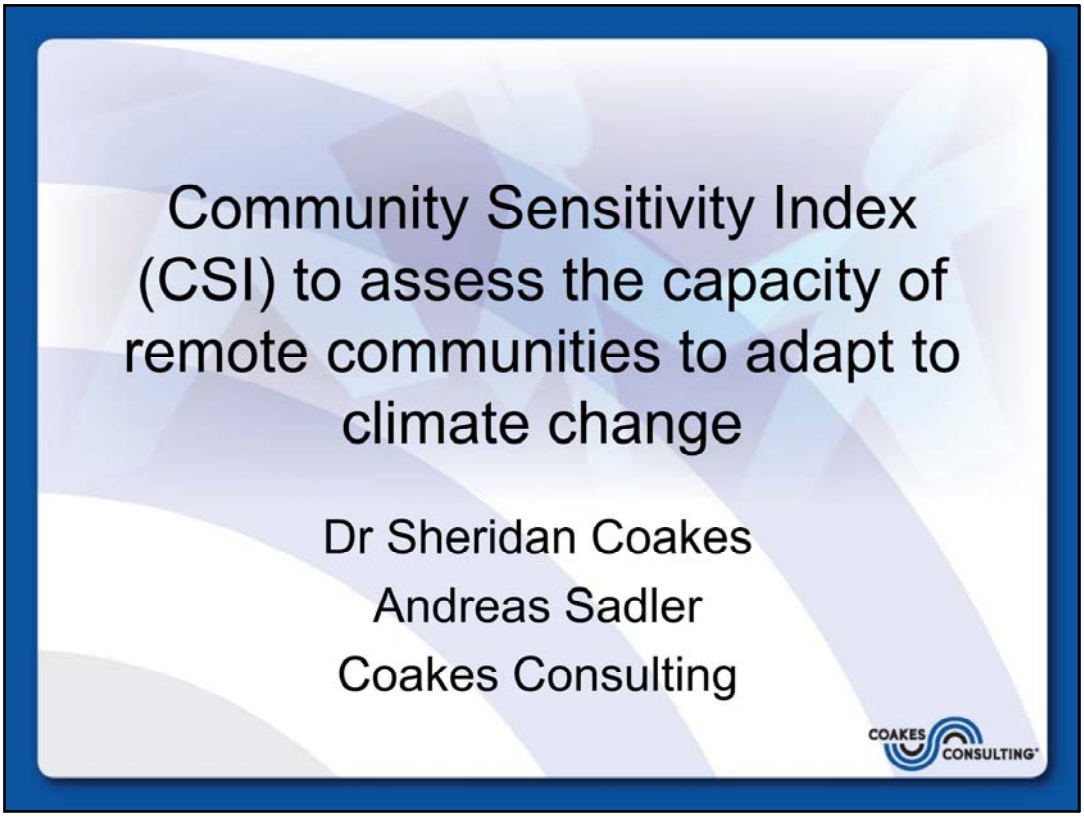
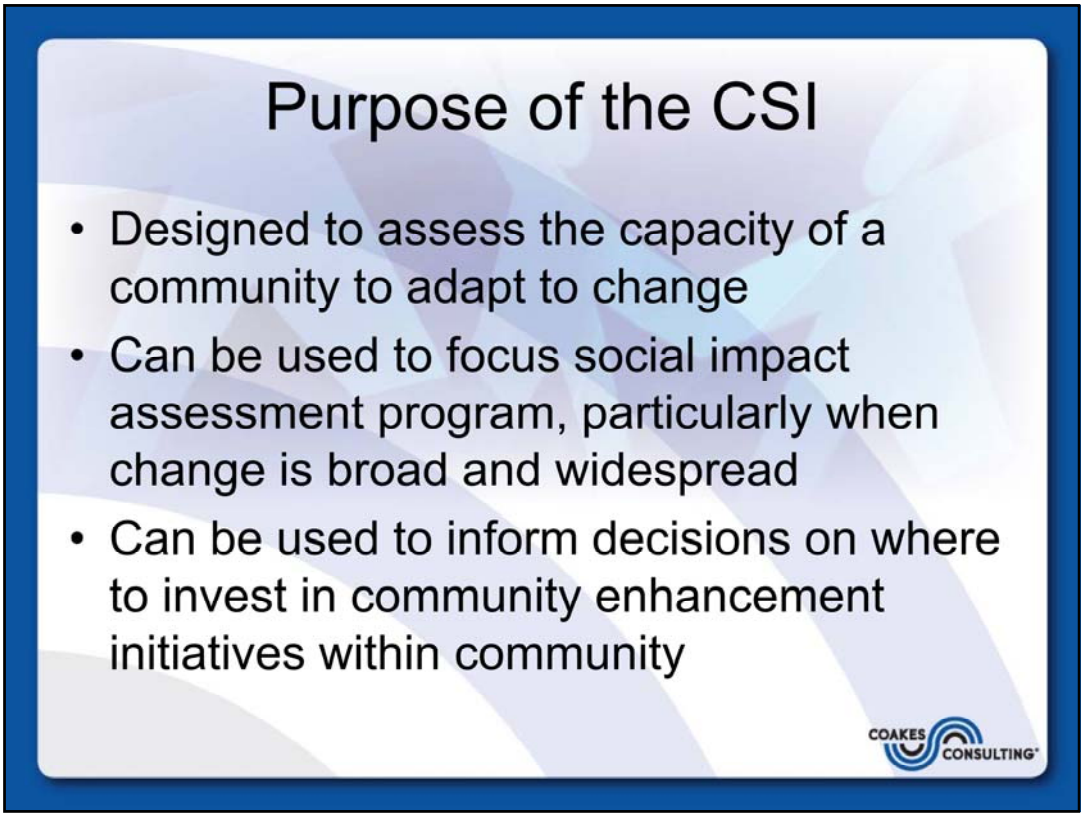


- Introduce self
- Thank Ana for opportunity to present
- Background about Coakes – what we do and clients etc
- Apology for sherie
- Intro to topic
    - an index we have developed to measure the adaptive capacity of remote communities
    - have usually applied it to remote communities with a resource dependency
    - the index is still in development – we have applied to several projects but working to improve the robustness of the index – look forward to feedback today

Overview

- Purpose and value of the index
- Theoretical framework for development
- Selection of indicators and statistical processes
- Examples of practical application in Australia
- Limitations
- Questions and discussion

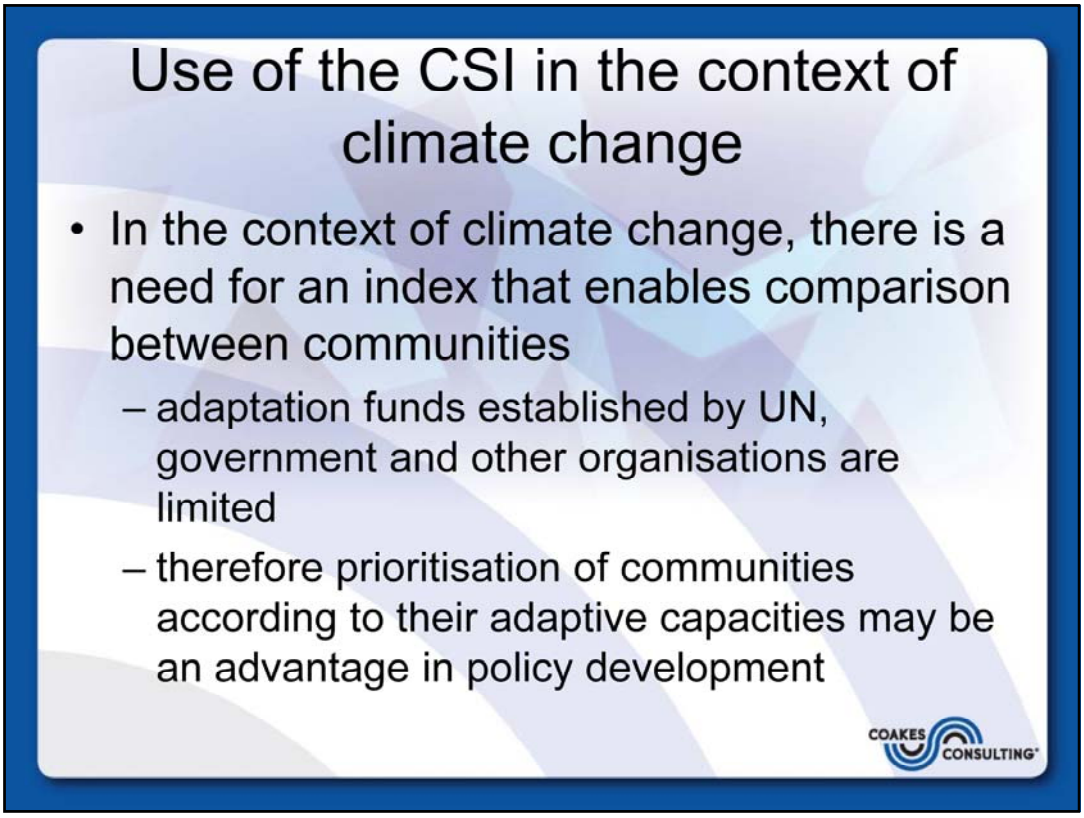


Key points:
Original concept of index development came out of SC's work in the forest sector – where SC was required, as part of a national social impact assessment program (as part of the National Australian Regional Forest Agreement Process), to identify communities that may be more/less sensitive (Vulnerable) to changes in forest use to guide the development of forest policy.

