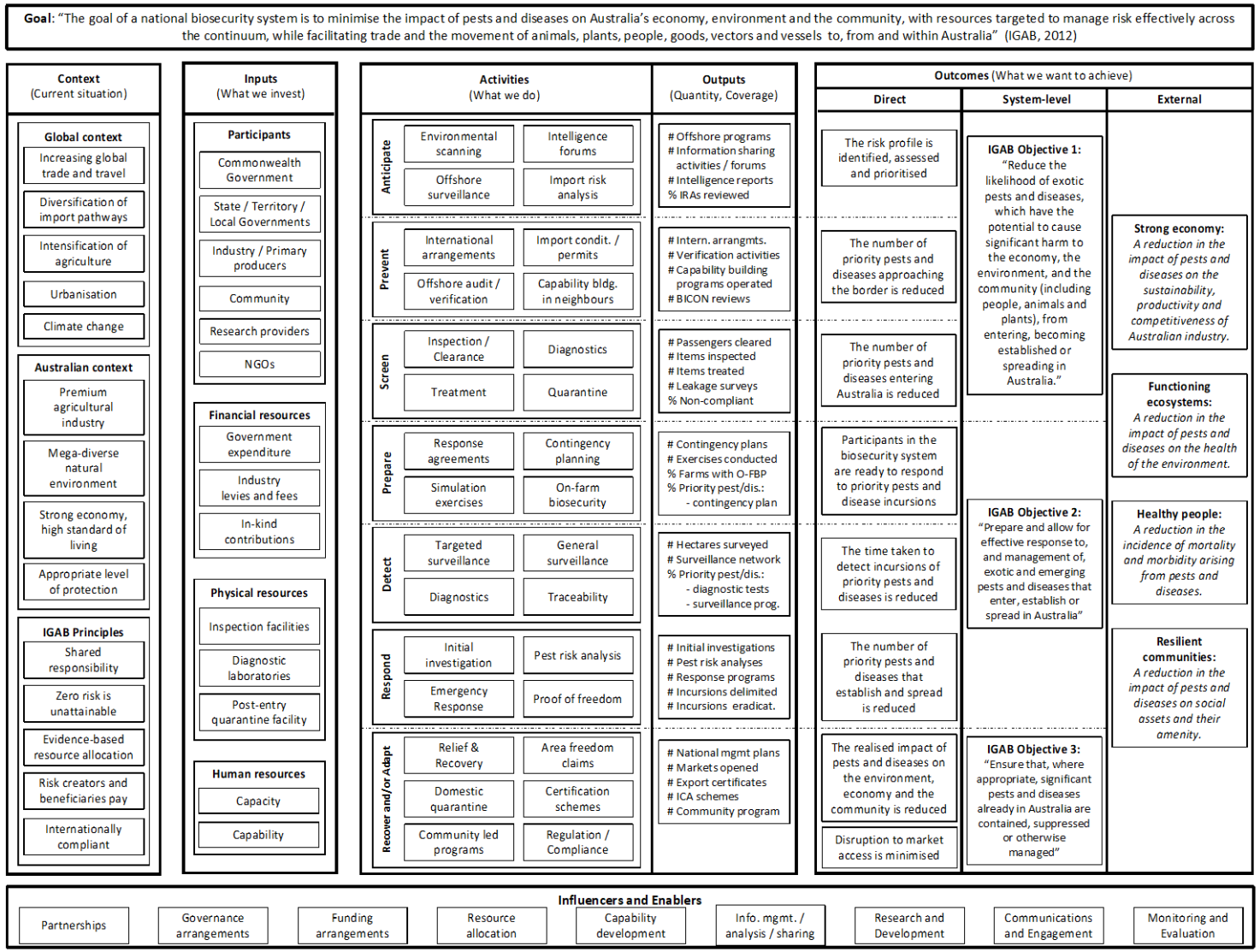
- Provide an objective basis on which to identify risk in the biosecurity system and to guide evidence-based investment decision making

