

# CBA101

Fundamentals of Cost-Benefit Analysis

NSW Government Virtual Internship



# Contents



## Topics

- Introduction to cost-benefit analysis
- Displacement and “additionality”
- Producer and labour surpluses
- Consumer surpluses
- Primary purpose visitation
- Producer and labour surpluses from visitation
- Capital costs and ongoing costs

## Appendices

The appendices are intended for students who do not have a commerce or economics background, and who may not be familiar with the concepts of discounting and/or market failure.

You do not need to read through the appendices if you feel you are familiar with these concepts.

- Time periods
- Discounting and present values
- Market failure

**Disclaimer:** All examples in this document are fictional and for learning purposes only. The materials in this document have been prepared for the NSW Public Service Commission's Virtual Internship, and should not be used for any other purpose.

# What is Cost-Benefit Analysis?

## Social welfare cost-benefit analysis

- Cost-benefit analysis (CBA) attempts to quantify the costs and benefits to a particular community (the referent group).
- An economic analysis is not a financial analysis (although financial analysis is relevant).
- An economic analysis attempts to capture and monetise social, economic and environmental impacts (that is, to put the impacts into dollar terms).
- A cost-benefit analysis must be consistent with the NSW Government Guide to Cost-Benefit Analysis (TPP 17-03).
- A cost-benefit analysis is usually conducted from the perspective of all NSW residents, rather than a council, NSW Government or project proponent.
- Cost-benefit analysis can be applied to almost all project types: construction, infrastructure, upgrades, policy initiatives, government expenditure, etc.

For most NSW Government CBAs, the referent group is NSW.



# Financial versus Economic Assessment

## Financial Assessment

- From the perspective of the business or proponent or project
- Looks at cashflows:
  - Sales/Revenue
  - Costs
  - Profit

Answers the question  
“Is the project commercially viable?”

## Economic Assessment

- From the perspective of the “**referent group**”
- Looks at:
  - Returns to NSW labour and producers
  - Returns to governments
  - Returns to NSW residents (consumer surplus)
  - Counterfactual

Answers the question  
“Does the project improve the **referent group’s welfare?**”

For the NSW Government, the referent group is the State of NSW  
(that is, all NSW residents)



Because the referent group is the whole State, a benefit that occurs in one area of the State or the economy in place of another, is ‘netted out’ from a State perspective.

# Costs and Benefits

## Costs

- All costs to the referent group are included.
- NSW Government funds, council funds, NSW-owned business and not-for-profit funds are all included as costs.
- Ongoing expenses (such as maintenance) are included as costs.
- Sunk costs (costs incurred before the analysis period) are excluded. For example, if you want to do a CBA on expanding a school, you would not count the cost of the school buildings that are already in place.

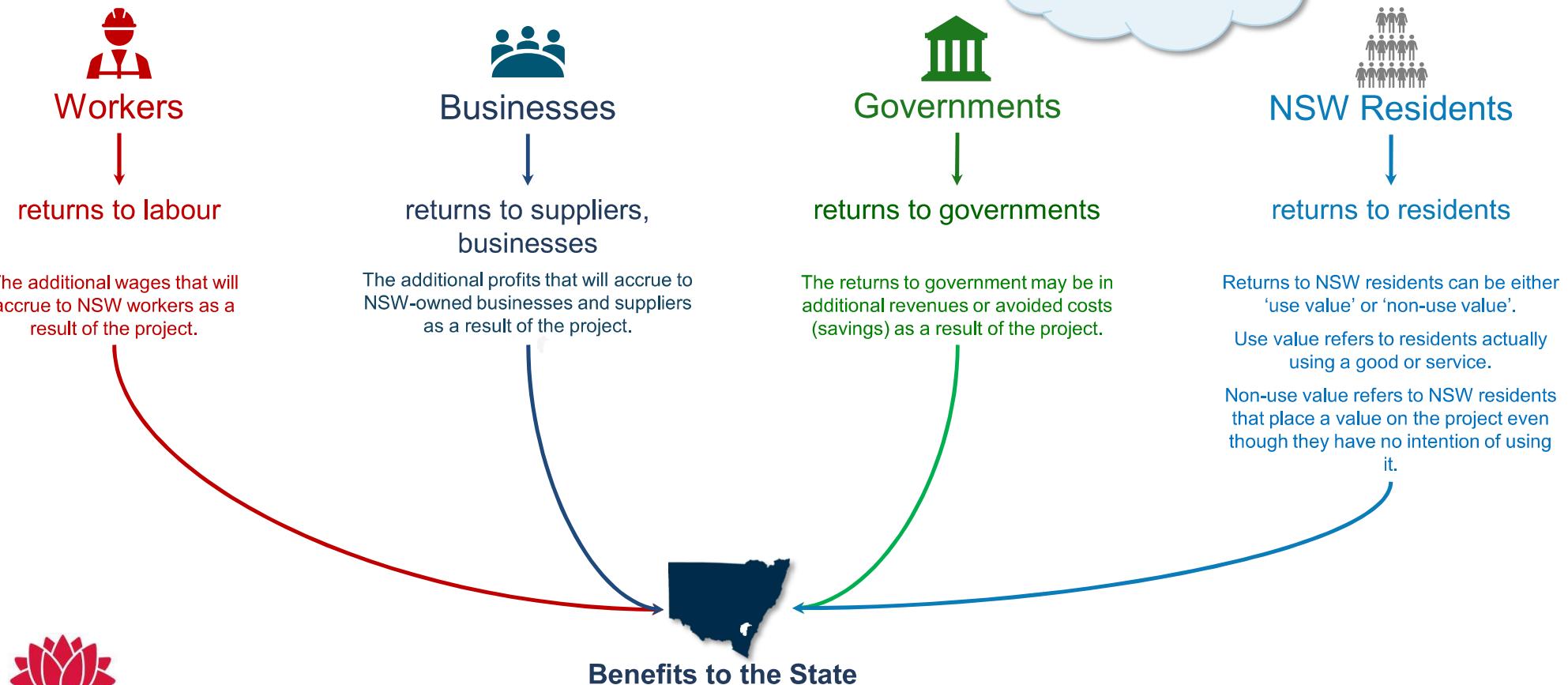
## Benefits

- Benefits are less certain, more varied and more difficult to estimate than costs.
- Benefits often depend on project type.