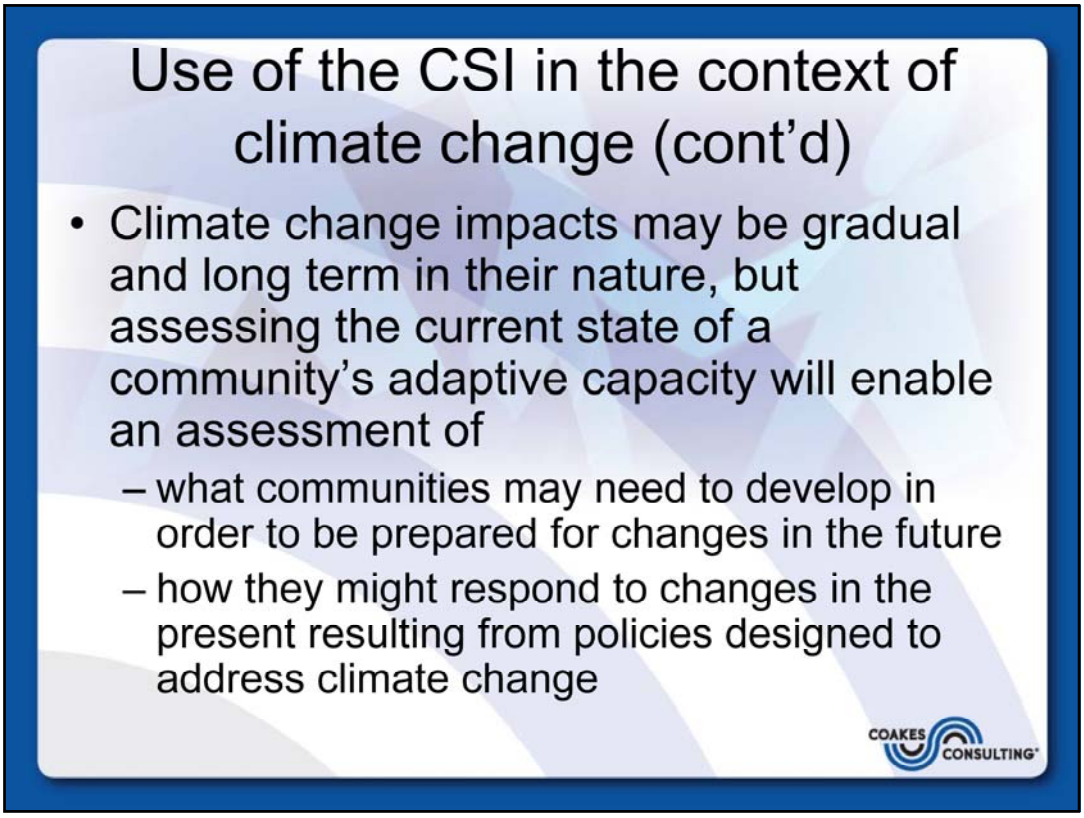
Within the SIA context, identifies communities which may be more or less sensitive/vulnerable to change and provides a focus for further social assessment work.

Also indicates what areas of community may require further development e.g. natural, physical, human, social capital – thus a useful means to prioritise communities for investment across particular sectors

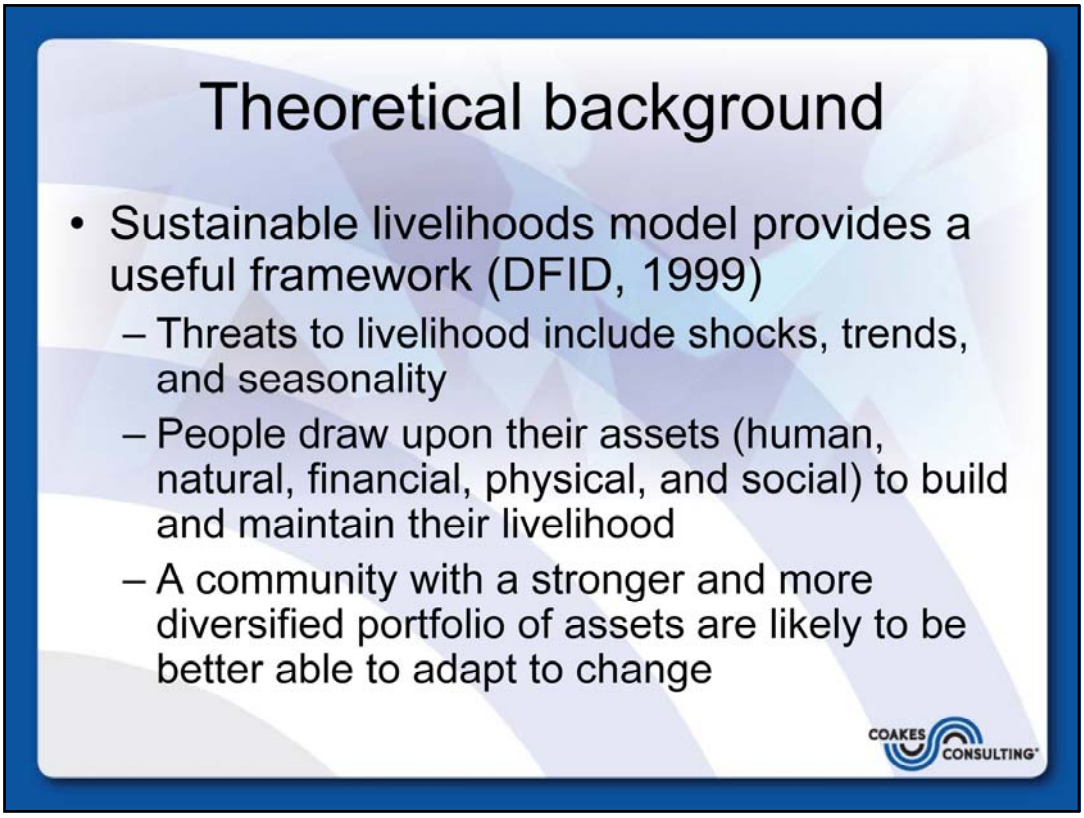
To date index has been applied in a range of resource management sectors, and used in conjunction with TRC-Analysis (methodology developed by Fenton and Coakes as part of the forest process) and published in Fenton, Coakes and Marshall (you will hear more about this methodology in Nadine's presentation later today)



This is a key point Andy for the presentation – otherwise where do you focus and how do you get people thinking about how they may cope with climate change impacts



e.g. in relation to last point – possibly the impact on industry resulting from implementation of an emissions trading scheme



Explain livelihoods model briefly and key points of capitals framework

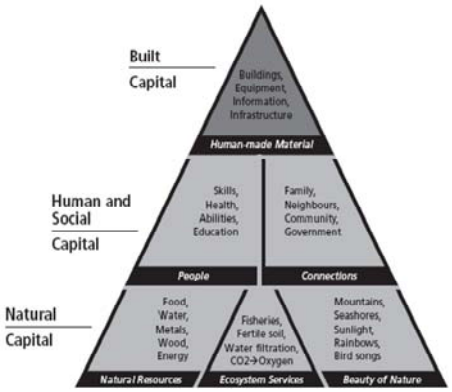
DFID – department for international development

Shocks – e.g. sudden onsets of natural disasters and health problems, conflict, economic crises
Trends – e.g. those relating to the economy, health, resources, and governance
Seasonality – e.g. critical fluctuations in prices and employment

Five areas of community assets or "capital"

Theoretical background (cont'd)

- Hart (2000) – natural, human, social, and built capitals are key assets that define a community's resilience and sustainability
- Central to Hart's model is the inter-relationship and linkages that exist between the different areas of capital



Four areas – leaves out financial

•The framework we've selected reflects elements of Hart and sustainable livelihoods approach

•Like sustainable livelihoods, we have five capitals as opposed to Hart's four

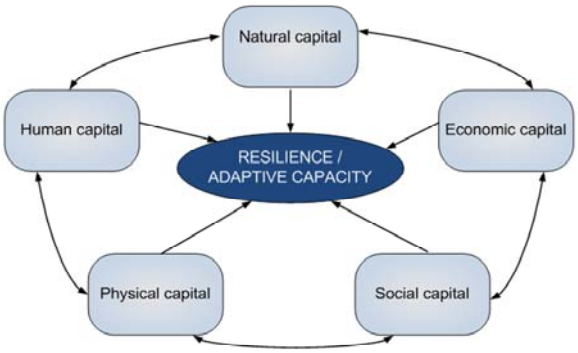
•We refer to financial capital as economic capital

•All the capitals are interrelated – if one is affected others may be affected – give example of human capital and maintenance of physical capital

•Also discuss how the index is useful in a climate change context because it encourages a focus on other areas of community impacts – not just environmental but socio-economic impacts as well

Our framework for CSI development

- Natural capital
- Economic capital
- Human capital
- Physical capital
- Social capital



– Assessing the status of these capitals can provide insight into community adaptive capacity

Natural capital

- •natural resources (e.g. water, minerals, energy)
- •Ecosystems (e.g. fisheries, agricultural soil)
- •Natural attractions / beauty (e.g. marine reefs)

Economic capital

- •Economic resources and key industry sectors (employment diversity)
- •Wealth of individuals, households and organisations (e.g. income levels, labour force participation)

