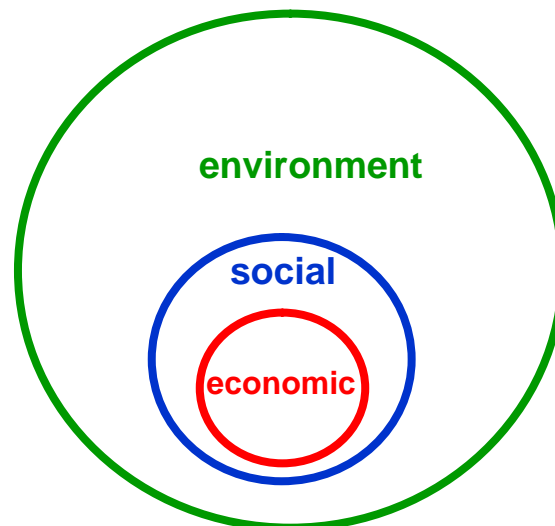


TOWARDS SUSTAINABILITY

INTRODUCTION

The definition¹ of sustainability is that **the social, environmental and economic impacts of an action² are all positive; now and for the next seven generations.**

It is supported by the mind-map:-



The definition is deliberately aspirational, because we need to define true sustainability: otherwise we won't recognise our goal. It is likely that many actions will not be able to attain positive impacts in all areas and so be truly sustainable. Some actions will get close; they will be nearly sustainable. Other actions will be quite unsustainable.

We need to recognise this reality, not just by accepting unsustainable actions because we think we cannot do better, rather by having a system to assess whether an action is close to sustainability, or a long way off.

¹ Details of this 'Definition of Sustainability', including explanation of the mind-map, are at www.stcwa.org.au (go to 'papers' at top of home page)

² In this definition 'action' includes projects, policies and strategies

The following rating system is suggested. It alone is not intended for detailed analysis; rather a concept for further development:-

| | Economic | Social | Environmental | Longevity | Alternative | (total) RATING |
|---------------------------------|----------|--------|---------------|-----------|-------------|-------------------|
| Sustainable | ★ | ★ | ★ | ★ | ★ | ★★★★★ |
| Nearly sustainable | ★ | ★ | ★ | ★ | ★ | ★★★★★ to ★★★★★ |
| Moderately unsustainable | ✶ | ✶ | ✶ | ✶ | ✶ | ★★★ to ★★★ |
| Very unsustainable | ✶ | ✶ | ✶ | ✶ | ✶ | ★★ to ★ |
| Grossly unsustainable | ✶ | ✶ | ✶ | ✶ | ✶ | ★ or less |

Towards sustainability ↑

Ratings towards sustainability

‘Star’ ratings are used, similar to energy ratings, where five stars equates to true sustainability, down to less than one star being grossly unsustainable.

Up to one star can be allocated under any of the headings: economic, social, environmental, longevity, and alternative.

‘Sustainable’ must have one whole star under each heading. The other ratings may actually have different portions of a star under each heading, like so:-

| | Economic | Social | Environmental | Longevity | Alternative | |
|---------------------------------|------------------------------|--------|---------------|-----------|-------------|-------------------|
| Sustainable | ★ | ★ | ★ | ★ | ★ | ★★★★★ |
| Nearly sustainable | total of 4 to almost 5 stars | | | | | ★★★★★ to ★★★★★ |
| Moderately unsustainable | total of 2 to almost 4 stars | | | | | ★★★ to ★★★ |
| Very unsustainable | total of 1 to almost 2 stars | | | | | ★★ to ★ |
| Grossly unsustainable | total of less than 1 star | | | | | ★ or less |

In brief, ‘economic’, ‘social’ and ‘environmental’ are the normal sustainability headings.

‘Longevity’ is where the likelihood of the action remaining economically, socially, and environmentally benign for around 140 years is considered.

'Alternative' relates to whether there is an alternative action reasonably available that is better than the one being assessed.

More specific meanings for each of these headings follows.

ECONOMIC

Economic impacts include³:-

- Benefit Cost Ratios
- Tourism
- Resource development
- Integration of freight transport modes
- Local business community
- Agriculture
- Energy

Note that economic impacts may include the \$ value of certain social and environmental impacts (eg the economic cost of traffic crashes). This does not preclude those impacts also being considered as social or environmental impacts (eg the social disruption caused by death or injury from traffic crashes may also be included as a social impact).

Economic impacts, and all of the social and environmental impacts, are assessed after modifications, remediations and offsets have been included (see STC 'Definition of Sustainability' for more information).