Evaluation framework

1. **Logic model as basis for evaluation**
2. Key evaluation questions
3. **Evaluation criteria**
4. **Performance indicators and measures**
5. Performance benchmarks
6. Performance narrative
7. Inform future operations and evaluations



Logic model diagram

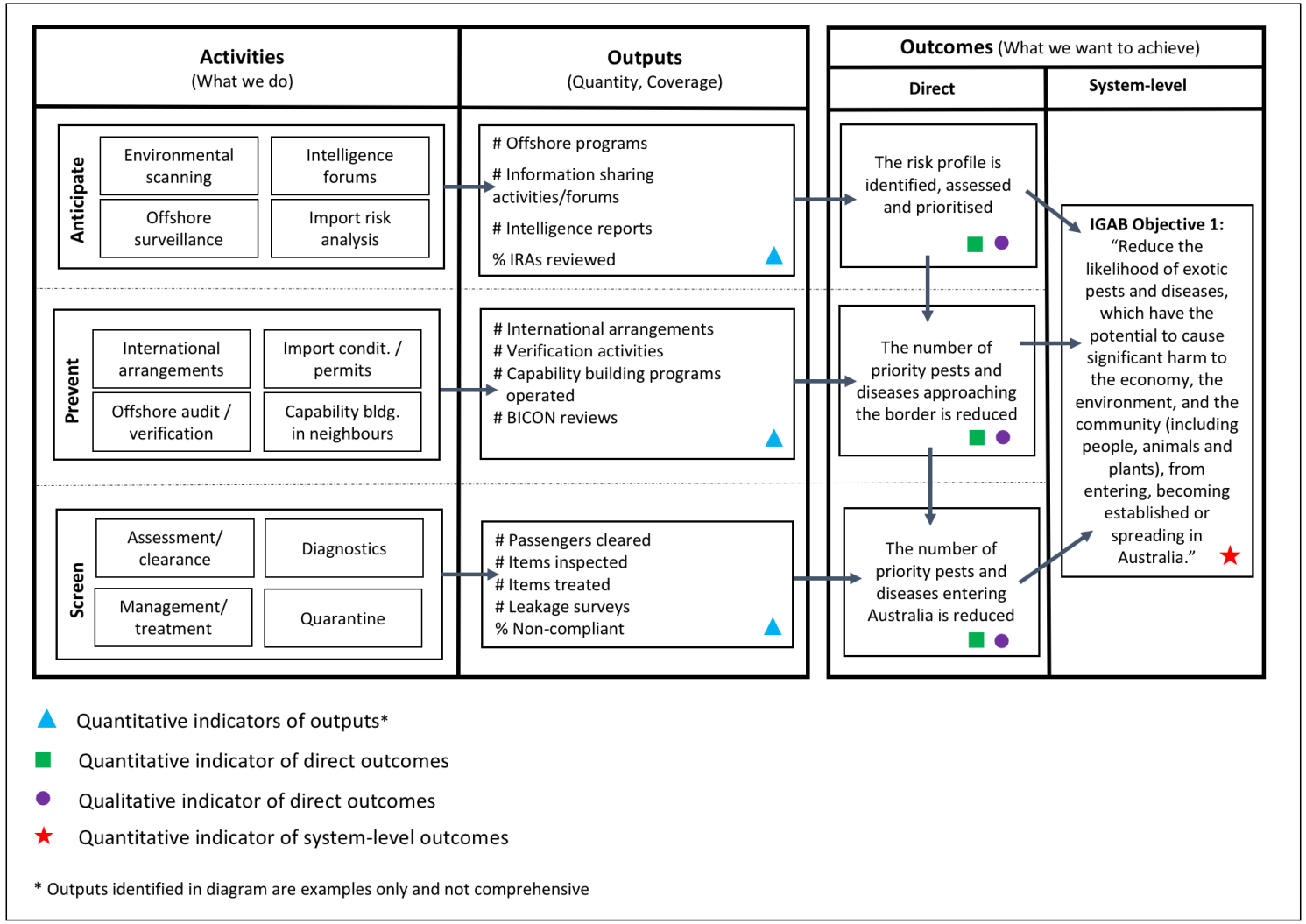


Evaluation criteria

- Effectiveness
- Efficiency – productive and allocative
- Resilience
- Capability
- Sustainability