Human capital

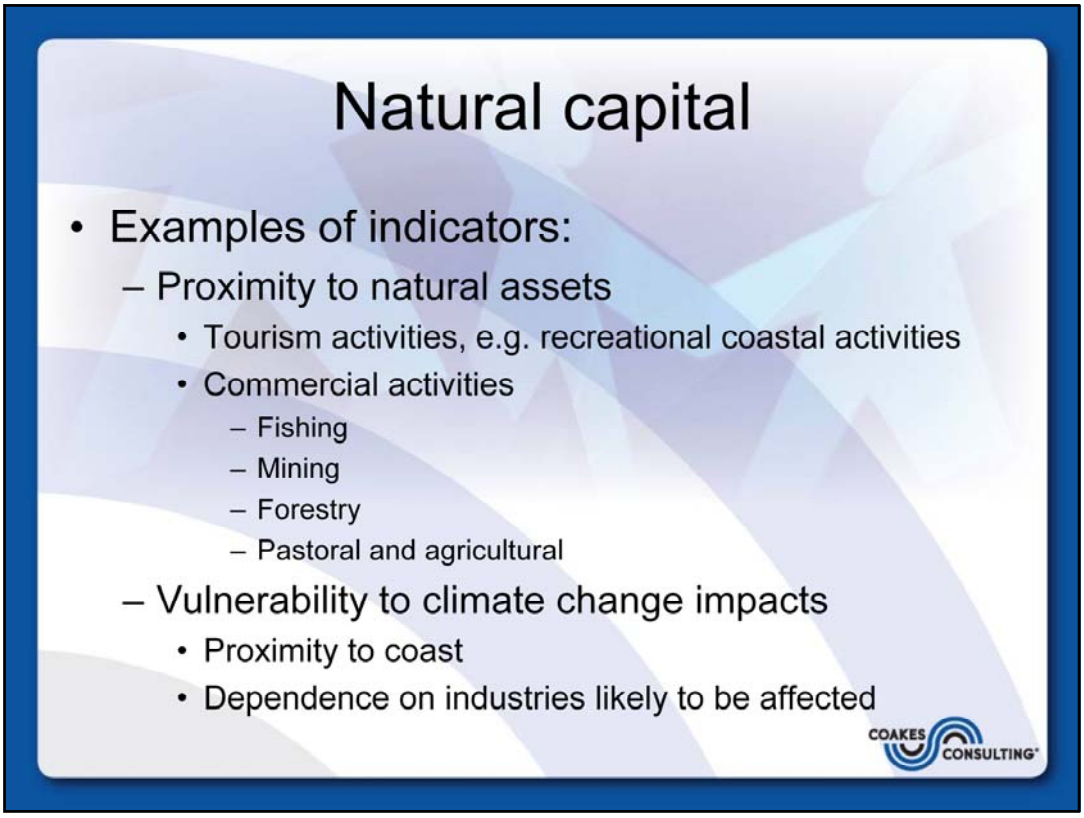
- •Skills
- •Health
- •Education
- •Abilities
- •Vulnerable / at-risk groups

Physical capital

- •built infrastructure
- •Accessibility to key community services and infrastructure
- •Information accessibility
- •Remoteness and isolation

Social capital

- •family and neighbours
- •Community networks and inter-relationships
- •Governance
- •Sense of community
- •History and heritage



-types of indicators – proxies versus characteristics thought to be causal
reflects vs causes

-subjectivity deciding whether or not something is good or bad (so it sometimes depends on study requirements)

- **Home ownership** - % of renters renting from government / community organisations
- **Income** - % of persons over 15 with less than 500 per week household income
- **Employment** –
  - unemployment rate
  - Forestry industry dependence / mining industry dependence – *presents opportunity for gearing index to specific issue*
- **childhood dependency & family structure**
  - number of dependent aged children as a proportion of employed persons
  - Number of one-parent families with dependent aged children
- **Economic diversity -** industrial diversity index

Education

•Proportion of total adult population with no post-school qualifications
•Proportion of total adult population who left school before year 10
•Proportion who never attended school

Skills & expertise

% of employed persons over 15 who are labourers or related workers
% of employed persons over 15 who are community / personal service workers

At risk groups

Proportion of retirees (65 and over)
Proportion who provide unpaid assistance to people with disability
Proportion who require assistance (core activity need)
Proportion who are indigenous

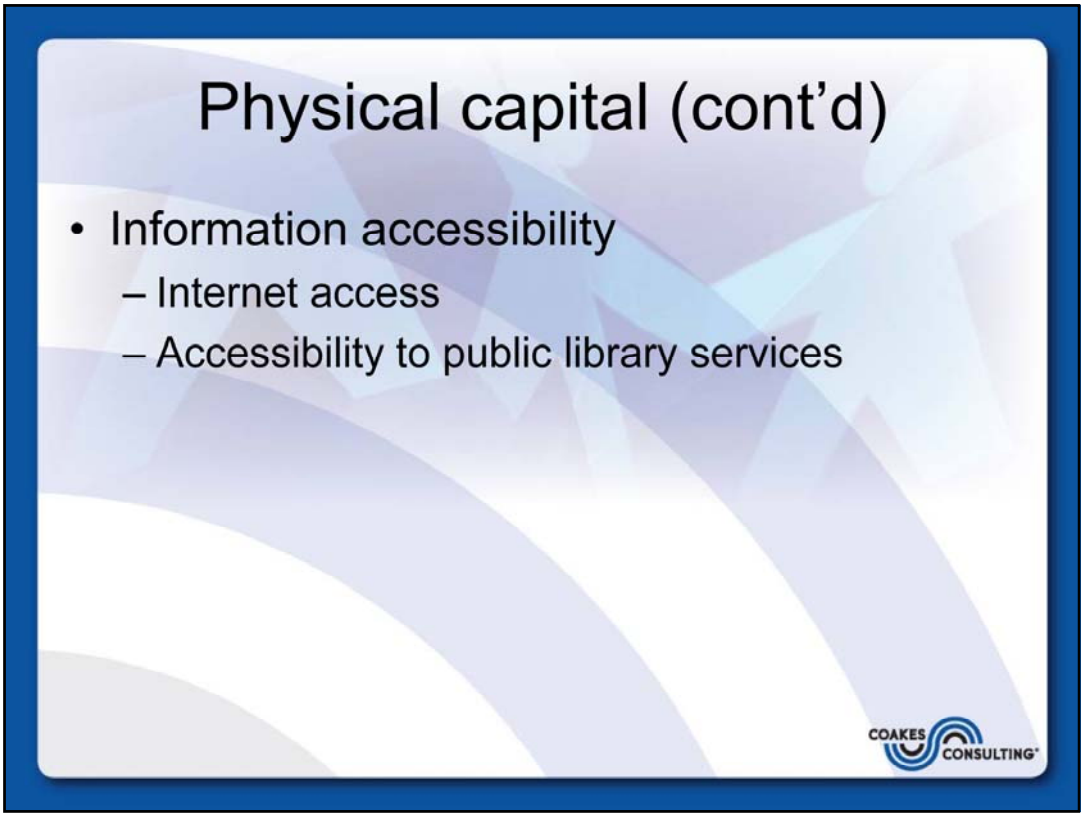
Use of benchmarks and – 1 / + 1 dichotomous variable –has limitations

e.g. health service benchmark is 2.6 beds per 1000 people (public) and 1.7 beds per 1000 people (private)

However, remoteness index has been relied upon when examining large number of towns

Remoteness index uses road distances to quantify isolation from essential services / facilities and opportunities for social interaction

Provides a numerical score between 0 and 15, 15 indicating extremely restricted access / very remote



Proportion with no internet access

Presence of a library -1 / 1+

Example of a variable that's more of a proxy

voting – percentage who don't vote in local government elections
Volunteering – percentage who don't volunteer for non for profit organisations
Population mobility – different address five years ago or one year ago
Language skills - % of immigrants who do not speak english
Crime rates – WA police statistics for Pilbara project, e.g. offences against the person

Explain assumptions behind how each one relates to participation / sense of community

Mention movement in Australia towards development of social / community indicators – e.g. survey used for DPI (developed by Victorian Governments Dept of Communities)

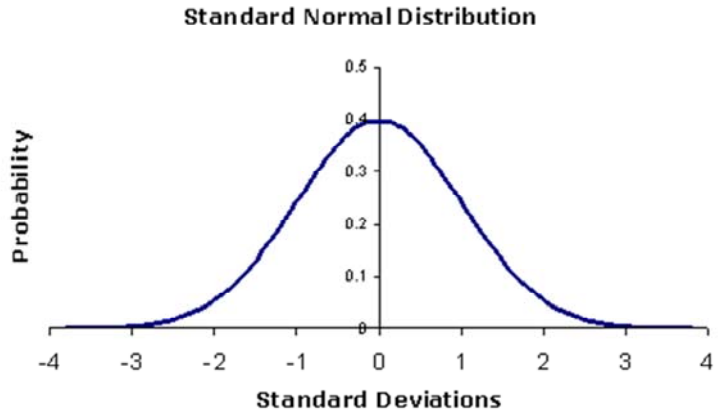
we used some indicators from these sources such as

