University of the Sunshine Coast
Sustainability Research Centre

August 2016

Prof Tim Smith and Dr Dana Thomsen

Sustainability Indicators

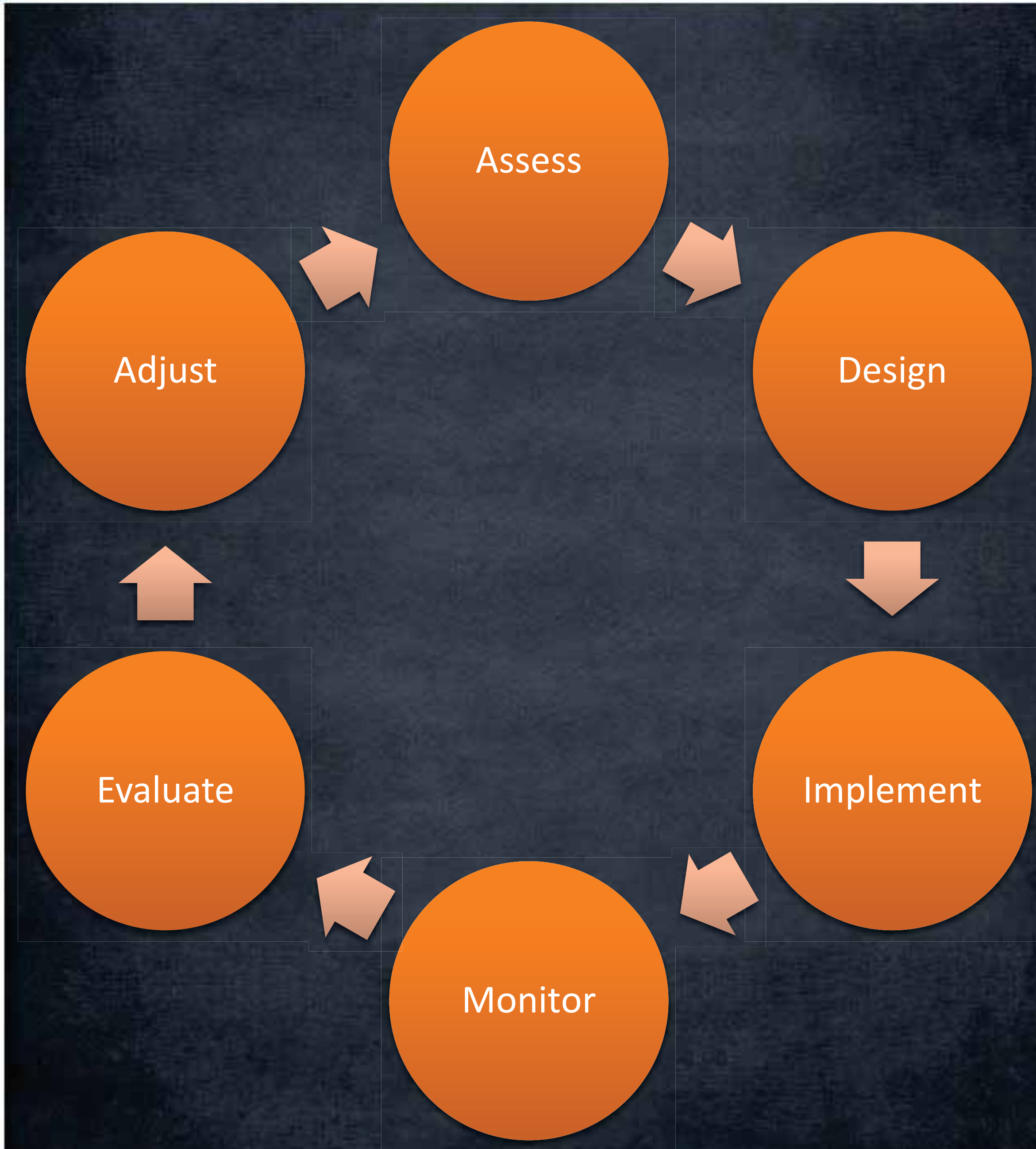
SUSTAINABILITY

- Goal for the Sunshine Coast region
- Progress towards the goal?
- How do we know if our decisions are making a difference?