Indicator framework - example

- Mix of quantitative and qualitative indicators
- Output indicators are important for scope and scale
- Outcome indicators are evaluative
- Use rubrics to summarise and order qualitative information



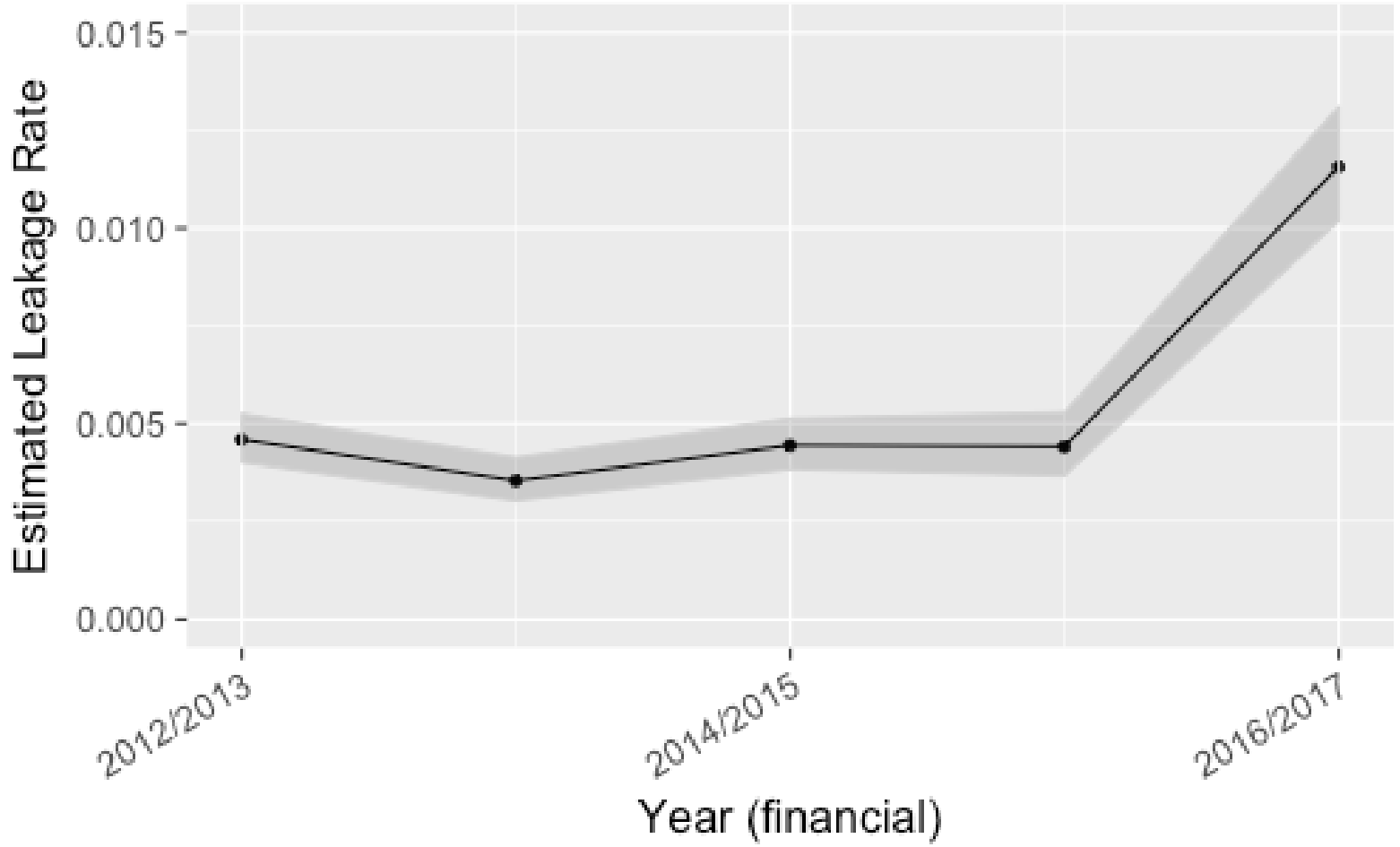
Screen:
an indicator of direct outcomes

Leakage rate:

the amount or rate of biosecurity risk material that is not intercepted at the border