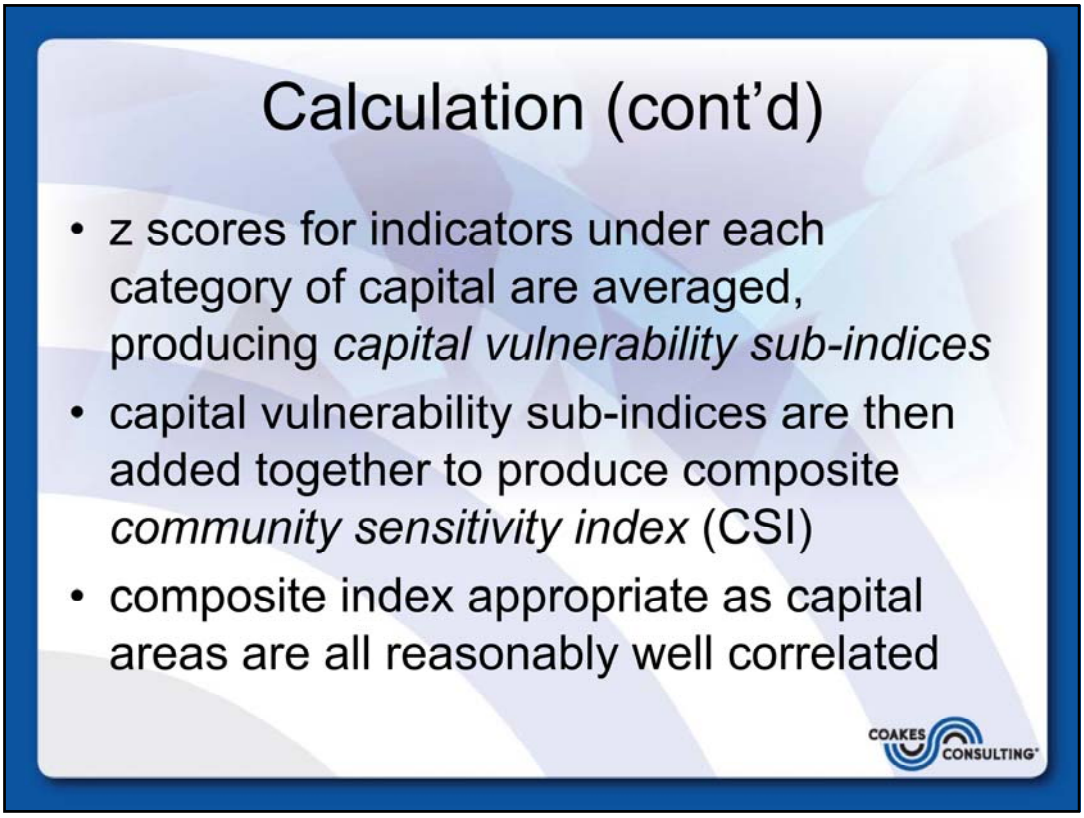
- couldn't raise 2000 dollars in an emergency
- parental participation in schools
- does not feel valued by society

Based on subjective survey responses (usual means of measuring social concepts – but not without limitations), and as more of these types of indicators become available we plan to integrate them into the index, which at the moment is largely based on ABS stats (which have their own limitations)

Index Calculation

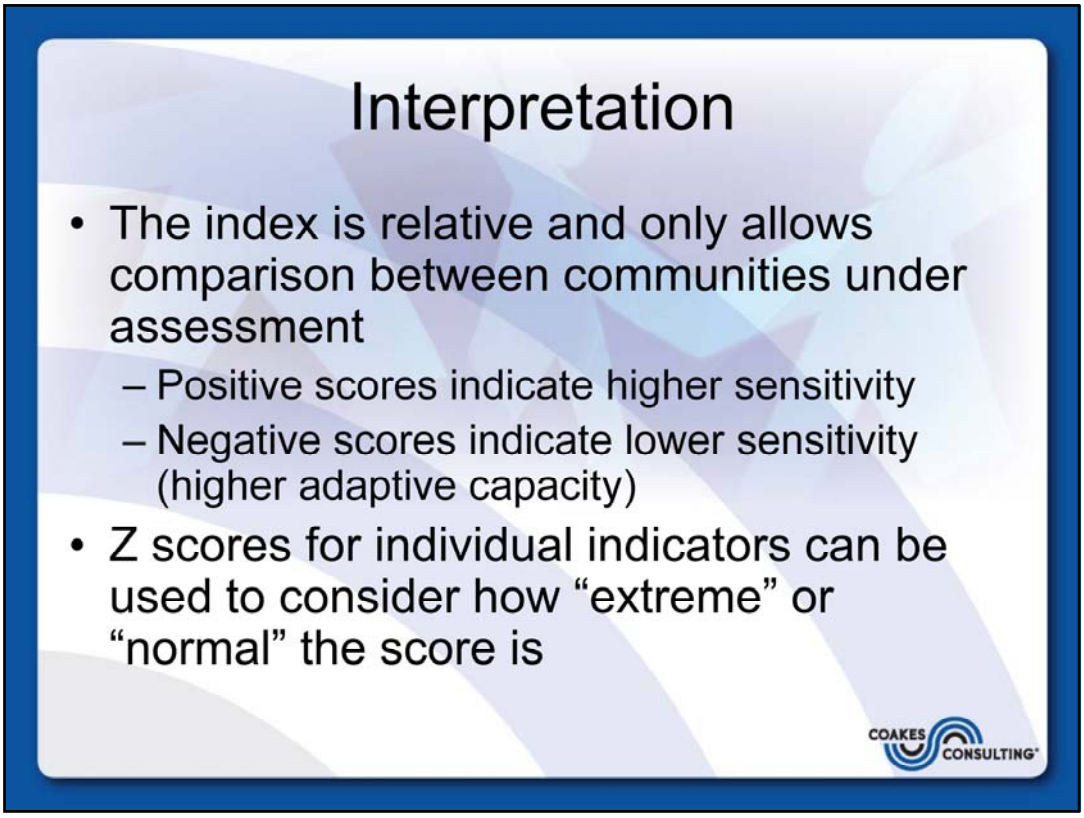
- Raw scores converted into z scores





Index assumes that all capitals are correlated – which they are so share with group the outcomes of our correlation analysis – present this data in slide

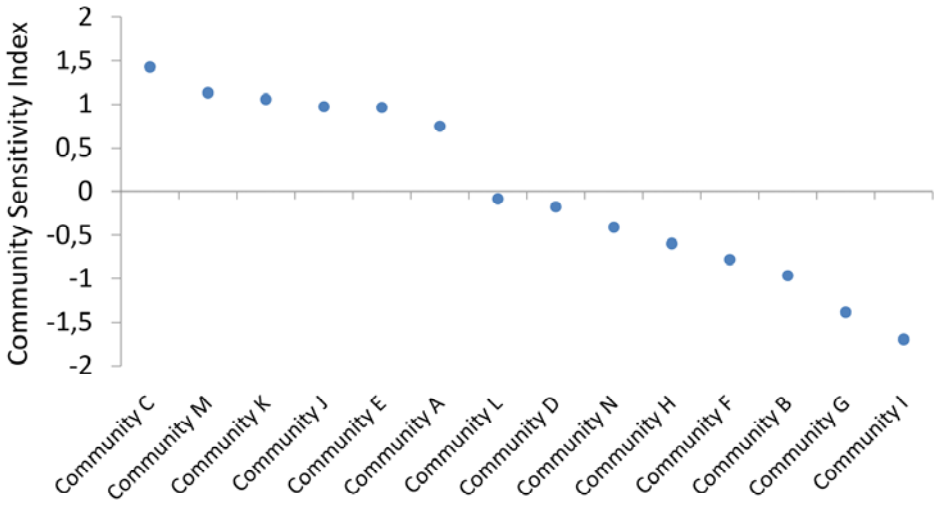
This suggests the index is indeed measuring a single construct, i.e. community sensitivity

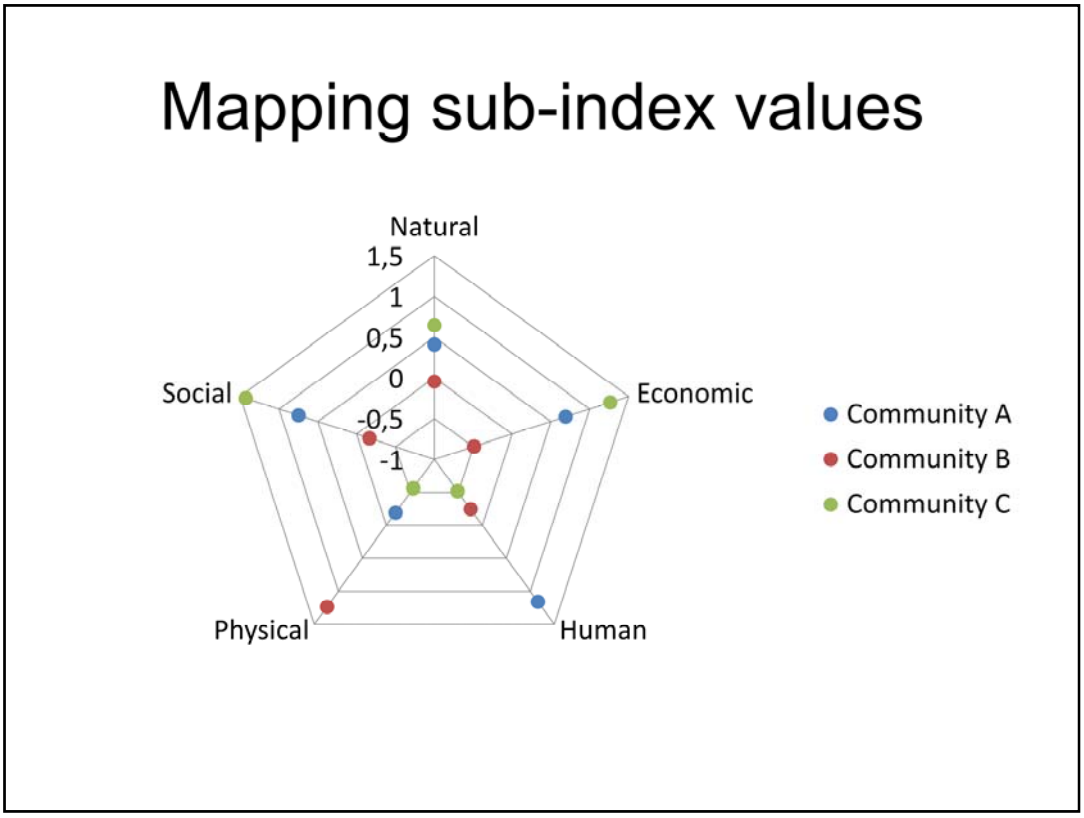


The index is relative and only allows comparison between communities under assessment – therefore says nothing about overall sensitivity, only relative sensitivity (this is important in the climate change context, as want to know which are more or less sensitive across a region, state etc