MONITORING AND EVALUATION

- Achieving goals
- Management effectiveness
- Continuous improvement

ADAPTIVE MANAGEMENT



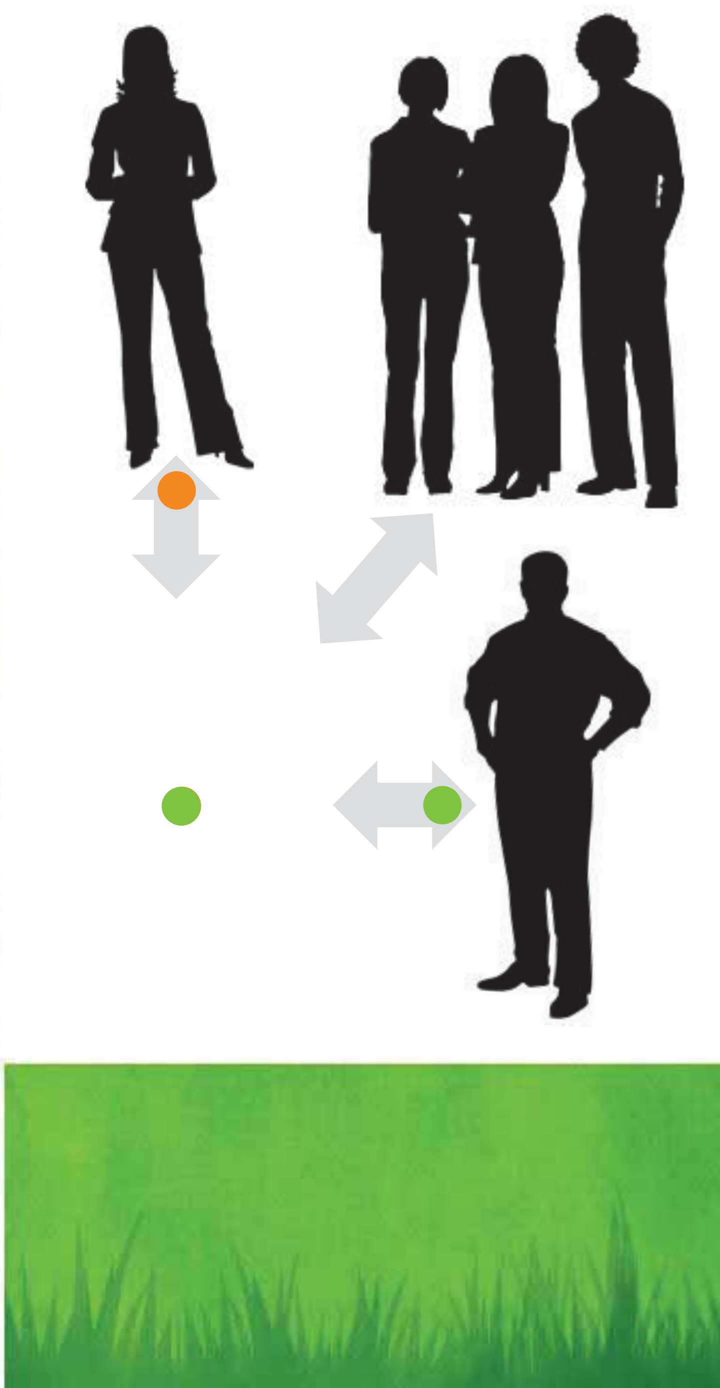
ADAPTIVE MANAGEMENT

- Treating management decisions as experiments (within limits)
  – Evidence base for decision-making
- Re-adjusting pathways
- Learning from successes and mistakes

Sustainability indicators

Constructive alignment

- Purpose
- Measure/indicators
- Process
- Communication



PURPOSE: WHY INDICATORS?

Measure system attributes & how they change over space & time

Understand change & change processes

Protect important values & amenities

EFFECTIVE INDICATORS DON'T JUST MEASURE CHANGE – THEY INITIATE CHANGE

INDICATORS: EXAMPLES

WATER QUALITY HEALTH COMMUNITY ENGAGEMENT

BIODIVERSITY COST OF LIVING HAPPINESS EDUCATION

WEALTH DISTRIBUTION RENEWABLE ENERGY SAFETY

WASTE DISPOSAL WATER USE AIR QUALITY TRANSPORT

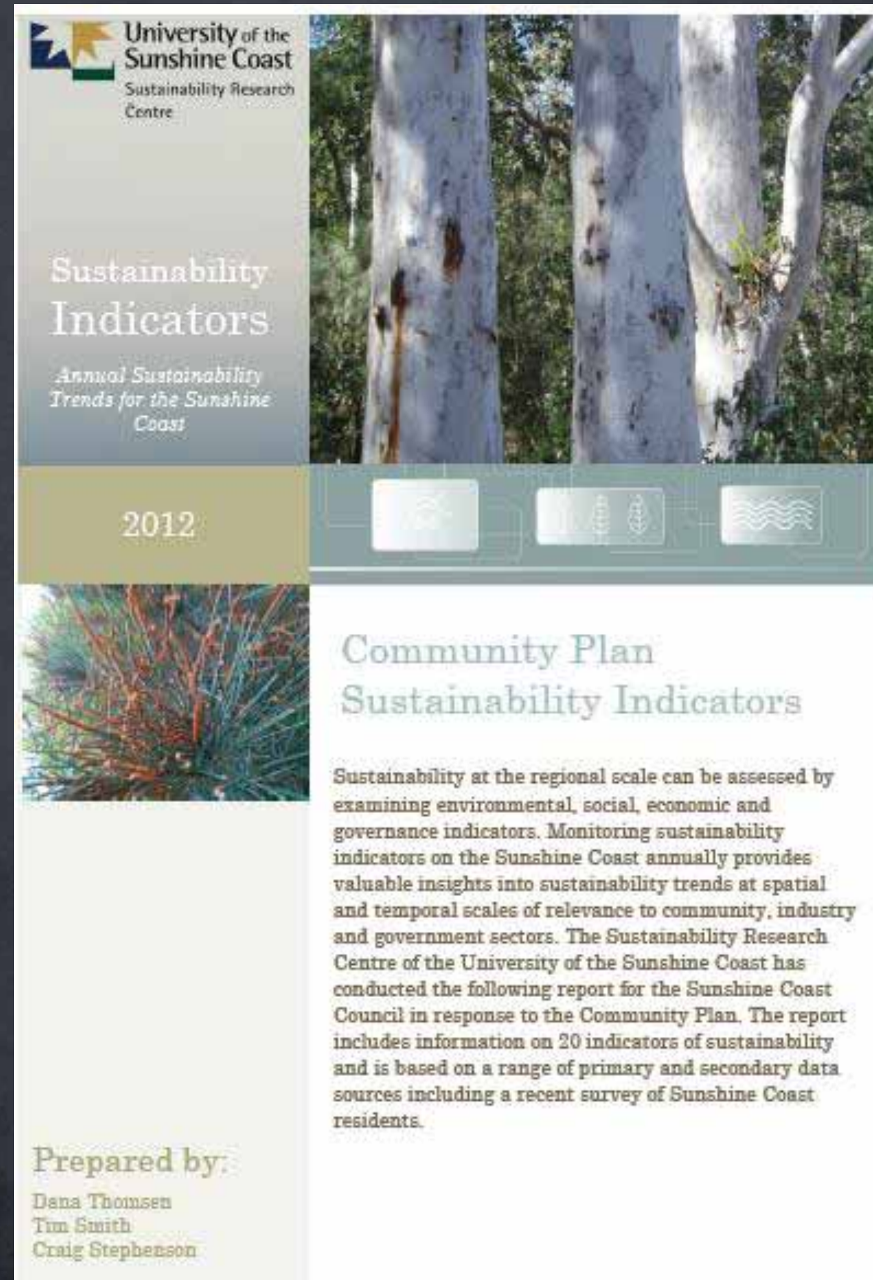
VOLUNTEERISM EDUCATION FOOD PRODUCTION

CLIMATE CHANGE ECONOMIC DIVERSITY FISH STOCKS

SUNSHINE COAST SUSTAINABILITY INDICATORS

20 INDICATORS BASED ON PRIMARY & SECONDARY DATA:

- ENVIRONMENTAL
- SOCIAL
- ECONOMIC
- GOVERNANCE
- COMBINED/SUMMARY



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Sustainability Indicators

Annual Sustainability Trends for the Sunshine Coast

2012

Community Plan Sustainability Indicators

Sustainability at the regional scale can be assessed by examining environmental, social, economic and governance indicators. Monitoring sustainability indicators on the Sunshine Coast annually provides valuable insights into sustainability trends at spatial and temporal scales of relevance to community, industry and government sectors. The Sustainability Research Centre of the University of the Sunshine Coast has conducted the following report for the Sunshine Coast Council in response to the Community Plan. The report includes information on 20 indicators of sustainability and is based on a range of primary and secondary data sources including a recent survey of Sunshine Coast residents.