- observed through end-point surveys of mail, travelers and commercial containerised cargo
- modelling approach adopted to better estimate leakage
- can be measured at different levels of the biosecurity system

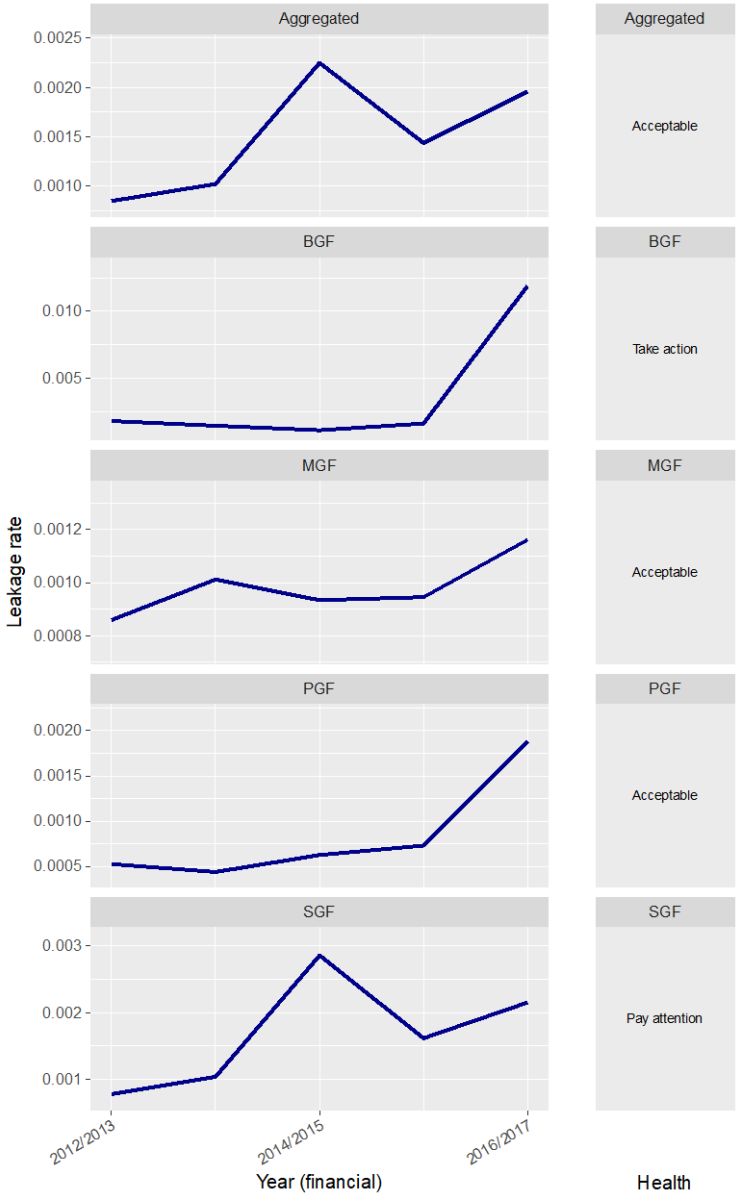
Example: estimated leakage rate for Brisbane Gateway Facility



Performance benchmarks

Table 3.1.: Decision matrix to assign the health of the pathway based on monitoring the trend and level of the indicator. This decision matrix is for an indicator that should be *high*, so that being below the benchmark, or a decreasing trend is not desirable.