Z scores – e.g. “unemployment in community A was three standard deviations above the mean and therefore considered extremely high”

Relative comparison





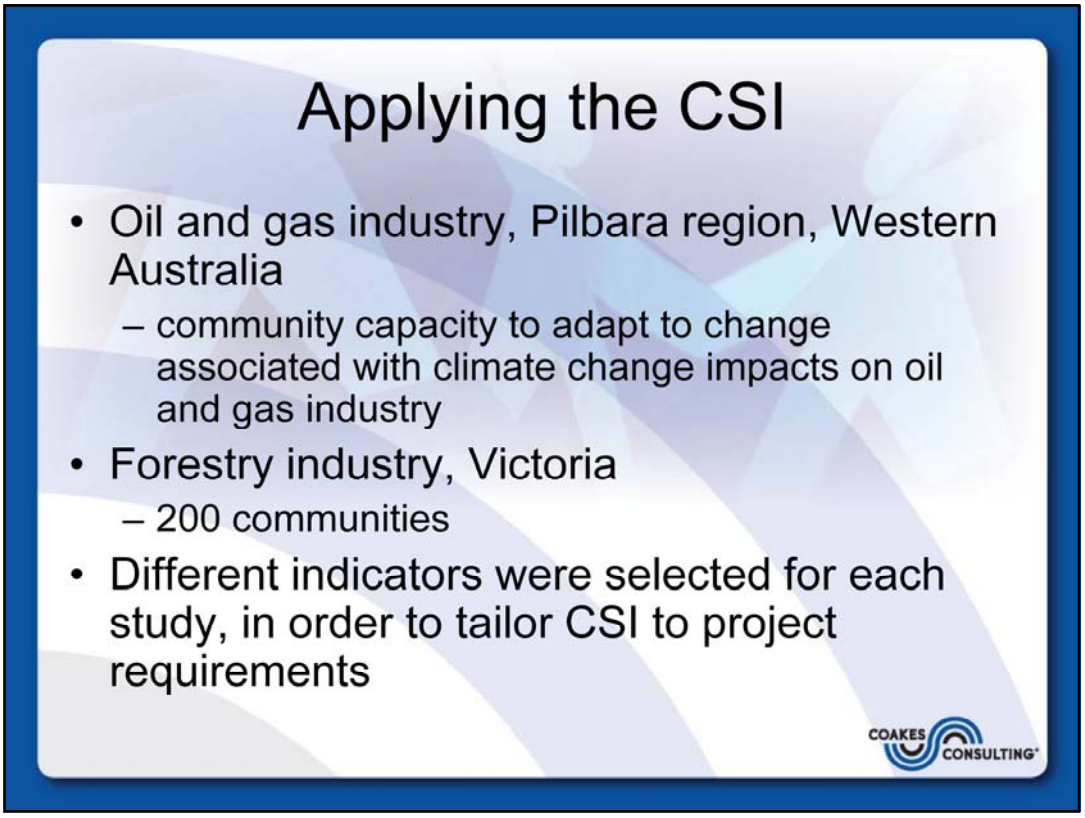
Depth of analysis

-when making sense of the results, you can look deeper at by examining the individual indicators in each capital area

e.g. you might find that high overall physical capital vulnerability was related to high remoteness

e.g. human capital vulnerability related to high proportion of low-skilled workers

Tells us more about the particular communities in more detail and the components that comprise community



I will talk briefly now about two studies in which the CSI has been applied, both of which related to climate change specifically:

1. Impact of climate change on Pilbara Oil and Gas industry, and associated community-level impacts
2. Impact of changes to forest management policy in response to climate change on forest dependent communities

Image of Port hedland

Coastal community

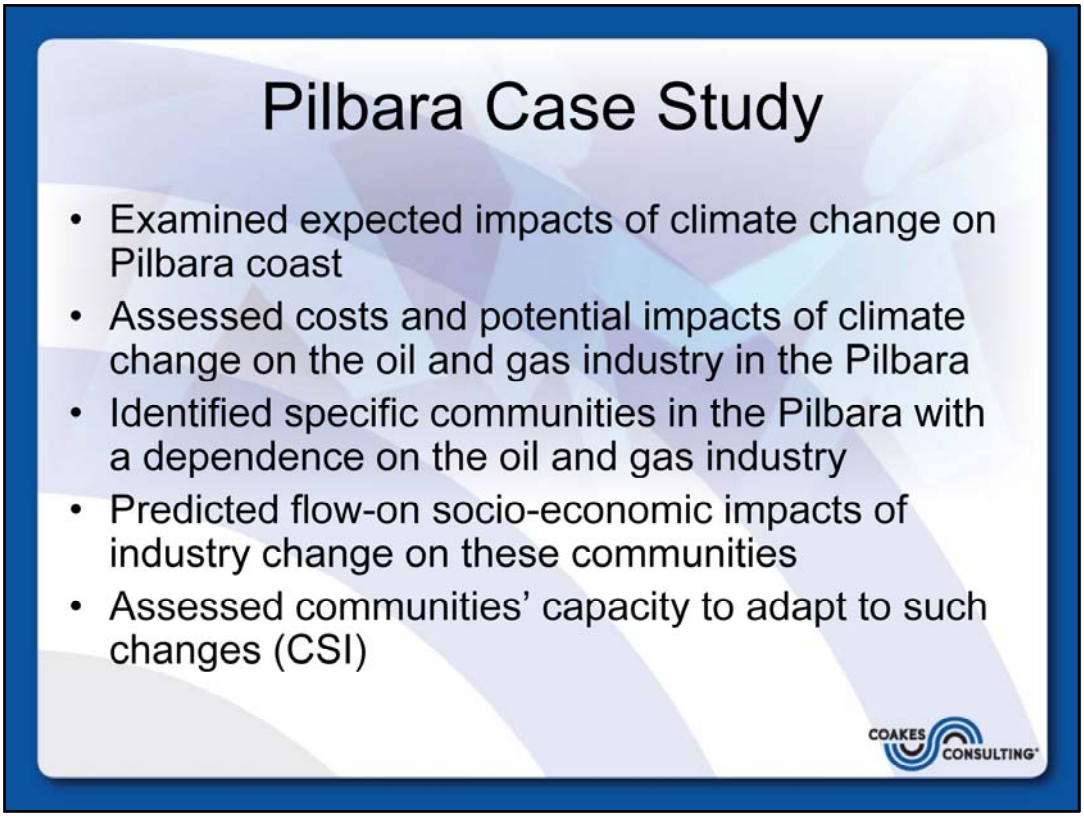
Pilbara rich in iron ore, and nearby towns service mining industry e.g. Newman and Tom Price

Low rainfall - Years without significant rainfall do occur

Pastoral activity (grazing of sheep and cattle) is the other main industry

Region is one of australia's hottest places – average max temperatures in Port hedland around 37 degrees celsius in summer, hot days go well into the 40s

Most cyclone prone area in australia – port hedland has been severely impacted over past 30 years, millions of dollars in damage



1. Some of the climate change impacts expected on pilbara coast included
    - Rising sea levels
    - Extreme weather events
    - Wind and wave directions

3. Used TRC analysis to identify communities linked to oil and gas industry (e.g. employment, expenditure, service use)

Identified three key communities – Karratha, Onslow, Dampier

Mention we also looked at secondary downstream industries (i.e. those reliant on gas supply from region).

Identified 17 additional communities (tier 2)

5. Changes to be faced by the community included environmental impacts on the towns, but also the socio-economic impacts of change in the oil and gas industry (resulting from climate change).