Prepared by:

Dana Thomsen
Tim Smith
Craig Stephenson

DATA SOURCES

- Private utilities, local, state, national & international agencies.
- Telephone survey of 1000 Sunshine Coast residents (conducted in 2012).
- Example sources only (a full list of references is provided within the report).

- Australian Bureau of Statistics
- Australian Department of Education, Employment and Workplace Relations
- Energex
- IPCC
- Queensland Department of Agriculture, Fisheries and Forestry
- Queensland Herbarium
- Queensland Department of Employment, Economic Development and Innovation
- Queensland Treasury, Office of Economic and Statistical Research
- Productivity Commission
- Sunshine Coast Council
- Unity Water

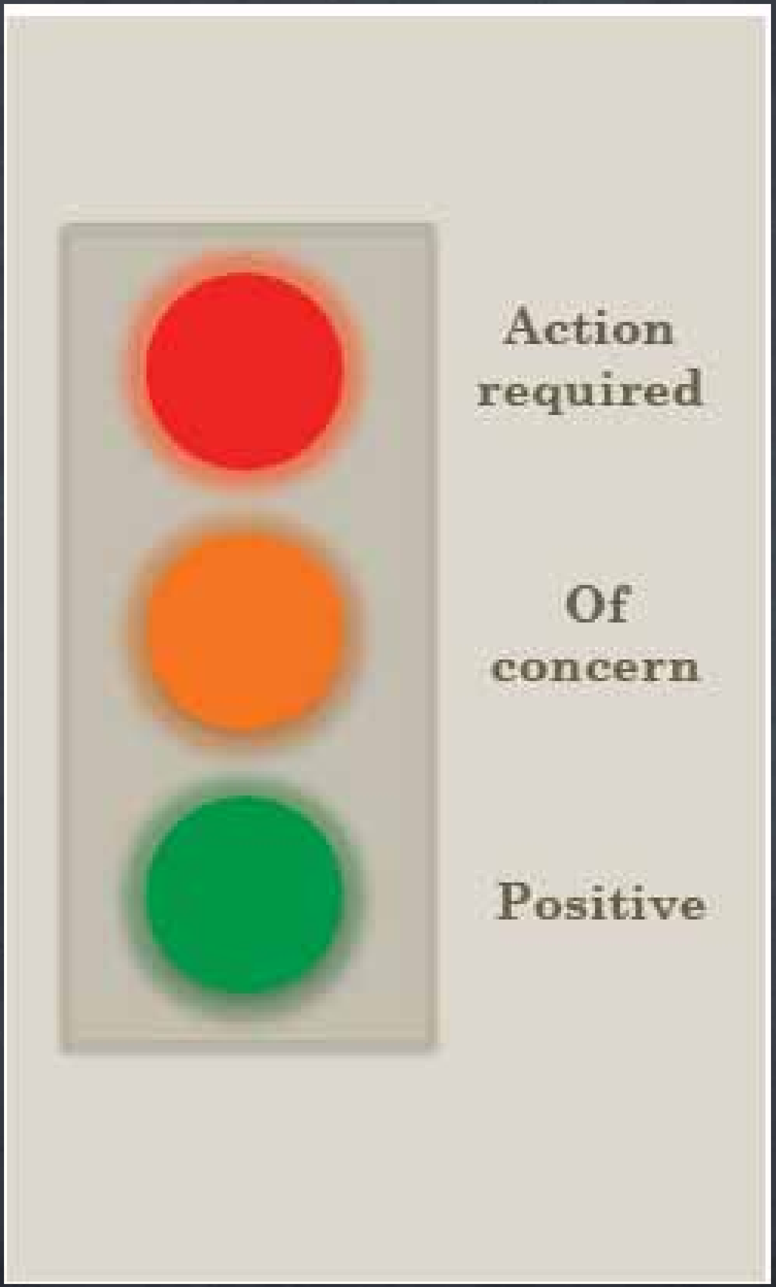
- IRIS Research Ltd

INDICATOR STATUS

For ease of communication we used a 3 point 'traffic light' system to indicate:

- POSITIVE STATUS;
- CONCERN; OR
- ACTION REQUIRED

Status was based on comparison with state and/or national trends or guidelines. It is also important to identify regional/local values.



INDICATOR COMPONENTS

To enhance learning & engagement each indicator included:

- DESCRIPTION
- RATIONALE/WHY IS IT IMPORTANT?
- HOW WAS IT MEASURED?
- STATUS
- TRENDS (SPATIAL & TEMPORAL)
- IMPLICATIONS
- CRITIQUE OF INDICATOR

[sustainability indicators] : 2012

1. Air quality

A measure of annual average PM_{10} concentrations.

Status: Positive

Description of indicator

PM_{10} is a commonly used indicator of air quality based on concentrations of airborne particulate matter less than 10 micrometers in diameter. Human activities that involve combustion, such as the use of vehicles and various industrial practices, can significantly increase the concentrations of airborne particulate matter especially near the source (e.g. major roads). Air quality can also be affected by dust storms and other events beyond the region.

Why is it important?

The quality of the air we breathe directly affects our health and wellbeing. Increased levels of particulate matter in the air have been connected to altered lung function and other health related issues.

How is it measured?

Air quality measures are taken at various National Environment Protection (Ambient Air Quality) monitoring stations throughout Queensland. The data used for the Sunshine Coast in this report has been recorded at a monitoring station in Mountain Creek. To comply with Australian Standards for air quality monitoring, 24-hour averages are recorded daily. These data are aggregated to generate annual average concentrations. Monthly bulletins and annual summary reports are available on the Queensland Government website at: http://www.derm.qld.gov.au/air/monitoring/network/southeast-qld.html

State of air quality

In 2011 the average annual air quality for the Sunshine Coast was 15.2 μg/m³ (PM_{10} concentrations).

Australian (AAQ NEPM) standards advise that levels of PM_{10} should not exceed 50 μg/m³ (24-hour average).

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INDICATOR: HEALTH EXAMPLE

5. Health

A measure of the number of residents registered as having diabetes.

Status: Positive

Description of indicator

A measure of the number of residents registered as having diabetes.

Why is it important?

Diabetes is the fastest growing chronic disease within Australia and globally. There are several types of diabetes including Type 1, Type 2, and Gestational. This indicator focuses on Type 2 diabetes because it is the most common form of diabetes (affecting 85-90% of all those with diabetes) and despite a strong genetic basis, the risk of developing Type 2 diabetes is substantially increased with various lifestyle factors such as obesity, limited physical activity and high blood pressure (www.diabetesaustralia.com.au). In this way, the prevalence of Type 2 diabetes can indicate a range of other health issues.

How is it measured?