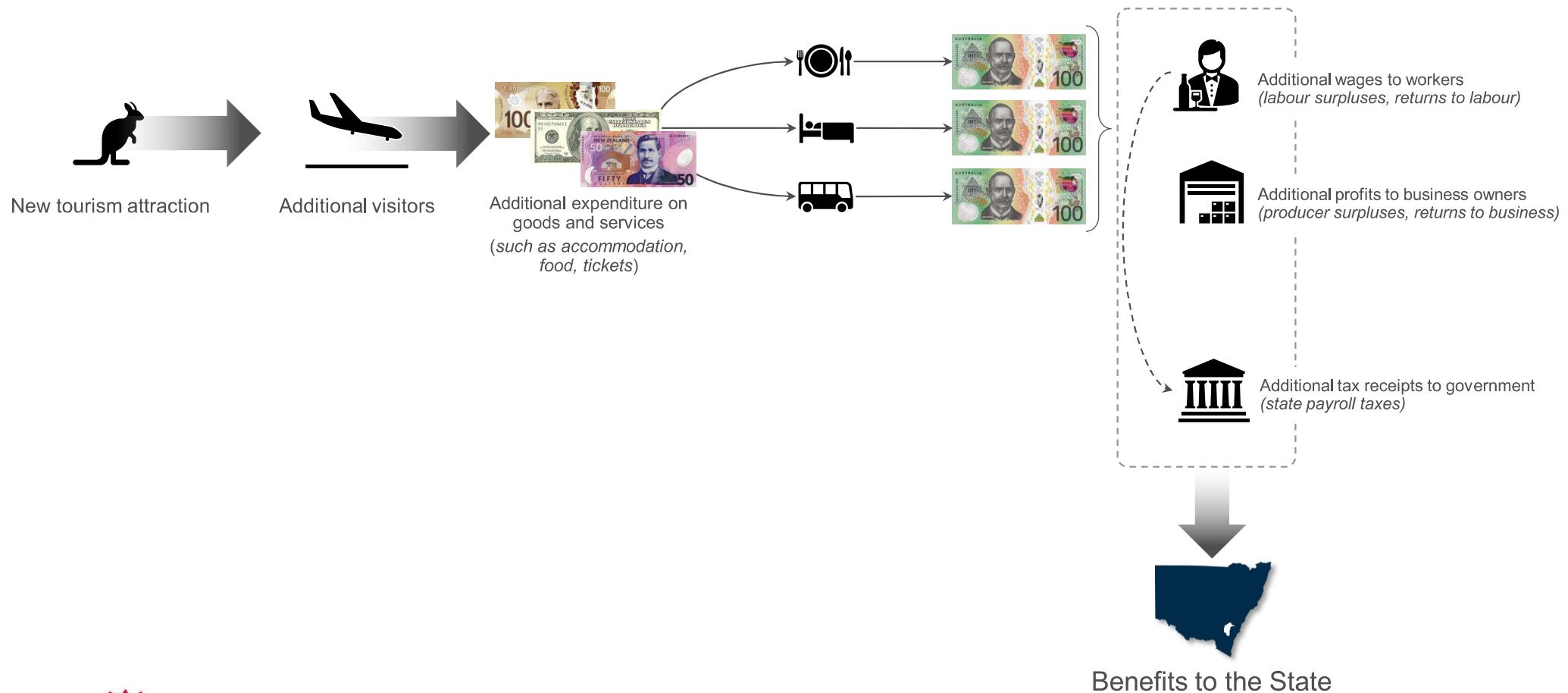
Note that second-round effects and multiplier effects are generally not included in a cost-benefit analysis.