These are examples of recommendations that were made to build adaptive capacity in each community

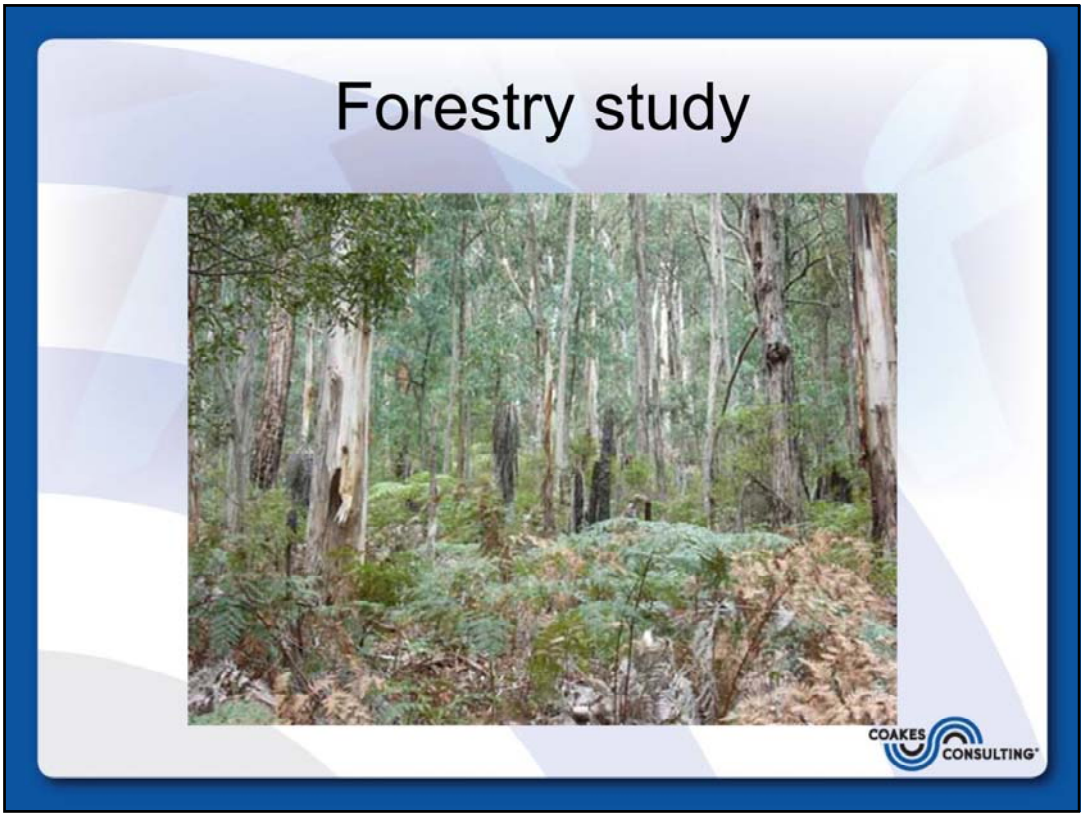
Natural
•diversification of commercial activities away from vulnerable environmental assets

Economic
•industry diversification – e.g. incentives for new business start-ups
•strategies to develop workforce skill diversity to facilitate greater diversification

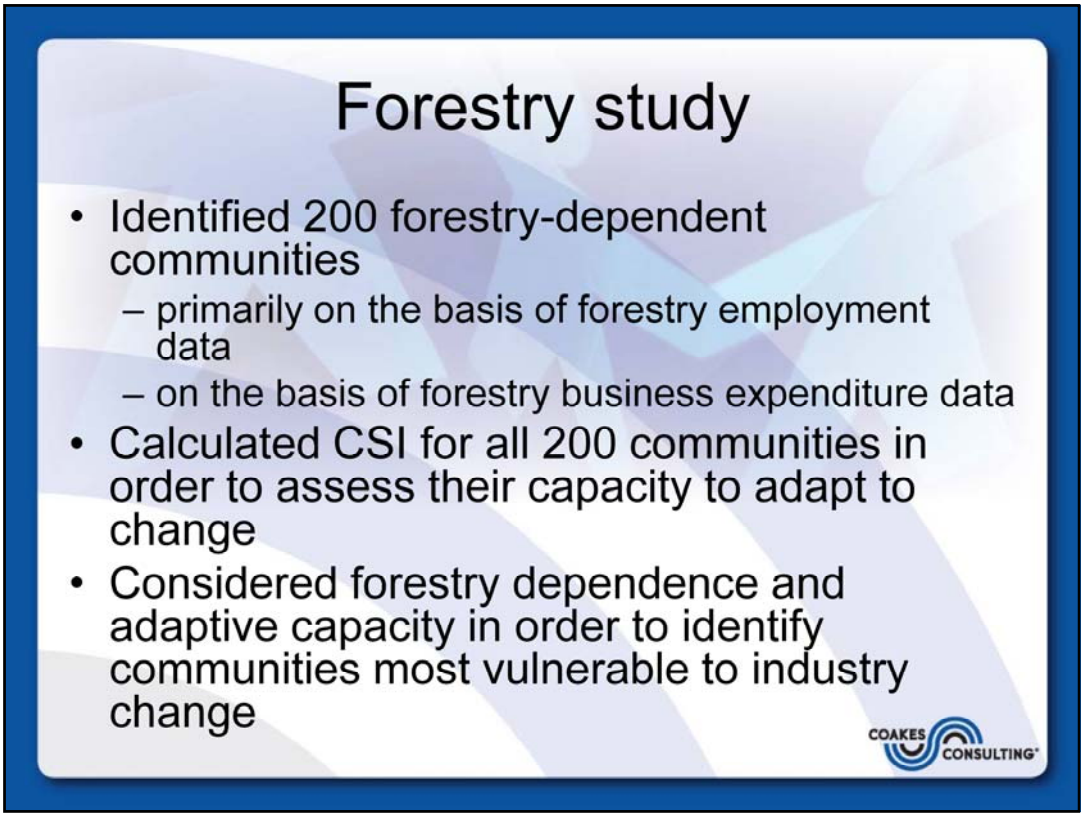
Physical
•upgrades to existing infrastructure
•undertake planning for new infrastructure
•address needs in emergency services to handle increased demand, e.g. due to extreme weather events

Human
•knowledge - education and information distribution to increase awareness / understanding of climate change challenges for the community
•develop policies to improve access to health services, especially for disadvantaged groups

Social
•encourage greater community involvement in decision-making and planning
•undertake community consultation

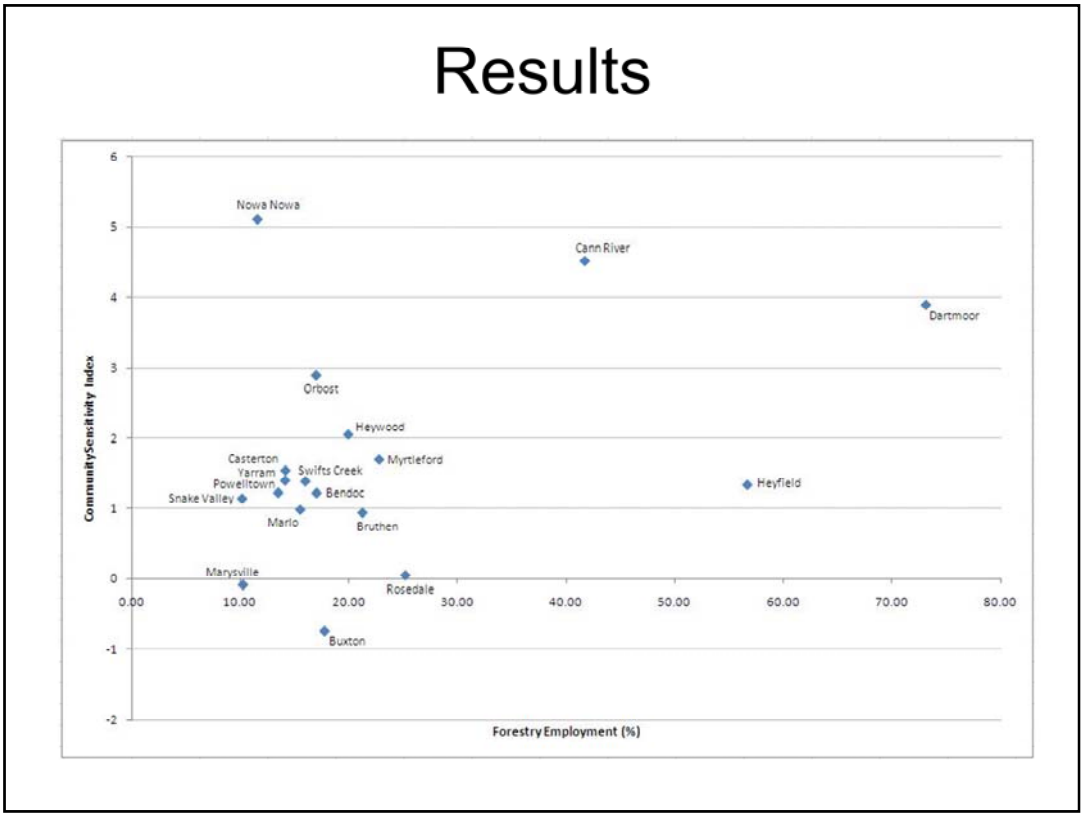


Give some context here on the DPI study



Forestry management policy closely linked to climate change issue – this study was around assessing impacts of changes to a specific forest management area that may result from policy changes designed to tackle climate change

Trees – carbon storage



Towns with forestry employment above 10 percent

THE KEY POINTS TO MAKE HERE ARE WE CAN LOOK AT DEPENDENCE AND SENSIVITY TOGETHER – some communities may have high forest dependence but be more resilient, however others may not – this is the key point to make here – same application in climate change – which more dependent on particular industries that may be more impacted by climate change, also which more sensitive to change e.g. natural capital – geographic location (near the coast) and their respective scores on other capitals.