The data for this indicator is sourced from the Australian Diabetes Map – a dynamic record of the number of people diagnosed with diabetes across Australia. The map is produced by the National Diabetes Services Scheme (NDSS) an initiative of the Australian Government administered by Diabetes Australia (see www.ndss.com.au). Note that NDSS population figures are based on the 2006 Census.

State of heath

The total number of diabetics registered with the National Diabetes Services scheme on the Sunshine Coast at the time of this report was 11,881. NDSS figures indicate that this represents 4.3% of the Sunshine Coast population and is below the national average of 5.6%. The proportional distribution of these cases across the Sunshine Coast is fairly uniform and is indicated in Table 4. Consistent with the commonly observed prevalence of Type 2 cases, 86% (10197 individuals) of registered diabetes cases on the Sunshine Coast are classified as Type 2.

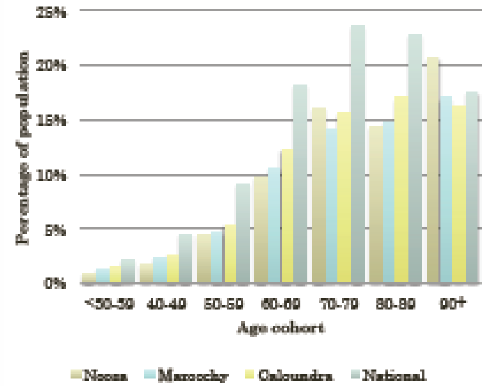


Figure 4. Distribution of registered cases of diabetes across the Sunshine Coast and Australia-wide according to age. Data sourced from the Australian Diabetes Map (NDSS).

In brief...

- Diabetes is the fastest growing chronic disease within Australia and internationally.
- There are 11,881 registered cases of diabetes currently on the Sunshine Coast.
- This represents 4.3% of the Sunshine Coast population and is below the national figure of 5.6%.
- Trends in the number of registered cases may change in future years as awareness of the disease increases.

Trends in diabetes

The NDSS indicates that the overall prevalence of diabetes in the Noosa (4.2%) and Maroochy (3.9%) areas of the Sunshine Coast is considered low by national standards and the 5% level of prevalence recorded in Caloundra may be considered neutral (Table 4). The majority of registered cases in the Sunshine Coast region are people aged 60 years or above (Figure 4).

Table 4. Distribution of registered cases of diabetes across the Sunshine Coast. Source: NDSS Australian Diabetes Map.

LGA	Cases (n)	Pop. (n)	Prevalence
Noosa	1912	45850	4.20%
Maroochy	5595	142841	3.90%
Caloundra	4374	87595	5.00%
Total	11881	276286	4.30%

Critique of indicator

As levels of diagnosis and registration increase this indicator may indicate a more pressing issue for this region or prevalence in age cohorts not yet detected.

Implications

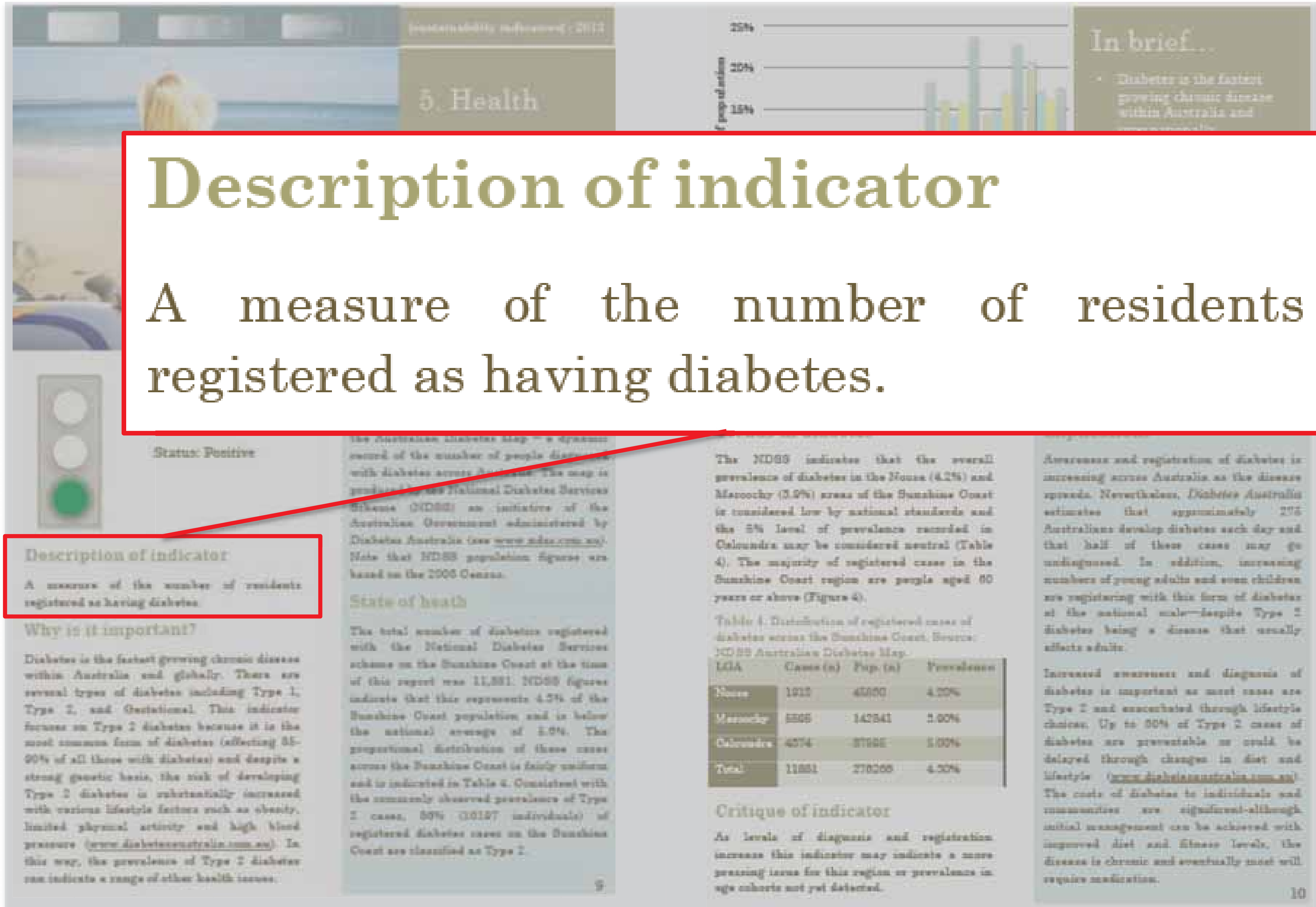
Awareness and registration of diabetes is increasing across Australia as the disease spreads. Nevertheless, *Diabetes Australia* estimates that approximately 275 Australians develop diabetes each day and that half of these cases may go undiagnosed. In addition, increasing numbers of young adults and even children are registering with this form of diabetes at the national scale—despite Type 2 diabetes being a disease that usually affects adults.

