

CBA Workplans

Cost-Benefit Analysis Training

Apia, Samoa

6th February 2012



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Objectives

Develop draft CBA workplans for each PACC pilot/demonstration project



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Approach to work-planning

1. Problem Analysis



2. Identify possible options



3. With and Without Analysis



4. Data (for Measuring costs and benefits)



5. Aggregate costs and benefits



6. Sensitivity analysis



7. Consider equity and distributional implications



Timeline



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Problem

- 1.1. Define nature and extent of problem
- 1.2 Identify cause(s) and drivers of problem
- 1.3 Set objective
- 1.4 Information sources



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1.1. Define nature and extent of problem

- Important that problem is clearly and correctly specified
 - otherwise CBA will not help to answer the right questions
- Problem must be significant (i.e. sufficiently large) to justify effort to address it
 - provide evidence of this



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1.1. Define nature and extent of problem:

Example

Nauru water example

- Quantity and quality of potable water supply in Aiwo and Denig districts is inadequate during drought periods (<30 litres/person/day). Among other things, this inadequate supply is considered to contribute to poor health outcomes (e.g. typhoid, diarrhoea).
- Number of drought days is very lengthy (Nauru Rain and Drought index)
 - Average length of drought is 19 months, and may be increasing
 - Frequency is once every 5 years, and may be increasing



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1.2 Identify cause(s) and driver(s) of problem

- Identify the range of causes and drivers that contribute to a given problem
- Typically, climate change serves to exacerbate existing problems.
- So, there are usually other causes and drivers that also need to be considered and addressed.



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1.2 Identify cause(s) and driver(s) of problem

Example Nauru

- Population growth (driver)
- Sea-water intrusion to groundwater lens (over-extraction, not storm surge)
- Inadequate water pricing (households receive subsidy for 50% of full cost recovery)
- climate change – (potentially) incremental increase in frequency and duration of drought events



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1.3 Set objective

- Objective should seek to address cause(s) of problem.
- For climate change (adaptation) component of problem, this will broadly be to reduce the vulnerability/increase resilience to certain climate event(s). If possible, be more specific. E.g.

Nauru water project

- Increase resilience of Aiwo and Denig districts to drought.
- More specifically, the aim is to supply an additional 4,000 litres per day to these districts during drought periods.



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1.3 Set objective

- If there are multiple causes of a given problem and the set objective only seeks to address one of these causes, then this should be clearly stated.
 - The extent to which a project proposal is effective may depend on whether these other causes of the problem are also addressed.
- E.g. Awareness programs - information failures are a common part of a problem and so education/awareness measures often complement larger projects



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1.4 Background information sources

- Information to populate these parts could be sourced from a range of background documents:
 - V&A Assessments
 - Socio-economic assessments (SEA-PACC)
 - Scientific reports
 - Technical reports undertaken in other jurisdictions
- Hopefully, these studies/reports have already been undertaken.



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2. Identify options

- Specify the set of project options to achieve the stated objective
 - Check: the option links back to the cause of the problem
- One of the options should always be ‘without project’ to form the baseline for analysis/measurement.
- Important to research options considered and used in other countries/jurisdictions.
 - E.g. Tuvalu now considering solar filtration systems being implemented by Nauru



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2. Identify options

Tuvalu example

1. Do nothing different (baseline)
2. Additional desalination plant
3. Community Cistern
4. Household water tanks
5. Solar Filtration

Cook Islands

1. Do nothing different (keep existing wharf design)
2. Modify wharf – design a
3. Modify wharf – design b



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3. With and without analysis

- As mentioned before, one of the options should always be ‘without project’.
- All costs and benefits of the interventions are then identified and assessed/measured with reference to this ‘baseline’.
- Do this by composing ‘with’ and ‘without-project’ tables
- **This is the most important part of the CB Framework.**



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3. With and without analysis

Baseline - without project (current wharf design)

- Damage to wharf infrastructure if cyclone event occurs
- Loss of wharf income (or businesses and community income if no wharfage fees charged) from no access to wharf services during reconstruction (if cyclone event occurs)
- No use of wharf (loss of incomes) during moderately rough seas

With project – retrofit wharf design

Costs

- (incremental) capital costs of re-designing and retrofitting wharf

Benefits

- Avoided damage to wharf infrastructure in event of cyclone
- Avoided losses associated with lack of wharfage services during reconstruction
- Increased use of wharf during moderately rough seas



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3. With and without analysis

Baseline – without project	Solar filtration with existing rainwater tank	Solar filtration with constructed rainwater tank
<ul style="list-style-type: none"> •Costs of collecting water from old tanks & contaminated groundwater •Health-related costs attributable to drinking poor quality water from old tanks and contaminated groundwater sources 	Costs	
	<ul style="list-style-type: none"> •Capital costs (purchase and installation of solar filtration unit) •Operating costs (maintenance + fuel) 	<ul style="list-style-type: none"> •Capital costs (purchase and installation of solar filtration unit + storage tank) •Operating costs (maintenance + fuel)
	Benefits	
	<ul style="list-style-type: none"> •Additional potable water supply •Reduced water-related health costs 	<ul style="list-style-type: none"> •Additional potable water supply •Reduced water-related health costs