Key towns identified

These were most dependent towns based on employment

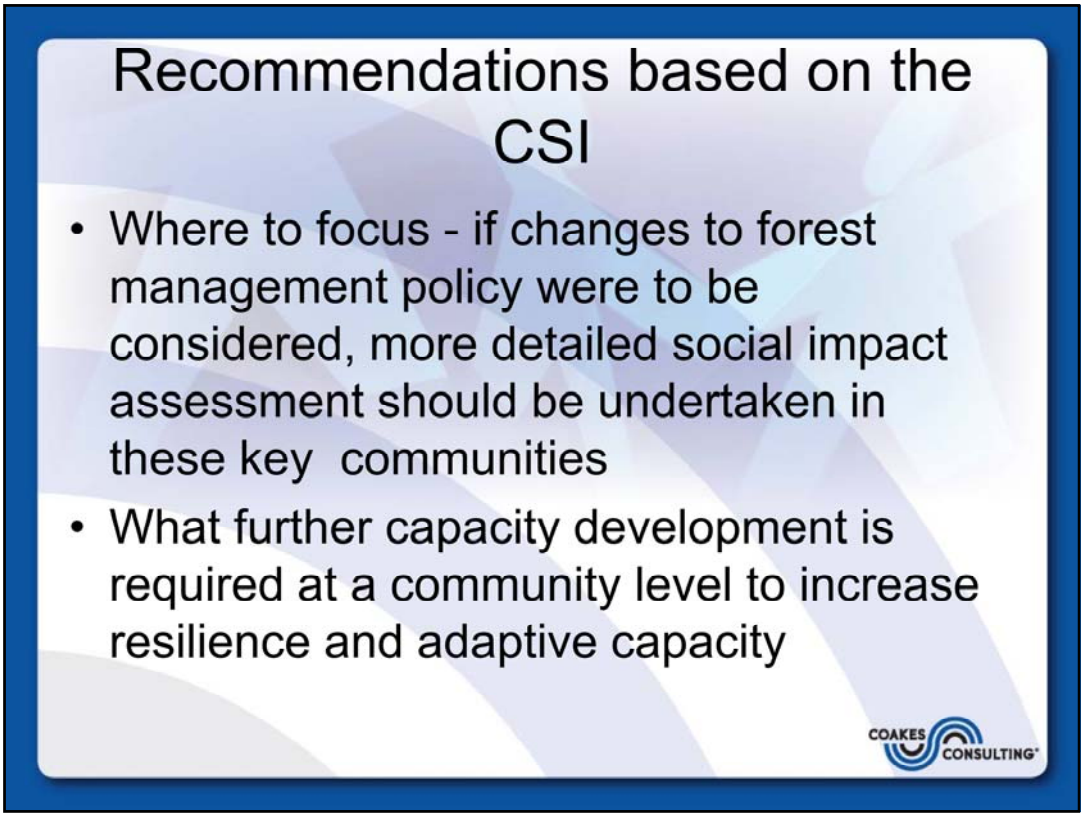
(some had extremely high forestry employment, e.g. Dartmoor, Heyfield and Cann River in the area of 40 – 75 percent)

These towns also had low adaptive capacity

The towns with the highest CSI scores tended to have very high economic and physical capital vulnerability (although they were high on all four). Economic capital vulnerability was partly related to low industrial diversity. Physical capital vulnerability was associated with high remoteness.

Towns like Cann River, Dartmoor and Heyfield were therefore identified as being particularly vulnerable because they were both (a) likely to be affected by industry change and (b) likely to have difficulty adapting to such a change

This graph enabled us to identify several key towns for further socio-economic profiling

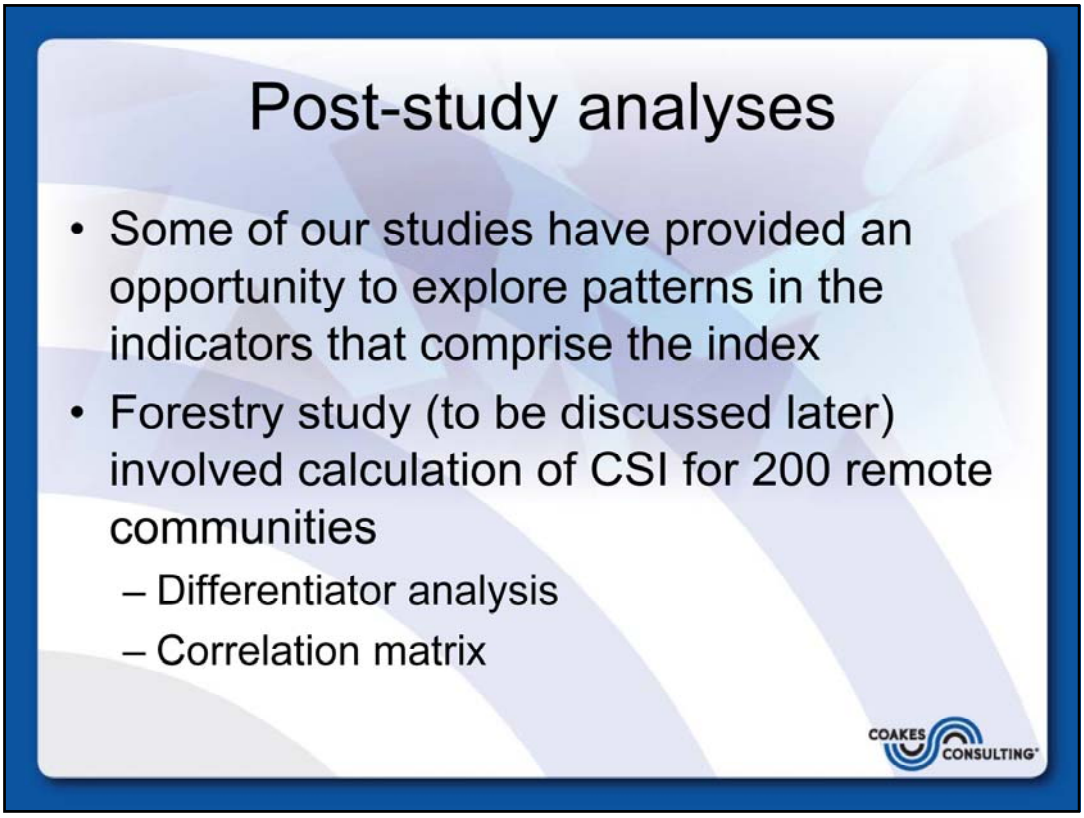


Key recommendation was that if any changes were planned, more comprehensive social impact assessment should be undertaken including community consultation within these key communities

Highlights the value of the index as a tool for identifying “at risk” communities – but it should not be used as an end in itself, i.e. we conducted more detailed profiling of key communities and recommended comprehensive SIA and consultation as a next step prior to any planned changes

The value of the CSI here was that it enabled an efficient analysis of all communities within Victoria – well over 300 – and then an assessment of 200

This process narrowed the communities down to a handful of vulnerable resource-dependent rural towns – which then would enable prioritisation of where to direct further SIA or even funding for enhancement initiatives in the key communities (e.g. which area of capital to enhance)



Differentiator analysis

We had a sample of 200 remote communities, and we examined which of the indicators were strong differentiators and which were weak differentiators

Strong differentiators were indicators that most readily differentiated between communities with the highest and lowest CSI scores – therefore the indicator was highly correlated with the final CSI outcome

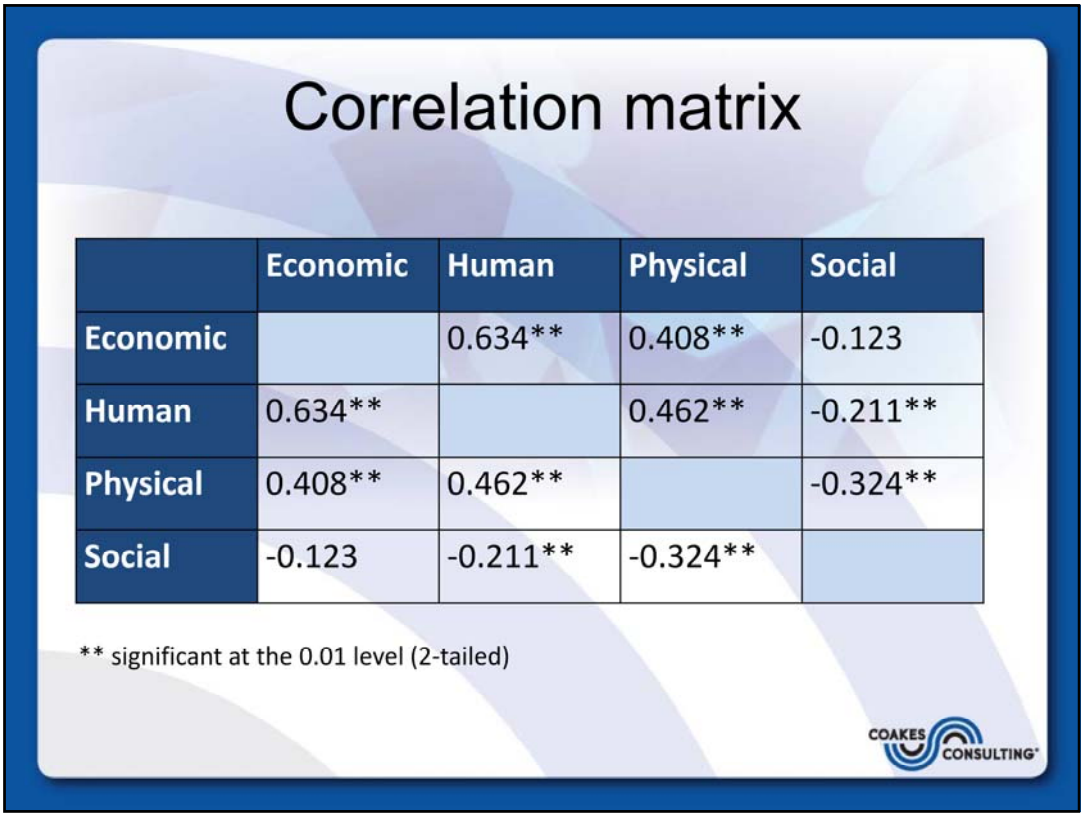
Weak differentiators were those indicators that did not typically differentiate between high and low CSI communities – i.e. they were not good predictors of overall sensitivity