Increased awareness and diagnosis of diabetes is important as most cases are Type 2 and exacerbated through lifestyle choices. Up to 60% of Type 2 cases of diabetes are preventable or could be delayed through changes in diet and lifestyle (www.diabetesaustralia.com.au). The costs of diabetes to individuals and communities are significant-although initial management can be achieved with improved diet and fitness levels, the disease is chronic and eventually most will require medication.

INDICATOR: HEALTH EXAMPLE

Description of indicator

A measure of the number of residents registered as having diabetes.



Sustainability indicators : 2011

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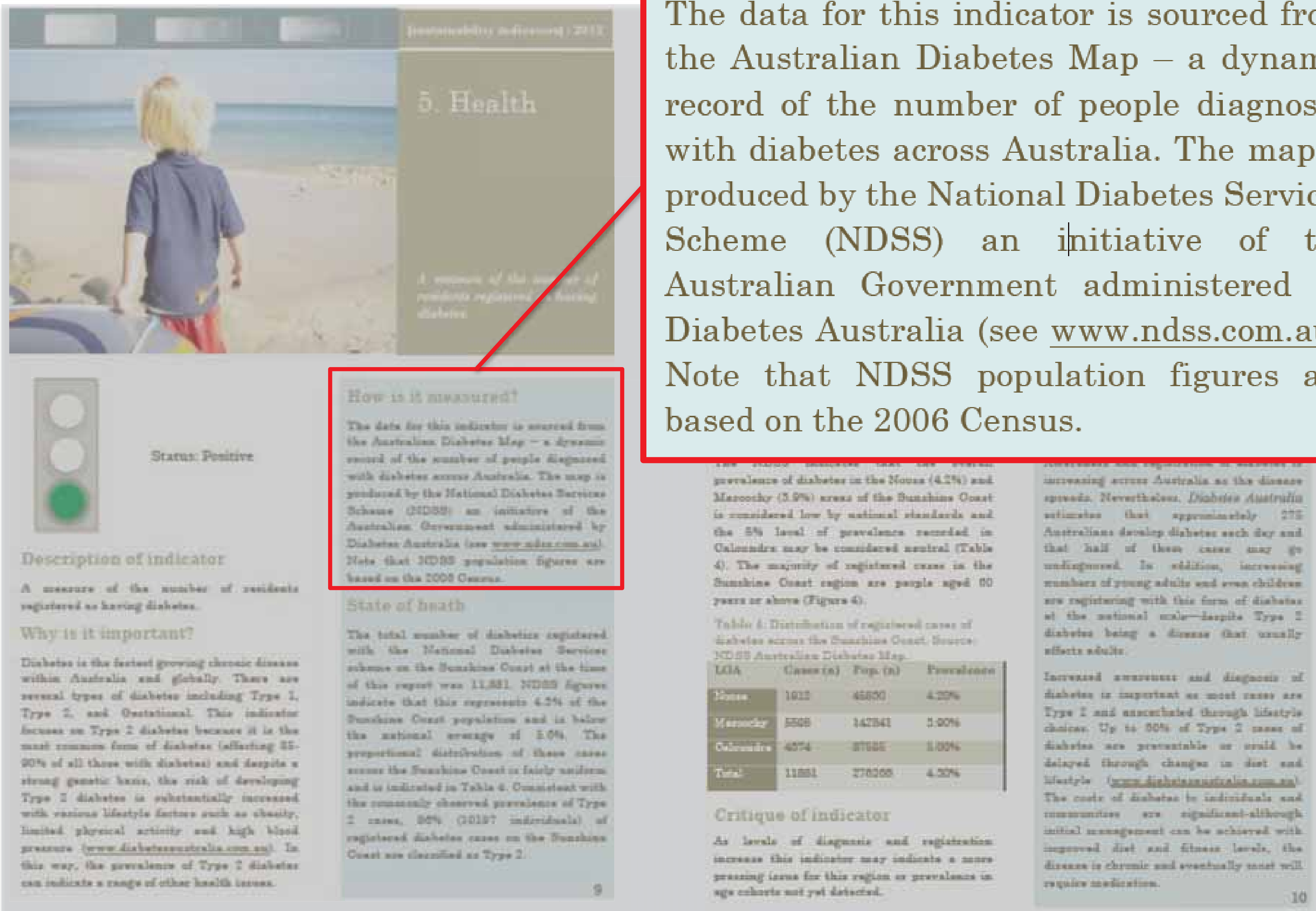
INDICATOR: HEALTH EXAMP



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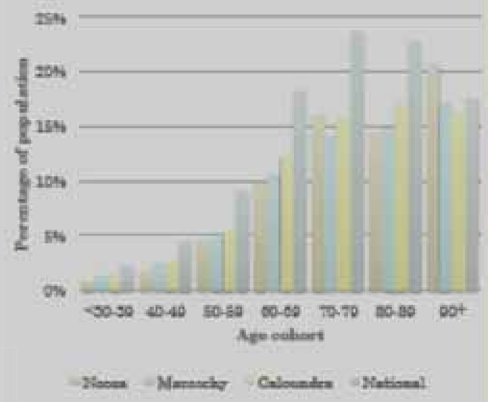