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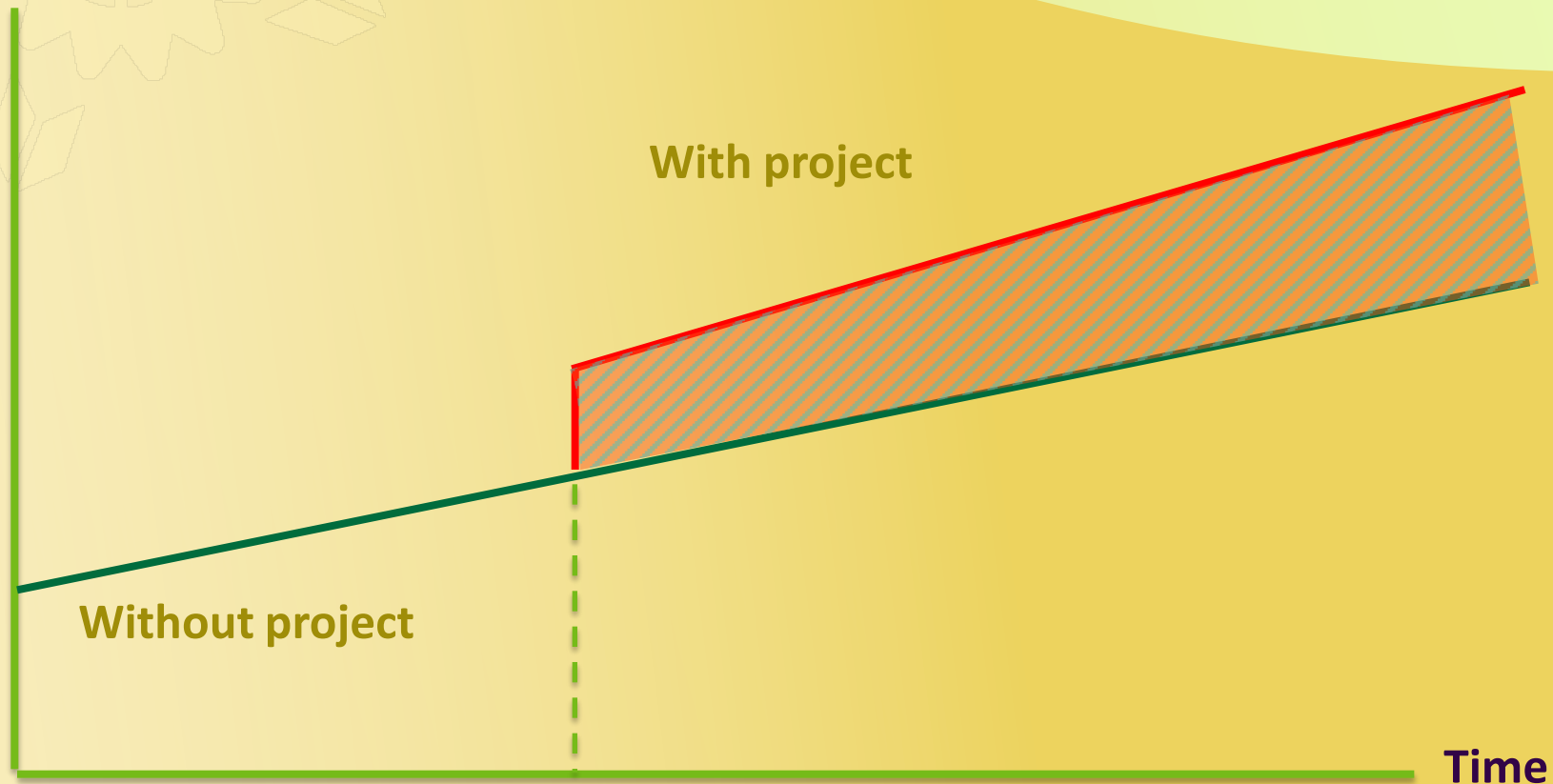
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3. With and without