The differentiator analysis reflects only on the towns included in the sample – i.e. the findings are a characteristic of the particular sample, and are linked to the differences that exist between communities in the sample… the indicators with the most variance tended to be those that served as the best differentiators

So for instance, industry diversity of employment was a strong differentiator because there was a lot of variability across the communities

Proportion with no school education was a poor differentiator because there was not much variability from community to communities

This means that the index can be refined (after the first calculation) to give greater weighting to the indicators that serve as the best differentiators…



Some of our studies have provided an opportunity to explore patterns in the indicators that comprise the index
Forestry study (to be discussed later) involved calculation of CSI for 200 remote communities

Correlation matrix

(reminder we did not look at natural capital here)

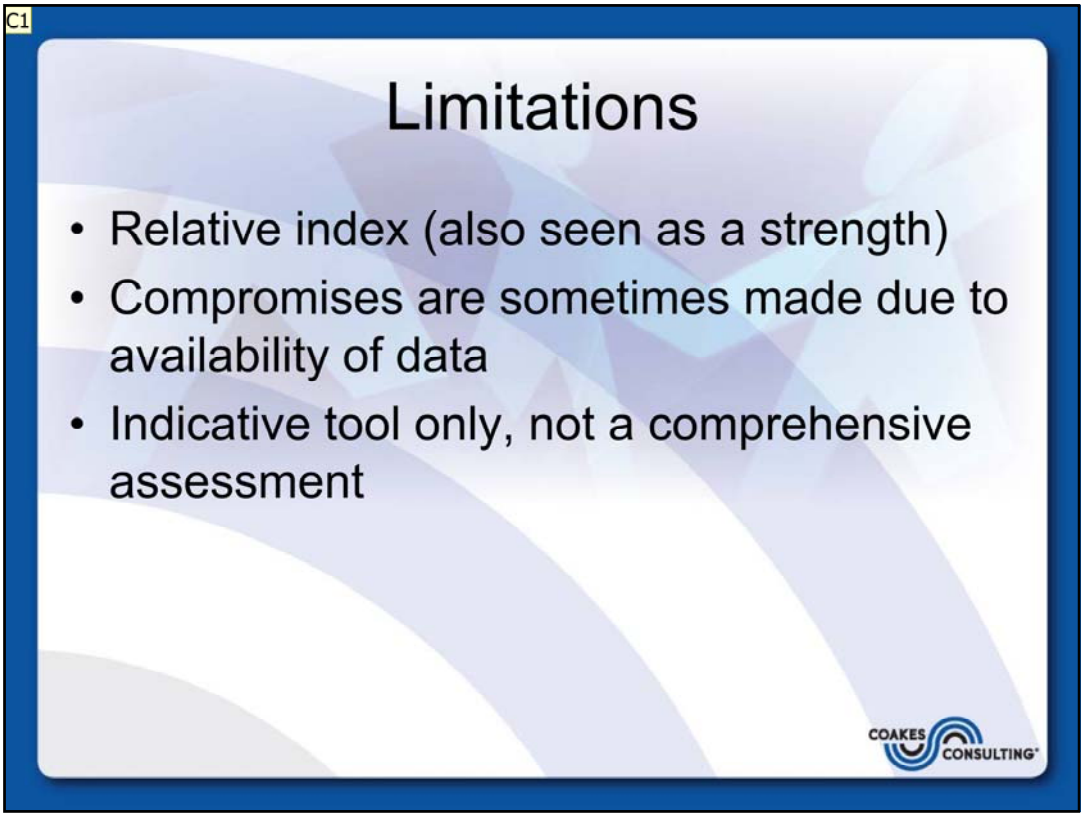
All capitals highly and significantly correlated, except economic and social where there was no statistically significant relationship.

Physical / human and social capital were inversely related, whereby increasing physical / human capital is associated with lower social capital

We did include some major, highly populated cities in the analysis (even though the index is really designed for rural communities) to make some comparisons

What we noticed is that social capital appeared to be lower in bigger more populated cities

Again this is probably explained by there being less “sense of community” and participation in bigger cities compared to small isolated towns where everyone knows one another.



1. Because the index is relative, it only allows comparisons between communities included in the analysis – BUT ENABLES A LOT OF COMMUNITIES TO BE LOOKED AT – this is its value particularly when it relies on secondary data – a good first look!

There's no way of knowing how "sensitive" the group of communities itself is as a whole without making comparisons to other reference groups, e.g. state averages

This means that the community with the lowest score is not necessarily highly adaptive – it just means it's the most adaptive. It could still be very sensitive. Obviously the more towns included in the sample the better – in the case of the forestry project we had 200 communities and are confident we had a good distribution

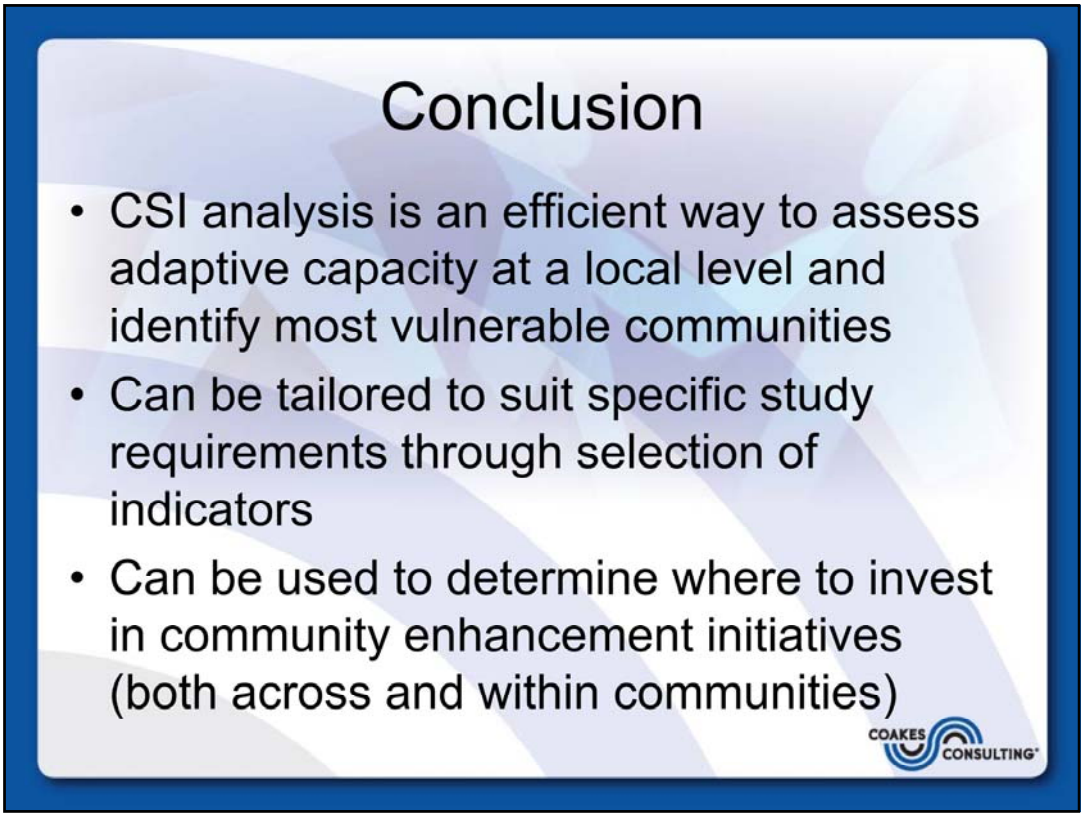
We see the fact the index is relative as a major strength, but this limitation is something we need to emphasise and sometimes remind our clients of. The reason its more of a strength is because ultimately the index is designed to enable prioritisation of communities according to their sensitivity / low adaptive capacity. In this sense it's more much useful to use a number that indicates relative sensitivity than it would be to use some figure of "absolute" sensitivity.

2. Data availability can be an issue and there is a reliance on secondary sources. We've made some compromises when we've had to examine a lot of communities. For instance, we did not look at natural capital in the forestry project. Also, much of the data used could be considered quite old, e.g. Census data which is collected in Australia every five years – we are currently using data from 2006. example – forestry project, Marysville had been wiped out by fire and yet the only data we had preceded the fire. A mill in Dartmoor had closed down meaning our ABS employment data was out of date. In these instances we relied more on data from our own survey work – BEST SOLUTION IS A MIX OF SECONDARY AND PRIMARY DATA.

3. It's an indicative tool only and we would usually argue its purpose is to prioritise potential targets for further SIA and / or funding of enhancement/community development initiatives. but we would recommend more detailed assessment / consultation be undertaken in those communities first.

Dias nummer 30

C1 Wouldnt raise this
Coakes; 17-10-2010



CSI analysis is an efficient way to assess adaptive capacity at a local level and identify most vulnerable communities – particularly when change is expected to be broad and widespread (e.g. climate change)

Invite questions