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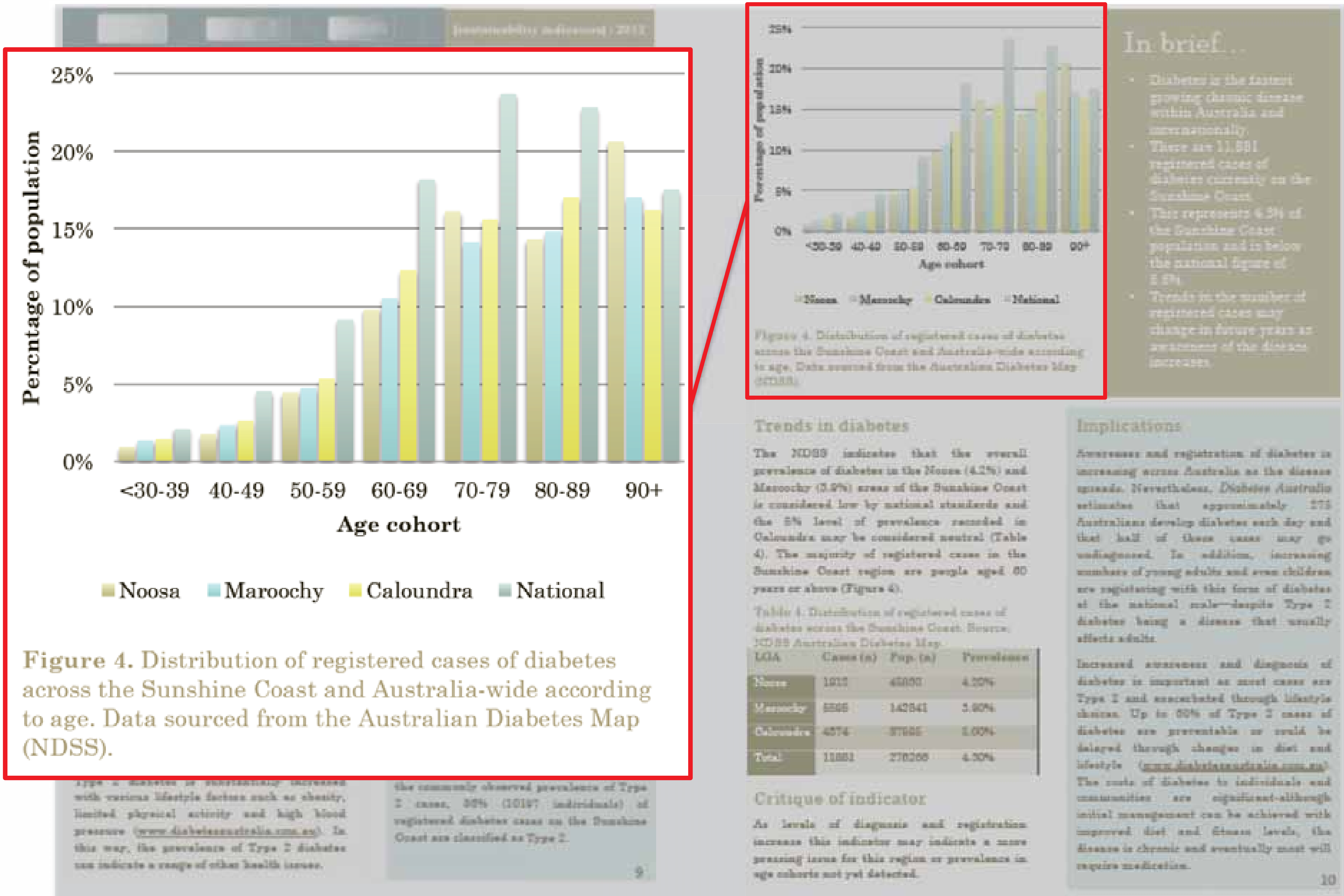

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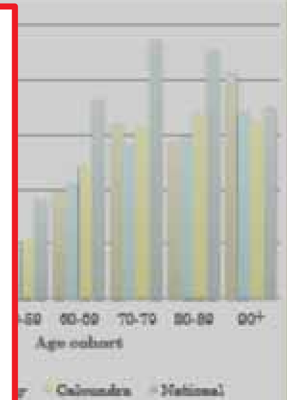

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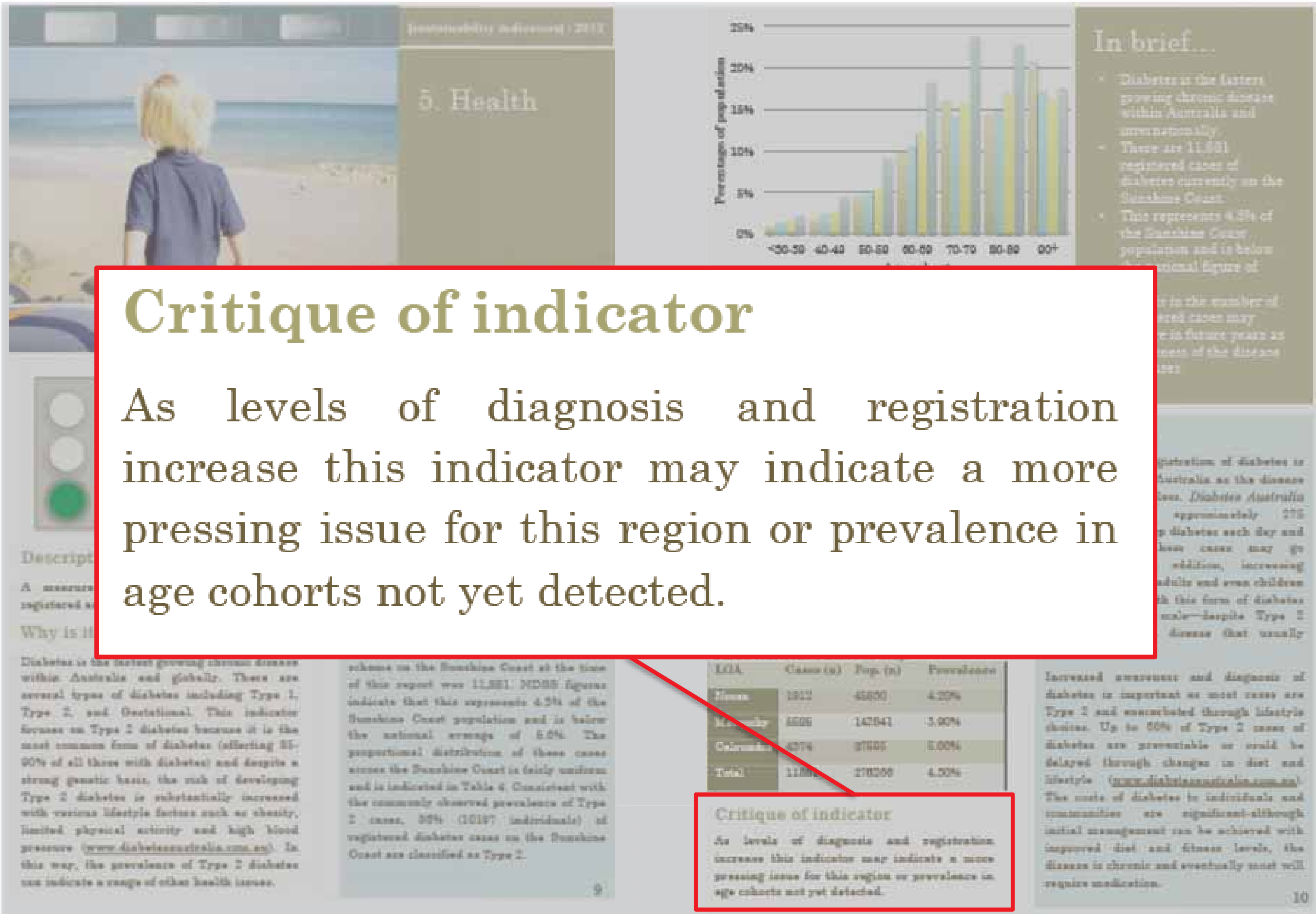