SOCIAL

Social impacts include:-

- Community access
- Displacement of people
- Culture and heritage
- Vibration
- Pedestrians and cyclists
- Public transport
- Noise
- Safety
- Personal security (lighting etc)
- Fatigue
- Visual quality
- Dangerous goods

ENVIRONMENTAL

Environmental impacts are those on the natural bio-physical environment. Because we consider 'social' and 'economic' impacts on humans separately,

³ 'Include' indicates that, for some actions, there may be more types of impact than the common ones listed above

impacts on humans are not considered under the 'environment' heading (to avoid double counting). Environmental impacts include:-

- Air pollution including greenhouse gases
- Surface/ground water
- Drainage
- Flora/fauna
- Wetlands
- Soil loss

LONGEVITY

'Longevity' is assessed by answering the question, 'Is the action or project economically, socially, and environmentally benign for the next 140 or so years?' If there is a reasonable expectation of this then the score under this heading is one star. If there is not, then the score is zero. If this is expected to change during the 140 year period then part of a star may be allocated.

For example, a short walk trip to buy something easily carried is always likely to be the most benign mode, it has operated well for thousands of years in the past, so can be allocated one star for its likely future longevity.

In contrast, making the same trip as driver only of a large, fuel hungry vehicle is not only economically, socially and environmentally negative now, but is almost certainly going to get more negative in future, because of peak oil and global warming, so it gets a zero score for longevity.

Somewhere in the middle is Perth's electric passenger rail. At present, while socially positive, it is not economic in outer areas, and is environmentally dubious because it's electricity is generated by fossil fuel. But in future increases in population density are likely to improve the economics of public transport, and there is a reasonable chance of stationary energy being produced in a sustainable way within 140 years. So it should be allocated part of a star, say half to three quarters, depending on more detailed consideration.

ALTERNATIVE

'Alternative' is assessed by answering the question, 'Is there an alternative that is better economically, socially, and/or environmentally that could reasonably be used?' If there is, then the score under this heading is zero. If there is not, then the score is one star.

For example, the above short walk trip is an economically, socially, and environmentally benign form of transport for that type of trip: there is nothing better, so it scores one star.

This might be compared to the above large vehicle trip when there are many alternatives that are more benign; such as walking, cycling, using public transport, or using a small fuel efficient vehicle. In this case the score is zero.

'Alternative' has been included to encourage people to think carefully about choosing better (less unsustainable) options. In itself this does not directly make an action less unsustainable, but it does increase the chances of a less

unsustainable option being chosen (to increase the star rating), so is considered a useful tool 'towards sustainability'.

RATING

The 'rating' is the total number of stars under the previous five headings.

A 'star' system has been chosen, rather than a number system, because much of the assessment process will depend on informed judgement, rather than detailed calculation. Clearly this will be subject to interpretation, but this is preferable to glossing over the reality that true sustainability is a challenge to achieve. It illustrates how much worse some actions are than others.

A FEW EXAMPLES

A short, driver only trip in a large 4WD, where there more benign alternatives reasonably available, scores zero stars: it is 'grossly unsustainable'. Compare this to a short walk trip to buy something easily carried, which has five stars: it is 'truly sustainable'. The difference between a zero star mode of transport and a five star mode is not just a little bit; it is huge.

Considering Perth's electric passenger rail when used in peak periods: it might be allocated, say, a half star economically because it has benefits in reducing congestion even if the fare box nowhere near covers its capital and operating costs; one star socially; say, half a star environmentally because it is quite fuel efficient compared to driver only commuter cars, despite it being fossil fuelled; say three quarters of a star for longevity; and, say three quarters of a star for 'alternative', because there were better alternatives especially for the Rockingham/Mandurah legs (buses could have penetrated Rockingham and Mandurah better than the train at much less capital and operating cost).

The total of this assessment is 3½: 'moderately unsustainable'. Of course, it may be argued that the score should be more, perhaps 4 star, in which case it just attains 'nearly sustainable' status, but it is certainly not 5 star, or truly 'sustainable', which is an important realisation. And out of peak periods its score will drop; this is the reality.

CONCLUSION

The purpose of this document is not to 'star rate' numerous transport modes or projects, although this could be done later. It is to introduce a system which recognises the reality that many actions are not, and never will be, truly sustainable; but it is possible to talk about those which are 'nearly sustainable' compared to others which are 'moderately unsustainable' or worse.

And it serves to emphasis the value of the few that are truly sustainable.

Approved at STC committee meeting 25/5/09

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The STC web site is www.stcwa.org.au