		Probability (p_b) that the indicator is less than the benchmark		
		$p_b > P_1$	$P_2 \leq p_b < P_1$	$p_b < P_2$
Probability (p_i) that the indicator is decreasing	$p_i > P_1$	Take Action	Pay Attention	Acceptable
	$P_2 \leq p_i < P_1$	Take Action	Pay Attention	Acceptable
	$p_i < P_2$	Pay Attention	Acceptable	Acceptable

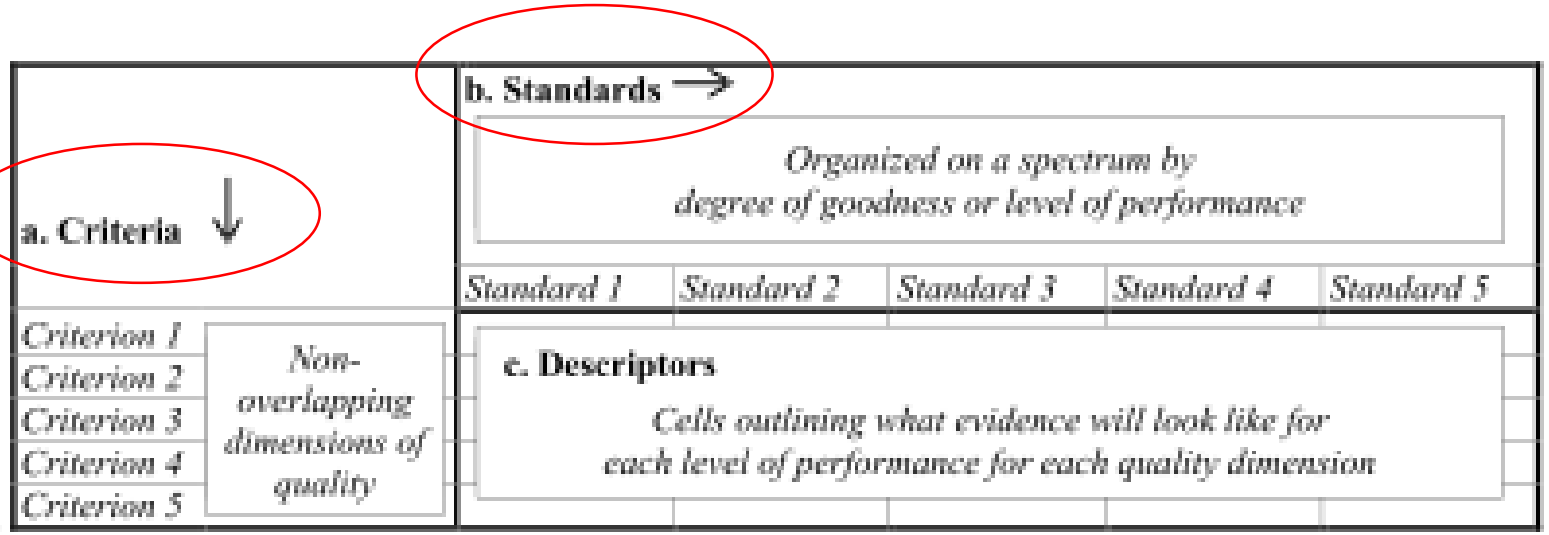


Aggregated mail pathway – all mail types
Inspected by canines

Using rubrics to synthesise qualitative information

- Qualitative information can supplement and enrich quantitative evidence
- Important to consider views of stakeholders - capture them rigorously and transparently
- Summarise and order qualitative information

Basic rubric structure



- Requires evaluative criteria and performance standards
- Rubrics can provide an evaluative description of performance at two or more defined levels
- Synthesis of results

Martens K. (2018): Rubrics in program evaluation. Evaluation journal of Australasia 18(1): 21-44

Implementing the evaluation framework

- Determining the appropriate level of aggregation for the performance evaluation
- Measuring qualitative information using rubrics
- Developing performance benchmarks, targets or expectations
- Resolving issues of data quality and availability

Thank you for your attention!