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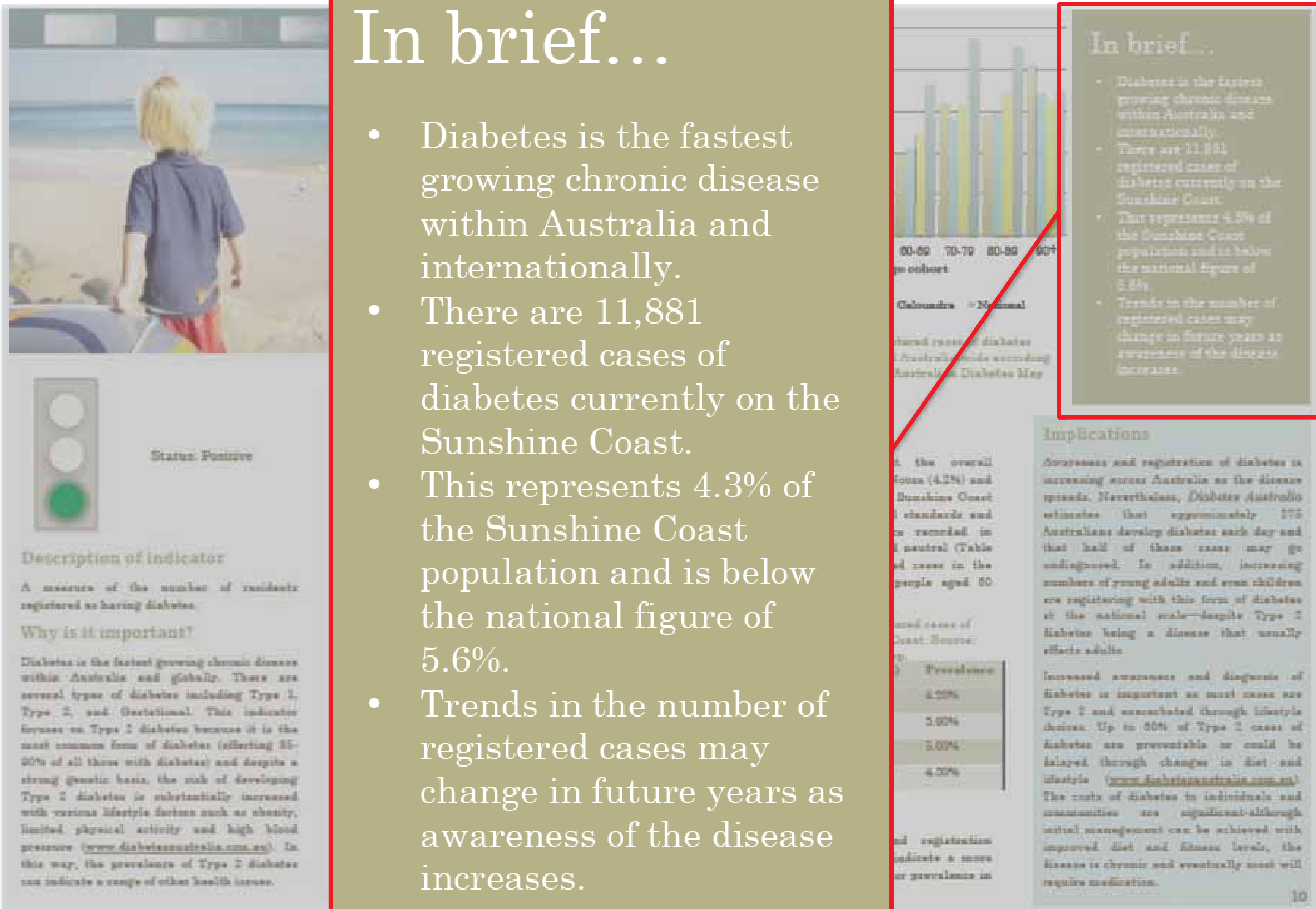

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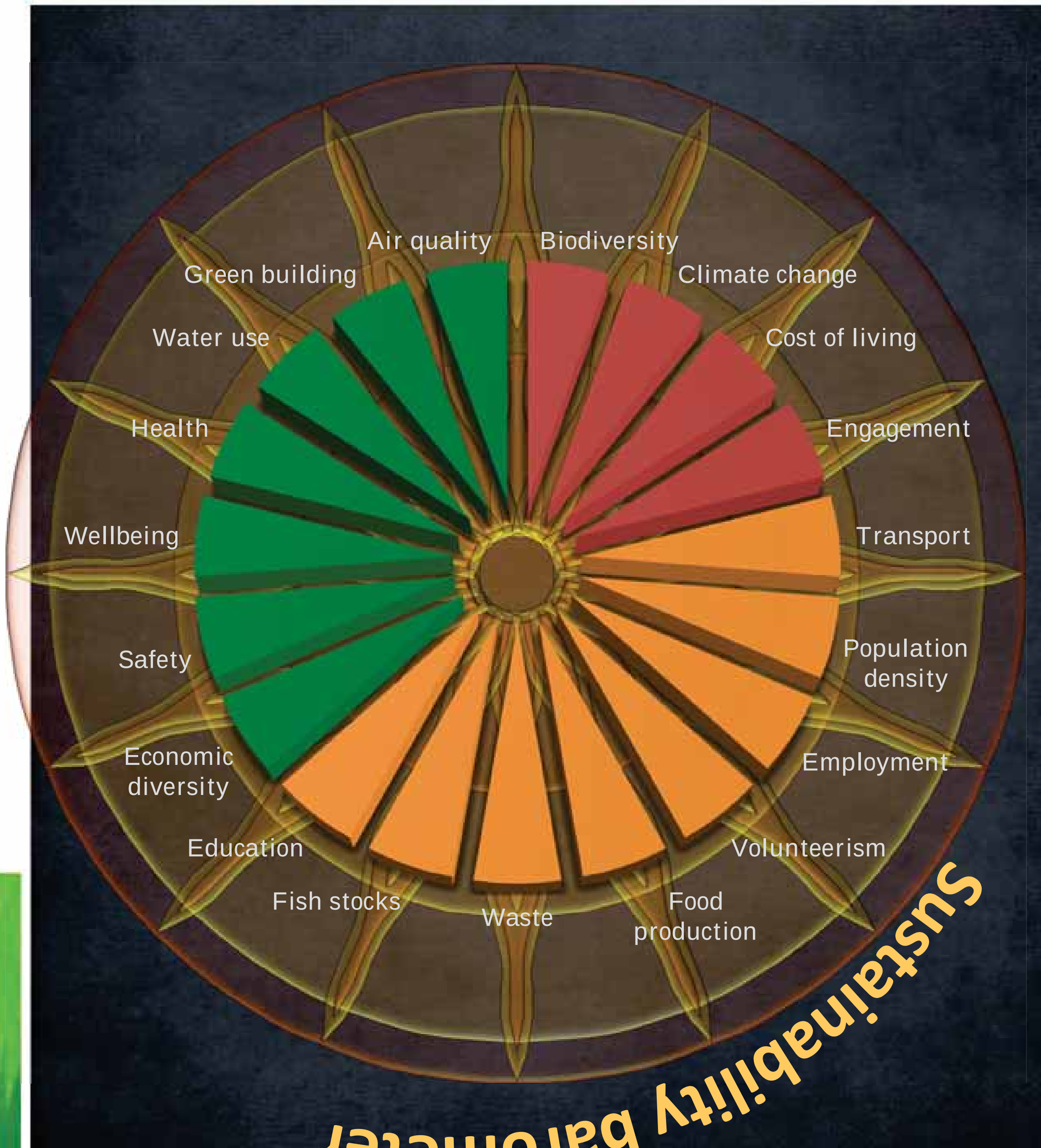
INDICATOR: SYNTHESIS