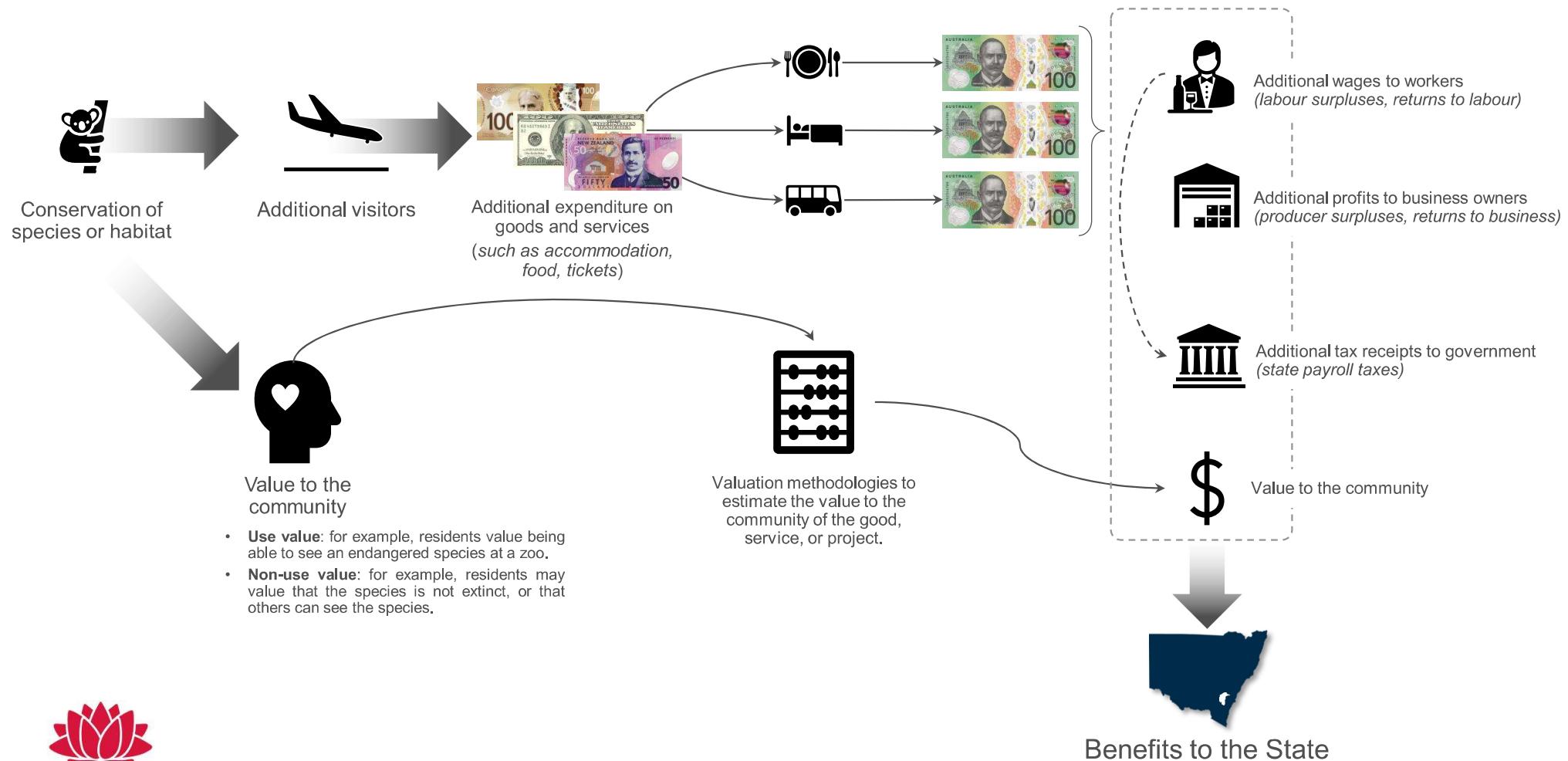
# Classes of Benefits



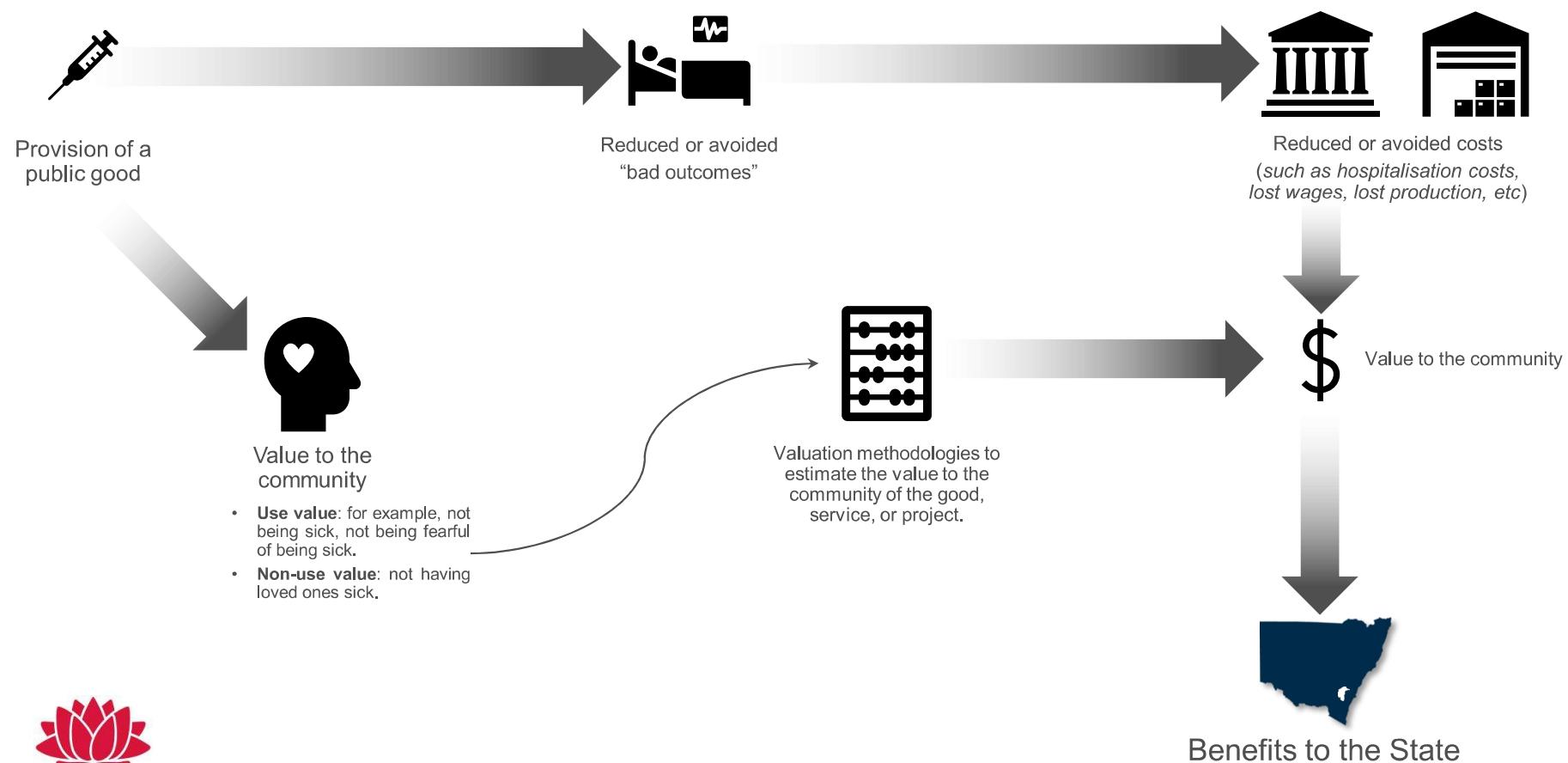
# Classes of Benefits (example 1)



# Classes of Benefits (example 2)

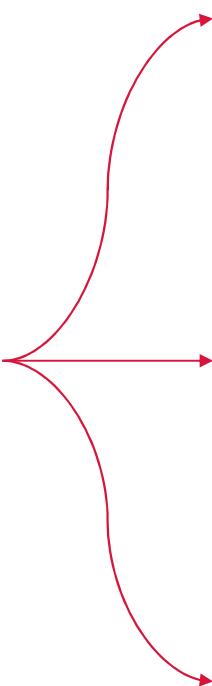


# Classes of Benefits (example 3)



# Benefit/Cost Ratio

Total Benefits  $\div$  Total Costs = Benefit/Cost Ratio



If  $BCR > 1$ :

- This means benefits are **more than** costs.
- Depending on other circumstances, this means the project could/should be supported.

If  $BCR = 1$ :

- This means benefits are **equal to** costs.
- Depending on other circumstances, this means the project is neither a benefit nor a cost to the referent group.

If  $BCR < 1$ :

- This means benefits are **less than** costs.
- Depending on other circumstances, this means the project could/should **not** be supported.

# NPV/I Ratio

A ratio used within the NSW Government is the “NPV/I ratio”.

This the present value of the project’s net benefits, divided by the cost to the proponent (in most cases, the NSW Government; that is, the amount of NSW Government assistance).

$NPV/I = \text{Project net benefits (or costs)} \div \text{Assistance amount}$

The ratio is essentially a measure of the efficiency of assistance to a project: a higher NPV/I ratio means that there is more net benefit to the referent group.

If  $NPV/I > 0$ :

- This means that the project’s net benefits are **higher than** the cost of securing those benefits (or costs).
- Mathematically, this will coincide with a **positive** net benefit amount, and a BCR **greater than 1**.
- Depending on other circumstances, this means the project could/should be supported.

If  $NPV/I = 0$ :

- This means that the project’s net benefits are **equal to** the cost of securing those benefits (or costs).
- Mathematically, this will coincide with a **zero** net benefit amount, and a BCR equal to 1.
- Depending on other circumstances, this means the project is neither a benefit nor a cost to the referent group.

If  $NPV/I < 0$ :

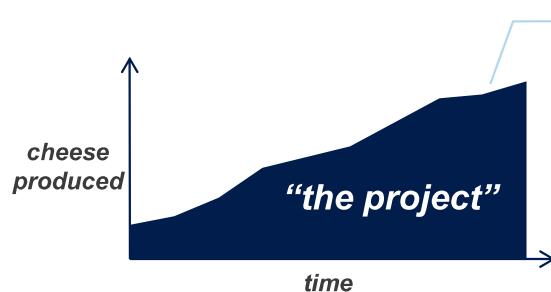
- This means that the project’s net benefits are **lower than** the cost of securing those benefits (or costs).
- Mathematically, this will coincide with a **negative** net benefit amount, and a BCR **less than 1**.
- Depending on other circumstances, this means the project could/should **not** be supported.



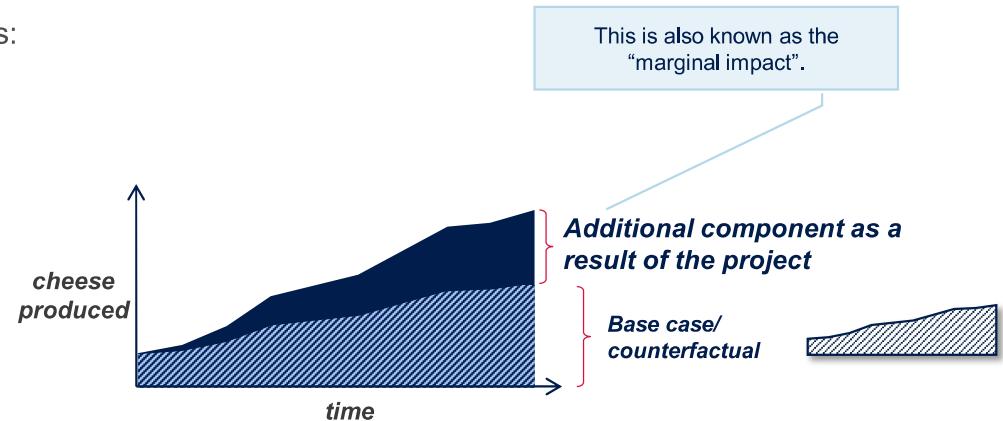
# Additionality – Part 1

Cost-benefit analysis is concerned with marginal impacts: the additional benefit to the referent group.