Outcomes



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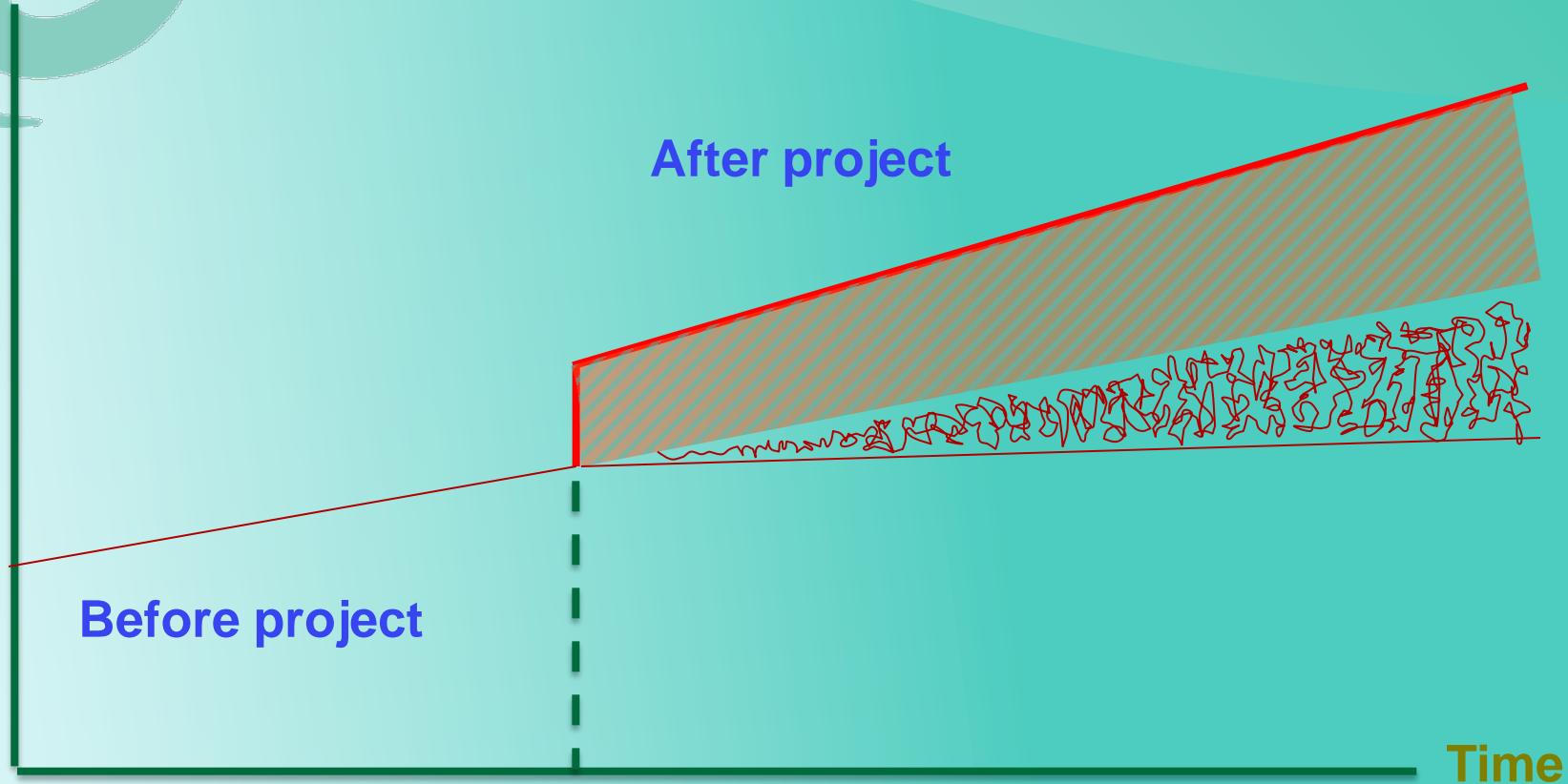
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3. Before and after

Outcomes



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4. Data/Measuring Costs & Benefits

- This section should detail the data needed to estimate each of the costs and benefits identified in the with and without analysis and the source of this data.
- Discuss this in more detail later. Compose in table as such:

Cost/benefit	Data needed	Data source



5. Aggregating costs and benefits

- This section will detail how costs and benefits will be aggregated/computed over time.
- [aggregation refers to the bringing together of all the different costs and benefits over the life of the project. The purpose of aggregation is to convert available data into manageable information - makes comparisons and thus decisions easier.]
- This will be discussed more in Discounting and Excel exercises.
- But, key issues to be outlined here include choice of discount rate and how the timeframe of the analysis will be determined, amongst others.



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6. Sensitivity Analysis

- List key parameters (e.g. length of drought period, effectiveness of intervention in reducing risk) for which there is a significant amount of uncertainty.
- Describe how these uncertainties will be tested through a sensitivity analysis - i.e. detail upper and lower bound values and the basis for selecting these values.



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7. Distributional and Equity implications

- Where distributional implications are considered important, the CB assessment should detail which groups incur the costs ('losers') and which groups receive the benefits ('winners').
- Comment/assess whether these distributional effects will cause political issues that may threaten the successful implementation of the project.
- Haven't had time in our work-planning sessions to complete this section. Great if you do but if you don't, maybe include it as an action in the timeline.



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8. Timeline

Action	Date	Responsibility
Data collection	End February	PACC Co-ordinator, PIC economist/technical official
Data analysis	March	PIC economist/technical officer, consultant/CROP economist (support role)
Draft CBA report	Early April	PIC economist/technical officer, consultant/CROP economist (support role)
Peer Review	Late April	SPREP economist, UNDP consultant
Final CBA report	May	PIC economist/technical officer, consultant/CROP economist (support role)



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