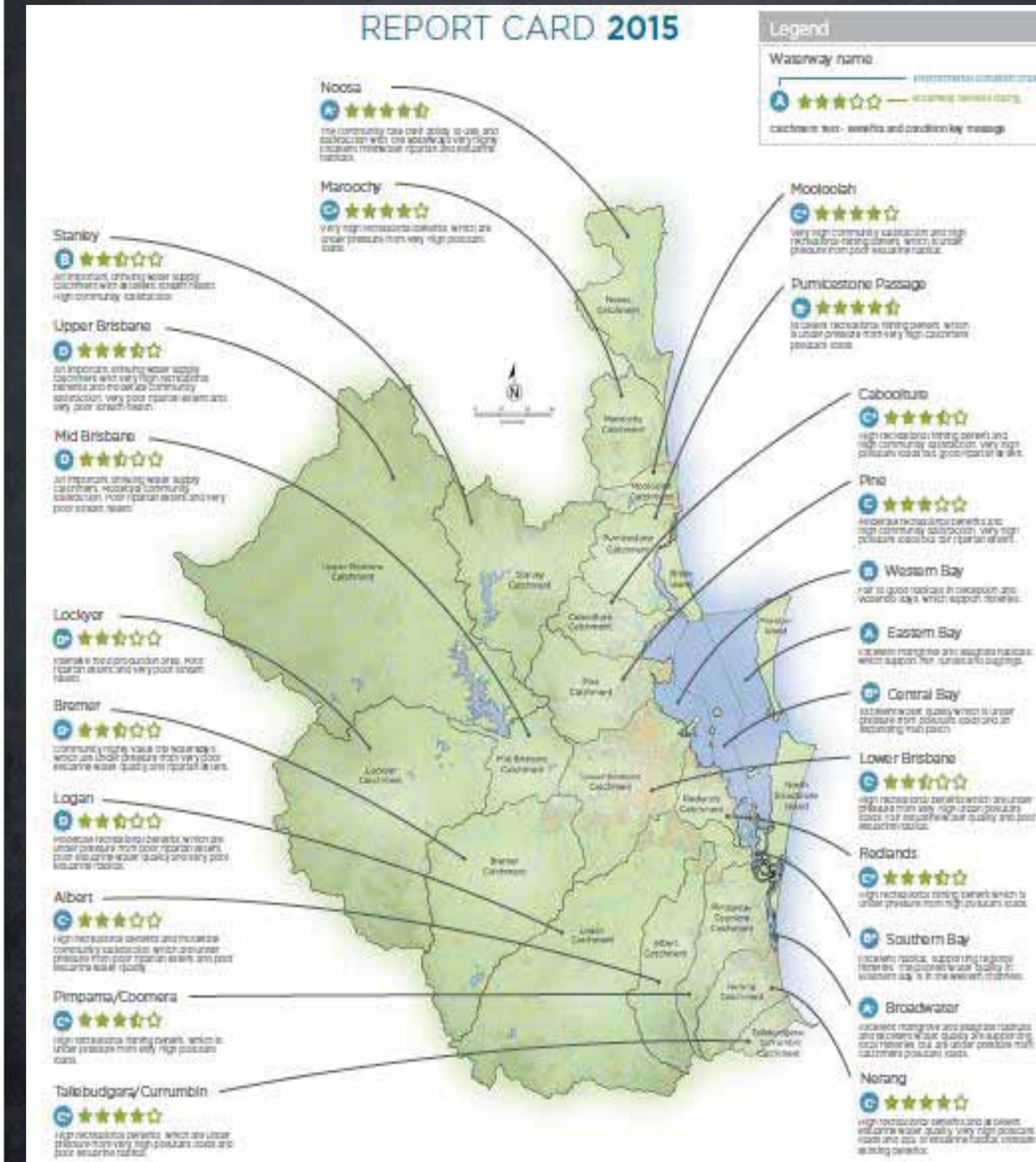
For effective communication of all issues we developed a summary indicator. The sustainability barometer facilitates:

- A regional snapshot/rapid appraisal
- Overall trend analysis
- Identification of cross-cutting & priority issues
- A starting point for further discussions.

Status was based on comparison with state and/or national trends or guidelines and community expectations.



OTHER EXAMPLES



IMPLICATIONS

- Are trends established, novel or uncertain?
- Are some indicators keystone attributes of regional sustainability (i.e. highly linked/underpinning outcomes of other attributes)?
- Which indicators would most benefit from timely and/or substantial investment?
- Which indicators are missing?
- What kinds of conversations and inquiry could follow?

OPPORTUNITIES AND QUESTIONS

- 2016 Census – timely for next comprehensive assessment
- Do we keep the same set?
  - Trends / consistency
- Do we extend beyond measuring 'state'
  - Include drivers, pressures, impacts and responses?
- How frequently should we measure?
- How do we integrate with others?

SUMMARY

- Sustainability indicators provide evidence of management effectiveness
- Identify areas of concern
- Help to target investment

- We are traveling blind without sustainability indicators