Consider a company making cheese, looking to expand their operations:



*Hang on a minute! They are describing their current operations as "the project"... but they are already operating!*



This is also known as the "marginal impact".

**Additional component as a result of the project**

**Base case/counterfactual**

But...

Some portion of the outcomes, production, jobs, etc. will occur anyway...

So we are only interested in the outcomes which would not have occurred without the project.

What would happen anyway is also known as "the counterfactual" or the "base case".

Additionality could also refer to reductions, especially in costs or avoided harms (e.g. hospitalisations).

*Examples include:*

- additional sales (additional revenues)
- additional expenses
- additional wages
- additional tourism
- reduced sickness



# Displacement

Displacement is where one event or transaction occurs in the same space as, or instead of, another event or transaction.

For example, Café New opens on the same street as Café Old.

Café New does well: its revenues increase, and it hires more staff.

However, Café Old – which had been operating successfully for many years – experiences decreases in revenues, and has to lay-off staff... who are then hired at Café New.

Many of Café Old's customers (revenues) have gone to Café New, and the staff hired by Café New have been 'taken' from Café Old.

From a **company perspective**, Café New is doing well, and is profitable. The café's owners are pleased with their decision to set up the café.

From a **State perspective**, however, there has been no change:

- while Café New may have hired 5 employees, at the same time Café Old had to lay off 5 employees;
- while Café New has generated new revenues of \$100,000 per week, Café Old has seen a drop in revenues of \$100,000 per week.



The referent group is the State of NSW  
(that is, all NSW residents)



Because the referent group is the whole State, a benefit that occurs in one area of the State or the economy in place of another, is 'netted out' from a State perspective.

Masrur only needs one cup of coffee (fixed demand): he will either buy that coffee from Café New or from Café Old.

If he buys it from Café New, then Café Old has lost a sale.

If he buys it from Café Old, then Café New has lost a sale.

In other words, even though Café New has opened, Masrur still only buys one coffee a day. The total amount of coffee being consumed in the economy hasn't changed.



# Additionality – Part 2

## So, how can Café New add to the NSW economy?

Café New is doing very well, and its coffee has become so famous that people are now travelling from Melbourne, and even Auckland to taste it!

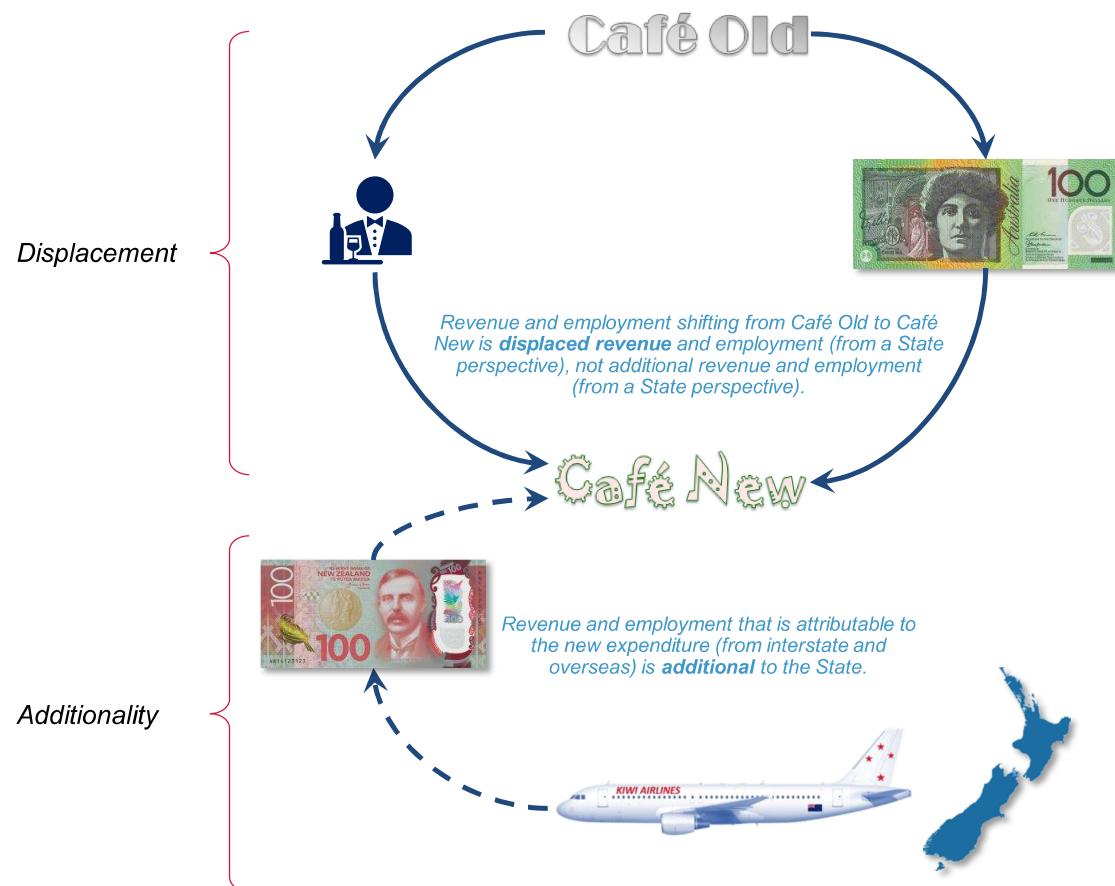
Café New's revenues increase to \$110,000 per week, and the café hires six new staff (five former Café Old waitstaff, and one formerly unemployed barista).

The \$100,000 per week that was 'taken' from Café Old, is still displaced revenue, but the extra \$10,000 per week of revenue from New Zealand and interstate visitors is considered **additional to the State**, as this revenue (*New Zealand dollars and "Melbourne dollars"*) would not have been earned in NSW if Café New was not operating.

Similarly, the five staff hired by Café New are offset by the staff losses at Café Old (displaced wages and employment), whereas the barista – who now has a job when she didn't have one before – is additional employment which would not have occurred if Café New was not operating.

