



Skills for Sustainability



Manufacturing Skills Australia

About metrics

CO₂ 5Y SF₆ 6
kW.h 4M °C
KL Kg NO_x
\$ CH₄ % MJ GWP



This project is supported by the Australian Government
through the Clean Sustainable Skills Package

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SF₆ \$

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kW.h Kg

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NO_x



People

Profit

About metrics

This guide provides general information about metrics. It explains the basic concepts and suggests a range of options that might be relevant, depending on the context.

The information is relevant to several units of competency in the MSS11 Sustainability Training Package, however, the guide is **not** aligned to a specific unit of competency or AQF level.

What is/are metrics?

In a business context 'metrics' usually refers to a system for measuring performance. Typically this defines what will be measured and the process for measuring – the units of measurement, specific methods and any conversions or indicators that might be needed.

Metrics is both an art and science.

The science is in taking the measurements and doing any maths needed to convert raw data into useful information.

The art is in choosing metrics to give the best result. The temptation is to choose metrics which are easily measurable, or even ones which are already being measured. The challenge is to choose metrics that are relevant to the desired outcomes.

Choosing metrics

Corporate level

At the corporate level, metrics should be chosen which show progress towards the organisation's strategic goals. The choice is critical because people will often work to achieve their key performance indicators (KPIs) rather than focus on strategic goals, especially if there are rewards for meeting targets.

If the strategic goal is to increase sales by 10% per annum then a simple metric of sales volume should be adequate. But how should it be measured in order to be meaningful – by dollar value, tonnes, number of items or something else?

The strategic goal for sales might be more complex. It could be to increase sales compared to a competitor or to reach a target for exports or for penetration into a specific market. Simple volume of sales will not be sufficient.



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If the strategic goal is 'serving the interests of our customers' or 'enjoying the ongoing support of the community', then there are no obvious metrics to go with these. How do we know if we're actually achieving these goals?

Whatever metrics we choose will in actuality define what we mean by these. So, choosing the metrics should be done in consultation with all relevant (possibly internal only) stakeholders.

Do we need to quantify these types of goals? There is a school of thought which says 'if you can't measure it, you can't control it'. While this is not the place for a philosophical debate on this, the best and easiest way of showing progress towards achieving a goal is to be able to measure that progress. We do not need to have a numerical target to show numerical progress, i.e. in mathematical terms, we can show we are moving along the axis or scale without needing to know how long the axis or scale is.

Department or section level

Many corporate level metrics are merely the sum of the relevant department level metrics. So measuring the same things but at a department level is appropriate. It may be desirable to consider the weight each department's measurements will have towards the overall strategic goal. For example, if noise reduction is a goal to improve support within the community, then those departments contributing most to community noise should perhaps be weighted more highly. Community noise may come from vehicle movements (employees coming to and leaving work, trucks, and so on) or it may come from the facility itself (plant and equipment noise, and air conditioning noise).

However, at the department level we have another factor to consider. We don't want one department achieving their metrics at the expense of another. Nor do we want one department achieving their metrics in a manner which prevents the entire organisation from achieving better metrics. The aim is to achieve as a team (the organisation), not just as a department. Metrics need to be chosen carefully to ensure that they lead to optimal outcomes for the whole team.

Here it is not just the metrics which are important, but also how the rewards for achieving those metrics are structured. Individual reward for achieving individual metrics will lead to competition between departments. A reward structure, which at least in part, is based on the overall performance of metrics for the entire organisation will lead to outcomes which benefit the entire organisation more.



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Individual level

Managers will be responsible for the achieving of the department metrics.

Managers may also have their own individual KPIs to achieve. In some organisations other individuals also have individual KPIs. These should be chosen and managed on the same basis as discussed above under department metrics.

But the real measures aren't measurable!

Indicators

While many things are easily reduced to numbers, sometimes the important things are not naturally numeric. In these cases, what you measure will be an indicator of performance rather than a direct measure.

This is often the case in social sustainability. While environmental damage or reduction in waste can often be readily seen and measured your business impact on the people in the local community may be harder to quantify. How do you know if you are 'serving the interests of customers'?

Typically these indicators will be chosen so that they can be measured or converted into numbers to allow for metrics in these areas.

Estimates

The overall aim of these metrics is to track performance. It is usually adequate to use estimates because the actual amount is not as critical as the changes over time. The method for estimating needs to be used consistently so that you can make a valid comparison between the baseline and the tracking data.

More information

See <http://www.sustainabilityskills.net.au/what-is-sustainability/sustainability-indicators/>

See About quantifying benefits and costs.

See list of possible 'measurables' in Appendix 1.



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Appendix 1: Possible 'measurables'

The following list shows **some** of the things that might be measured in a typical business that can link to an aspect of sustainability: social, environmental or economic. There are many more.

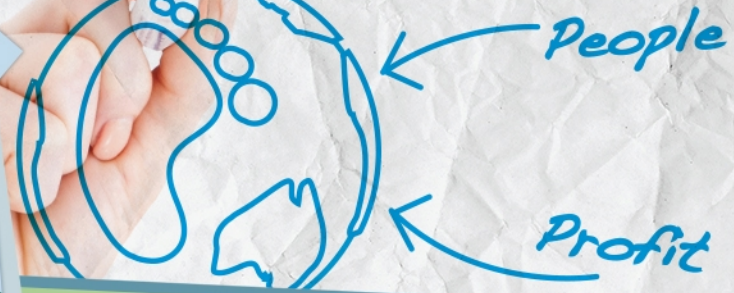
- amount and types of hazardous/restricted substances used
- amount and types of metals, or other materials, released into to the air, soil or water
- amount of fuel consumed by fleet
- amount of land set aside for biodiversity, and community/recreational areas
- amount of media coverage (positive/negative)
- amount of raw materials or energy used per production unit
- amount of waste to landfill
- audit coverage of international labour organisation (labour standards in-house and down the supply chain)
- analysis of total water discharge and quality
- calculations of levels of emissions of greenhouse gases (GHGs), such as carbon dioxide measured as CO_{2-e}
- invoices showing cost/amount of disposal at prescribed waste facilities
- laboratory reports of hazardous emissions monitoring results
- level of investment in environmental protection
- levels of specific pollutants and hazardous substances released into the environment (e.g. dust, particles, metals, volatile organic compounds and GHGs)
- levels of noise generated
- materials/energy inputs compared to outputs (mass/energy balance), i.e. their conversion to product efficiency
- number of lost time injuries
- number and nature of environmental incidents and infringements
- number and types of customer complaints (and responses)
- number of complaints for bullying, sexual harassment and discrimination in the workplace



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- number of complaints/convictions for corruption
- number of criminal prosecutions for environmental non-compliance
- number of days lost due to industrial action
- number of environmental infringements
- number of non-compliances for legislation, regulations and license requirements
- number of women in management positions and progression rates
- percentage of green vehicles in the fleet
- percentage of products that follow eco-design principles
- percentage of recycled material used in packaging
- percentage of packaging that can be recycled and is recycled
- percentage of recycled water used
- percentage of recycled/renewable material input
- percentage of the products sold that is reclaimed at the end of the products' life
- percentage of waste reduced, re-used or recycled
- production downtime
- profit margin and value of the business
- rate and cost of staff turnover
- reports of the number and nature of environmental incidents and accidents
- staff qualifications, training time and training cost
- supply chain invoices showing consumption of resources (e.g. amount of fuel, gas, electricity, raw materials and packaging materials)
- surveys of employee satisfaction levels.



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