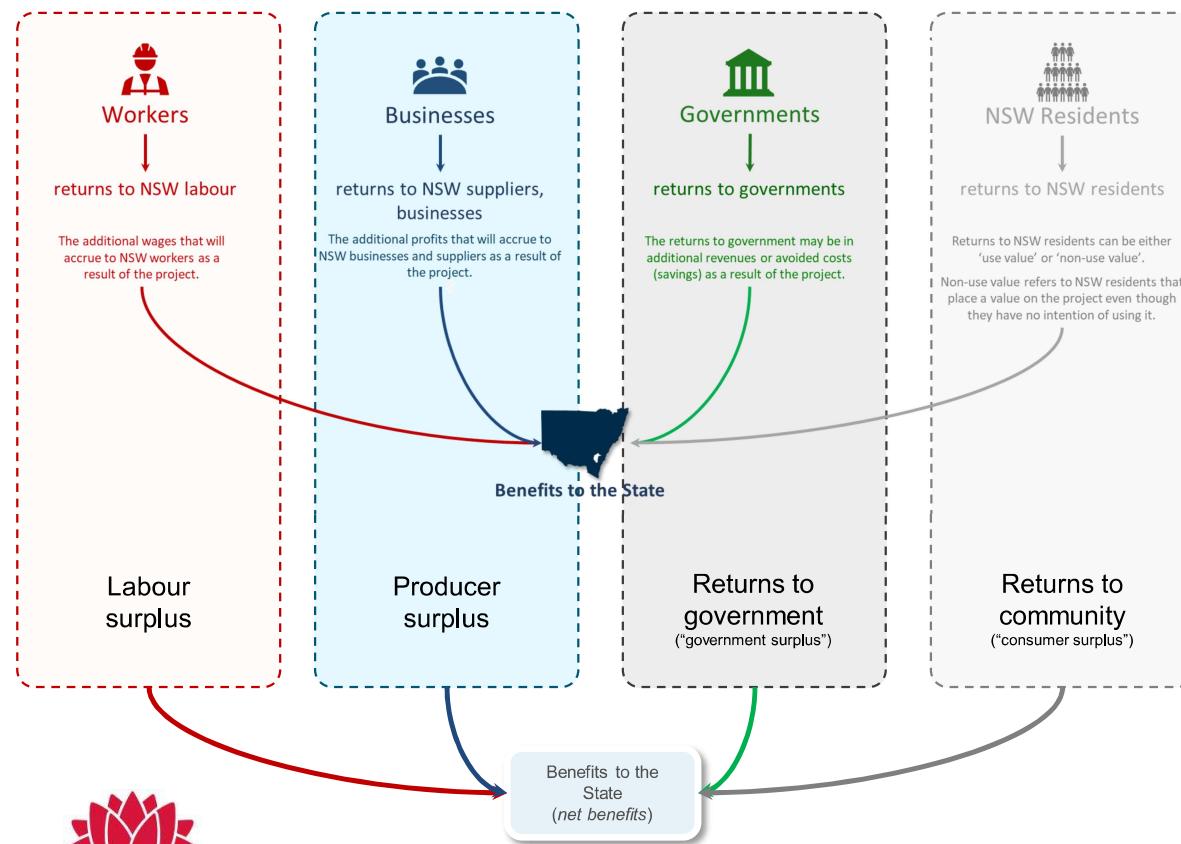
Note that additionality generally refers to expenditure, rather than the number of workers or transactions.

However, knowing the number of workers, averages, number and volume of transactions, etc will aid in estimating the additional (or reduced) expenditure.



# Surpluses – Part 1

Recall the sources of economic benefit:



▪ **Labour surpluses** are the returns to NSW workers above those which they could have expected to earn in the counterfactual. Because the counterfactual is often not known, we will often use a proxy, such as:

- the worker's (or workers') wages at their previous employment;
- the worker's (or workers') wages at their next-best employment alternative;
- the value of unemployment benefits (in the case of employment drawn from the pool of unemployed workers).

▪ **Producer surpluses** are the returns to NSW businesses above those which they could have expected to earn in the counterfactual. The producer surplus is estimated as the returns under the project, minus the returns without the project (or the next-best use of resources). As this is often difficult to estimate, the proxy used is the profits accruing to the businesses.

▪ **Returns to government** are the additional receipts to government as a result of a project (in excess of those which could have been expected without the project, in the counterfactual). An example might include the additional tax receipts or royalties paid as a result of a project. (For example, a business expansion might increase employment, leading to additional payroll tax (a *NSW Government tax*)).

Returns to the community

# Surpluses – Part 2

Recall the sources of economic benefit:

- **Returns to the community** – also known as **consumer surpluses**  
– are benefits which accrue to the community as a whole, or to sectors of the community (separately to returns to workers or business owners).
- Consumer surplus is defined as the difference between the amount that consumers are willing to pay for a good or service (such as access to a museum), and the amount that they actually pay. For example, if John is happy to pay \$20 for an exhibition ticket but the museum only charges \$15, that \$5 difference is consumer surplus.
- These benefits may have ‘use value’ or ‘non-use value’. ‘**Use value**’ refers to residents actually using a good or service (such as John visiting the museum), while ‘**non-use value**’ refers to the benefits residents receive from the provision of the good or service to others (such as Alex being happy that museums are available for others to visit).
- Determining returns to a community is often achieved through **revealed preferences** (studying the actual spending habits of consumers) or **stated preferences** (studying what consumers state, usually in surveys).



Returns to  
community  
("consumer surplus")



Image: Art Gallery of New South Wales

# Visitation (Tourism)

- Tourism visitation provides benefits to the community as follows:
  - additional wages to workers from servicing visitors;
  - additional profits to businesses from servicing visitors; and
  - additional net revenues to government from taxes.
- Recall that all costs and benefits are measured from a NSW perspective: this means we only include expenditure of visitors from outside NSW\*.
- A “visitor” or “tourist” is therefore someone from interstate or from overseas. An interstate visitor from the Australian Capital Territory is as much a visitor as an international visitor from the USA or UK.
- For visitation expenditure to be included, the expenditure must be related to the project, program or attraction being analysed: the attraction must be the **sole or primary purpose** (see next page) for the visit to NSW, or for the extension of a stay in NSW.



The exception to this is where people who would have left NSW stay in the State, rather than go overseas or interstate. For example, imagine Lily, an avid skier who enjoys steep, challenging routes.

Lily could go to the Opal Mountains Ski Field, but its routes are too easy for her, so she goes to New Zealand every year to ski instead. But if the Opal Mountains Ski Field was upgraded, Lily might decide to stay in NSW to ski the same challenging routes without having to go overseas. This retained expenditure could be counted as an additional benefit to NSW!



Image: NSW Department of Planning

## Visitor expenditure “cheatsheet”

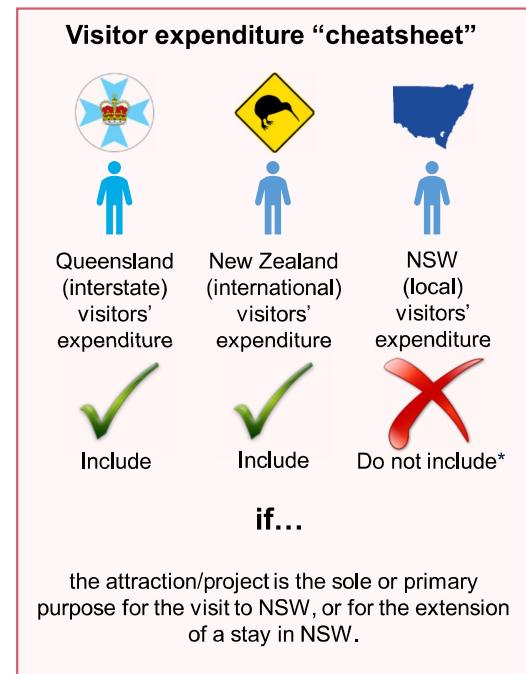
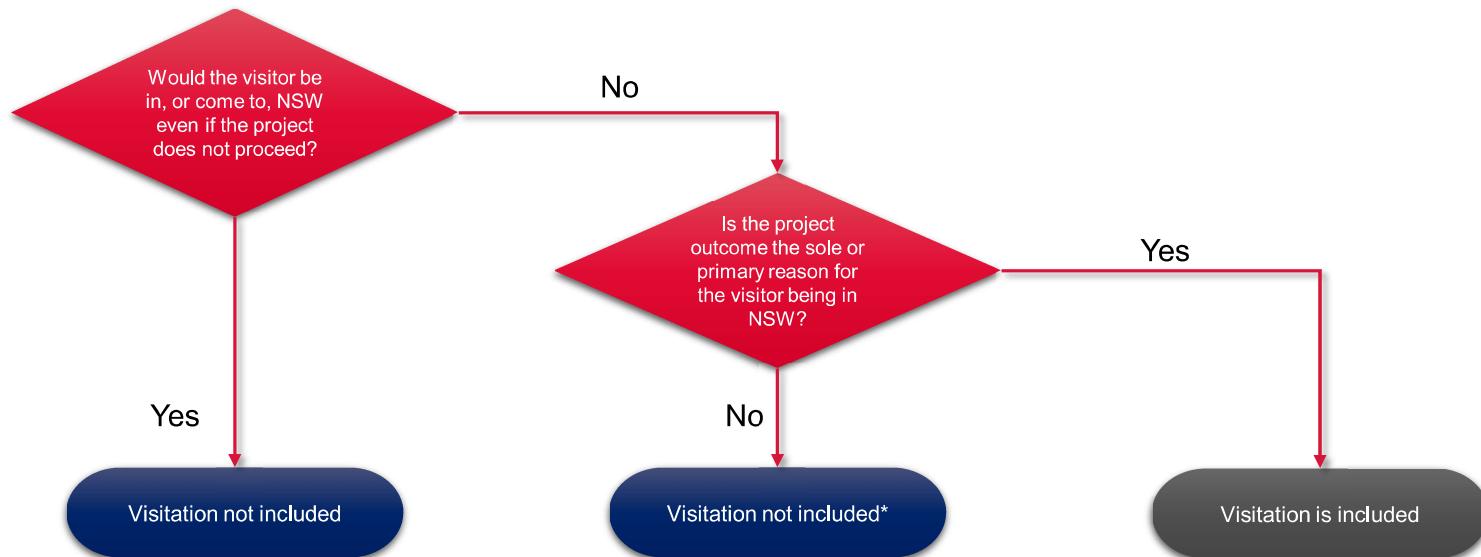
Queensland (interstate) visitors' expenditure	New Zealand (international) visitors' expenditure	NSW (local) visitors' expenditure
Include	Include	Do not include*

**if...**

the attraction/project is the sole or primary purpose for the visit to NSW, or for the extension of a stay in NSW.

# Visitation (Primary Purpose Visitation)

- Also known as “induced visitation”.
- We are only interested in the visitation which would not have occurred without the attraction; expenditure from visitation which would have occurred anyway is not included.



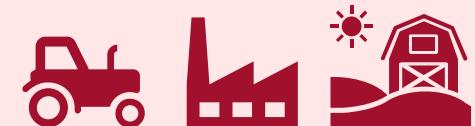
# Capital and Ongoing Costs

- We usually distinguish between **capital** and **ongoing costs**.
- Capital costs are the costs incurred by a proponent for the establishment of their business, and represent the formation or acquisition of an asset for future use.

*...includes all costs necessary to establish and operate the project, including the design and construction of buildings, structures, associated infrastructure and fixed or mobile plant and equipment...*

NSW Department of Planning, PS 10-108

Capital is usually associated with the purchase of plant, equipment and land.



- Ongoing costs are the expenses incurred in the 'ordinary course of business'.

*Expenses are consumptions or losses of future economic benefits in the form of reductions in assets or increases in liabilities of the entity, other than those relating to distributions to owners...*

Statement of Accounting Concepts SAC 4

- Public Sector Accounting Standards Board
- Australian Accounting Research Foundation
- Australian Accounting Standards Board

Ongoing costs are the ordinary day-to-day, weekly, monthly and annual expenses of running the business, including purchasing of inputs/ingredients, workers' wages, rent, electricity, etc.



"Capital expenditure" and "operating expenditure" can get tiring to spell out and say aloud, so we usually shorten them to "capex" and "opex" in casual contexts.

# Capital and Ongoing Costs (residual values)



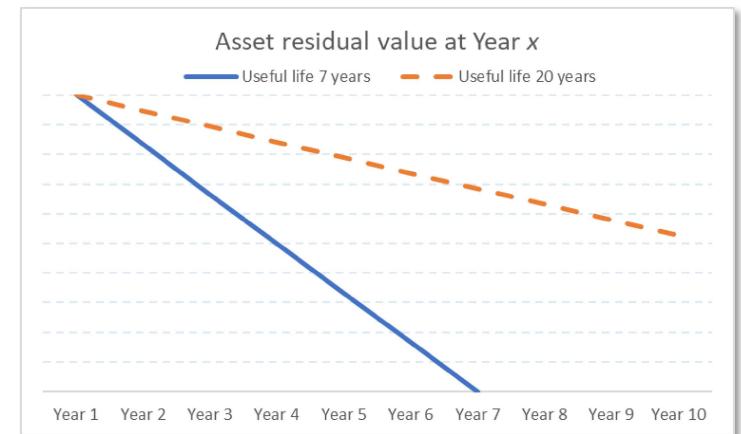
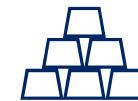
A **residual asset value** refers to the value of an asset at the end of the analysis period.

As an example, assume that a project is being analysed for **ten years**. The project includes the purchase of machinery for use in chocolate making.

If the machine has a useful life of **seven years**, the assumed value of the machine at the end of the analysis period (ten years) will be **zero**. This is because it is assumed that the asset will be fully depreciated by the end of seven years, and will be unusable by this time anyway. (*For example, after seven years, the wear and tear of daily chocolate-making means that the machine will be too old to use or too expensive to maintain.*)

The exception to this may be **scrap value**: at the end of its useful life, some assets may have 'scrap value', either by being sold as second-hand assets, spare parts, or other valuables in the asset. (*For example the chocolate machine may be made of gold, which may have re-sale value.*)

If, however, the chocolate-making machine is assumed to have a useful life of **twenty years**, we would expect a **residual value** to be included as a benefit to the business. In this example, as the analysis period is ten years, and the machine's useful life is assumed to be twenty years, a residual value of approximately 50% of the purchase value could be included as a benefit to the proponent (depending on the depreciation method or usage schedule used).



# Discounting and Present Values

When analysing projects, you will often need to compare projects across time. Projects which run for different lengths of time, or which have delays of benefits (or expenses), may not be easily comparable due to the timing differences. The timing of costs and benefits can also affect the value of a project.

The value of time, and the risk associated with time, is captured by the **discount rate**.

*To compare costs and benefits it is necessary to allow for differences in time. This comparison is done by discounting the value of future costs and benefits to determine their present value. The present value is the value today of some future cost or benefit. Present values allow for decisions to be made in the present, about initiatives that have costs and benefits in the future. It also allows for comparisons over time or across proposals with different analysis periods.*

*Discounting reflects the view that a dollar received in the future is worth less than a dollar now (for a consumer), or that a dollar invested today will not be available to invest elsewhere (for an investor).*

"NSW Government Guide to Cost-Benefit Analysis" (TPP17-03), Appendix 4, p42.



In New South Wales, the NSW Government Guide to Cost-Benefit Analysis (TPP17-03) prescribes 7% per annum as the discount rate. Other jurisdictions may have different prescribed discount rates, and/or discount rates for different scenarios.



Please note that the discount rate is not the same as the risk rate.

The discount rate reflects the **time preference of money**: that a dollar today is worth more than a dollar "in a year".

This incorporates risk, but is not the same as risk.

For more details, please consult the appendix on discounting.

# Appendices





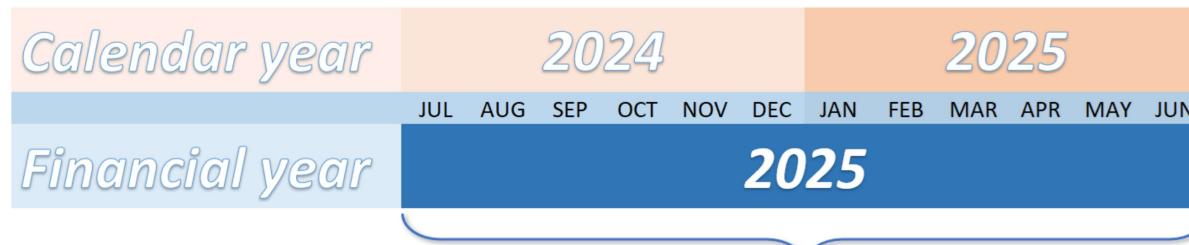
# Time periods

In Australia, a “financial year” is generally the year between 1 July and 30 June of the following year. For example, the 2025 financial year (or the 2024/25 financial year) will begin on 1 July 2024, and end on 30 June 2025.

Other countries may have different financial years, for example:

- In the United Kingdom and Japan, the financial year is 1 April to 31 March of the following year.
- In the United States, the financial year is 1 October to 30 September of the following year.
- In many European, African and Asian nations, the financial year is the same as the Gregorian calendar year: 1 January to 31 December.
- In New Zealand and many Commonwealth nations, the financial year is the same as in Australia: 1 July to 30 June of the following year.

In theory, the financial year could encompass any yearly time period, and many countries – including Australia – allow a company to choose its own financial year. In practise, however, most companies follow the government fiscal year.



*“the 2025 financial year”  
“financial year ended 30 June 2025”  
“FY2025”  
“2024/25 financial year”  
“fiscal 2025”*

# Discounting and Present Values – Example part 1

Your friend Ken owes you \$100. He says to you, "I can either pay you \$100 today, or \$108 in two years."

Which do you choose?

In order to make this decision, you need to establish your risk profile and your time value of money.



Your risk profile is the risk attached to how likely you think your friend will pay you back in the timeframe, compared to how likely he is to pay you back now. Your friend may be very trustworthy, but perhaps you're concerned that Ken (a volcano researcher) will fall into a pit of lava in the next two years.

Let us assume that you have calculated Ken's trustworthiness, and the probability that he will not be able to repay, and your discount rate is 5% per annum. This means that each year, the value you attach to an amount declines by a further amount. This amount is calculated as follows:

$$\text{Discount in year } n = \frac{1}{(1 + d)^n}$$

So, the value of the amount you are evaluating is as follows:

$$\text{Present value of amount } A \text{ in year } n = A \times \frac{1}{(1 + d)^n}$$

Where:

$d$  = the discount rate

$n$  = the year (or time period). Now is represented by the Year 0.

$A$  = the present value of the amount

Recall that another way to express

$$\frac{1}{(1 + d)^n}$$

is

$$(1 + d)^{-n}$$

So, the current value to you of \$100 now is \$100 (obviously). The mathematical proof being  $100 \times (1 + 5\%)^{(-0)}$ , which equals \$100.

The value to you **now** of \$100 **in one year** is therefore  $100 \times (1 + 5\%)^{(-1)}$ , which equals \$95.24.

The value to you **now** of \$100 **in two years** is therefore  $100 \times (1 + 5\%)^{(-2)}$ , which equals \$90.70.

So how does this help you with Ken?



If Ken had offered to give you \$100 now or \$100 in two years, you wouldn't need to do a present value calculation to know that it was a bad deal: you would obviously prefer the \$100 now. With the present value calculation, you know that \$100 in two years is only worth \$90.70 to you now. But.....

# Discounting and Present Values – Example part 2

Ken didn't offer you \$100 now versus \$100 in two years, or \$100 now versus \$90.70 in two years.

Ken offered you "\$100 now or \$108 in two years". So, should you take his offer?

To know whether to accept his offer, you will need to calculate the value to you now ("present value") of \$108 in two years.

$$\begin{aligned} \text{Present value of amount } A \text{ in year } n &= A \times \frac{1}{(1+d)^n} \\ &= 108 \times \frac{1}{(1+5\%)^2} \\ &= 97.96 \end{aligned}$$

Where:

d = the discount rate

n = the year (or time period). "Now" is represented by the Year 0.

A = the present value of the amount

Based on your risk profile, \$108 in two years is worth \$97.96 to you now. This is worth less to you than \$100 now, and **you should therefore reject Ken's offer.**

## PLOT TWIST: What if Ken had offered you "\$100 now or \$112 in two years"?

You would just need to calculate what \$112 in two years is worth to you **now**, as you did above.

$$\begin{aligned} \text{Present value of amount } A \text{ in year } n &= A \times \frac{1}{(1+d)^n} \\ &= 112 \times \frac{1}{(1+5\%)^2} \\ &= 101.59 \end{aligned}$$

In this case, you would **accept** Ken's offer, as \$112 in two years is worth more to you than \$100 now, even after factoring in the risk and uncertainty attached to the two year wait and Ken's (un)reliability. In fact, given that \$112 in two years is worth more than \$100 now means that Ken has rewarded you for taking the risk with a "**risk premium**".



# Discounting and Present Values – Example part 3

So, how much would Ken have to offer you in order to make you *indifferent* to whether he pays you now or in two years?

Recall that:

$$\begin{aligned} \text{Present value of amount } A \text{ in year } n &= A \times \frac{1}{(1 + d)^n} \\ &= 112 \times \frac{1}{(1 + 5\%)^2} \\ &= 101.59 \end{aligned}$$

To calculate this, you will need to figure out the exact amount payable in two years that equals \$100 now. This can be done by re-arranging the above equation.

$$\begin{aligned} \text{Future value of amount } A \text{ in year } n &= A \times (1 + d)^n \\ &= 100 \times (1 + 5\%)^2 \\ &= 110.25 \end{aligned}$$

So if Ken offered you \$100 now or \$110.25 in two years, you would be indifferent, as they are theoretically worth the same amount (in present value) to you.

The decision criterion is, therefore, that any offer below \$110.25 should be rejected, while any offer above \$110.25 should be accepted.



# Discounting and Present Values – Part 1

What does this have to do with cost benefit analysis? As can be seen in the example below, if the effects of time are not taken into account (through discounting), the benefit/cost ratio will be inaccurate, and the wrong investment decision may be made.

## Discounting vs no discounting

### Real amounts

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Benefits	200	200	300	400	500	1,600
Costs	(1,500)					(1,500)
<b>Net benefit (cost)</b>	<b>(1,300)</b>	200	300	400	500	100
Benefit/cost ratio:	1.07					

### Present value amounts

Discounting factor	0.9346	0.8734	0.8163	0.7629	0.7130	
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Benefits	187	175	245	305	356	1,268
Costs	(1,402)					(1,402)
<b>Net benefit (cost)</b>	<b>(1,215)</b>	175	245	305	356	(134)
Benefit/cost ratio:	0.90					



VALUES

A decorative banner with the word "VALUES" in a serif font, centered between two white arrows pointing towards it.

Nominal amounts refer to the 'face value', unadjusted for time or inflation. The nominal value can be thought of as the actual price of an item.

Real amounts refer to amounts which have been adjusted for inflation, and reflect the 'real value' of an item.

Real amounts = nominal amounts - inflation adjustment

Discounted amounts refer to the present value of real amounts. The final results of any CBA should be reported in discounted amounts.

# Discounting and Present Values – Part 2

The discount rate selected can have a material effect on whether a project is accepted or rejected.

Discounting reduces the impact of costs and benefits in the future. The higher the discount rate, the greater the reduction. Most projects involve taking action now or in the short term, in the hope of achieving benefits in the future. Therefore, for most projects, the higher the discount rate, the lower the estimated net benefit and benefit-cost ratio, and vice versa.

In the example below, in the second year of spending, the cost is discounted, but not by the same proportion as the benefits that occur later. This effect is greater at the higher discount rate, and in this case at the higher discount rate, the project is estimated to produce a net cost instead of a net benefit.



In the short term, the choice of discount rate is less likely to have an effect on decision-making.

By the later years, discounting has a material effect on decision-making.

For example at the 50-year mark, at 3% p.a. discounting, a value has been discounted down to 23% of its original value. However, at 10% p.a. discounting, it retains less than 1% of its original value.

# Discounting and Present Values – Part 3

In addition to discount rate effects, the **timing** of cashflows (or costs and benefits) can materially affect a project's profitability, **even where the monetary amounts are equal and the discount rates are the same**.

Consider the two example projects below:

- both of which are over five years;
- both of which are discounted at 7% per annum;
- both of which involve \$1.6 million of benefits and \$1.5 million of costs (net benefits of \$100,000 over the five year analysis period, in nominal terms).

While the timing is the only difference between the two projects, these timing differences – together with the effects of discounting – mean that the projects have different net present values (\$134,000 cost, compared to \$145,000 benefit), and different benefit/cost ratios (0.90 compared to 1.13).

Timing 1						Timing 2															
Real amounts						Real amounts															
Benefits	200	200	300	400	500	Total	1,600														
Costs	(1,500)						(1,500)														
Net benefit (cost)	(1,300)	200	300	400	500	Total	100														
Benefit/cost ratio:	1.07					Benefit/cost ratio:	1.07														
Same total amounts																					
Present value amounts						Present value amounts															
Discounting factor	0.9346	0.8734	0.8163	0.7629	0.7130	Discounting factor	0.9346	0.8734	0.8163	0.7629	0.7130										
	Year 1	Year 2	Year 3	Year 4	Year 5		Year 1	Year 2	Year 3	Year 4	Year 5										
Benefits	187	175	245	305	350	Total	1,268														
Costs	(1,402)						(1,402)														
Net benefit (cost)	(1,215)	175	245	305	350	Total	(134)														
Benefit/cost ratio:	0.90					Benefit/cost ratio:	1.13														
Different timing of costs and benefits																					
Different NPVs and BCRs																					

# Market Failure

“Market failure” has a specific and narrow definition in economics. It is where a market (for example, “car insurance market”) fails to allocate resources efficiently (perhaps over-allocating resources to one market, or under-allocating resources to another market).

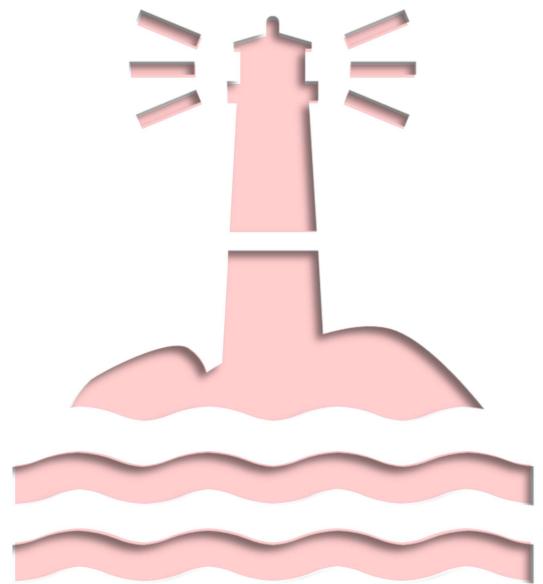
Market failure is often used as the major rationale for government intervention (where the free market has failed to allocate resources optimally for the community).

The four most commonly cited forms of market failure are:

-  public good;
-  information asymmetry;
-  externalities; and
-  market power.

# Market Failure – Public Goods

- The definition of a public good should not be confused with phrases such as '*public benefit*', '*good for the public*', '*public interest*' or '*publicly produced goods*'. It does not simply mean "*good for the public*" (even though it may be good for the public).
- Public goods exist where provision of a good or service for one person means it is available to all people at no extra cost ("**non-excludable**")  
**and**  
consumption of the good or service by one person does not affect the good or service's availability to others ("**non-rivalrous**").
- The non-excludable and non-rivalrous nature of a public good (or service) makes it impossible or difficult to recoup the costs of providing the good, through requiring payment from users.
- For this reason, private firms have no incentive to provide the good or service, as there is no feasible way to recover the cost of providing it.
- Government action is often required to mandate payment (taxes, levies), or to provide the good or service itself.
- Examples of public goods include national defence, law enforcement, clean air, street lights, flood control dams, lighthouses, mass vaccination programs.



# Market Failure – Information Asymmetry

- Markets rely on “perfect information” to operate efficiently. All parties to a transaction are assumed to have access to all the information they require in order to make an ‘informed choice’.
- Information asymmetry occurs when one party to a transaction has more or better information than the other party, preventing another party from making a fully-informed decision.
- Information asymmetries are often dealt with through requirements to disclose information, warning labels, government agencies providing information, etc.



# Market Failure – Externalities

- Externalities are costs or benefits which are imposed onto unrelated third parties by the actions of an individual or firm.
- May be “good” (positive) or “bad” (negative) externalities.
- Externalities can result in too much or too little of a good or service being produced than is socially efficient. For example, pollution: where the cost of polluting is passed on to society and/or future generations, businesses may over-pollute, since they do not have to pay the cost of polluting.
- Governments often try to address negative externalities through:
  - regulation that mandates corrective measures;
  - persuasion (e.g. anti-drink-driving or anti-littering advertising campaigns); or
  - taxing activities that generate negative externalities.



# Market Failure – Undue Market Power (imperfect competition)

- Undue market power exists when one buyer or seller in a market has the ability to exert significant influence over the quantity of goods or services traded, and/or the price at which they are traded.
- In perfectly competitive markets, market participants have no market power. The ability of a firm to raise its price above competitive levels is limited by the existence of – or the threat of – competition.
- The existence of undue market power can result in economic inefficiency, as it may:
  - allow firms to increase prices without a commensurate reduction in demand; and
  - restrict competition by creating barriers to entry by other firms.
- Examples of undue market power include monopolies and oligopolies.
- Where market power exists, governments may intervene to correct the operation of the market or set prices at a competitive level (*for example, the Australian Competition and Consumer Commission*).

