100% RE: From Market to Moral Sentiments

Apologies to Mark Carney (https://www.bbc.co.uk/programmes/b00729d9)

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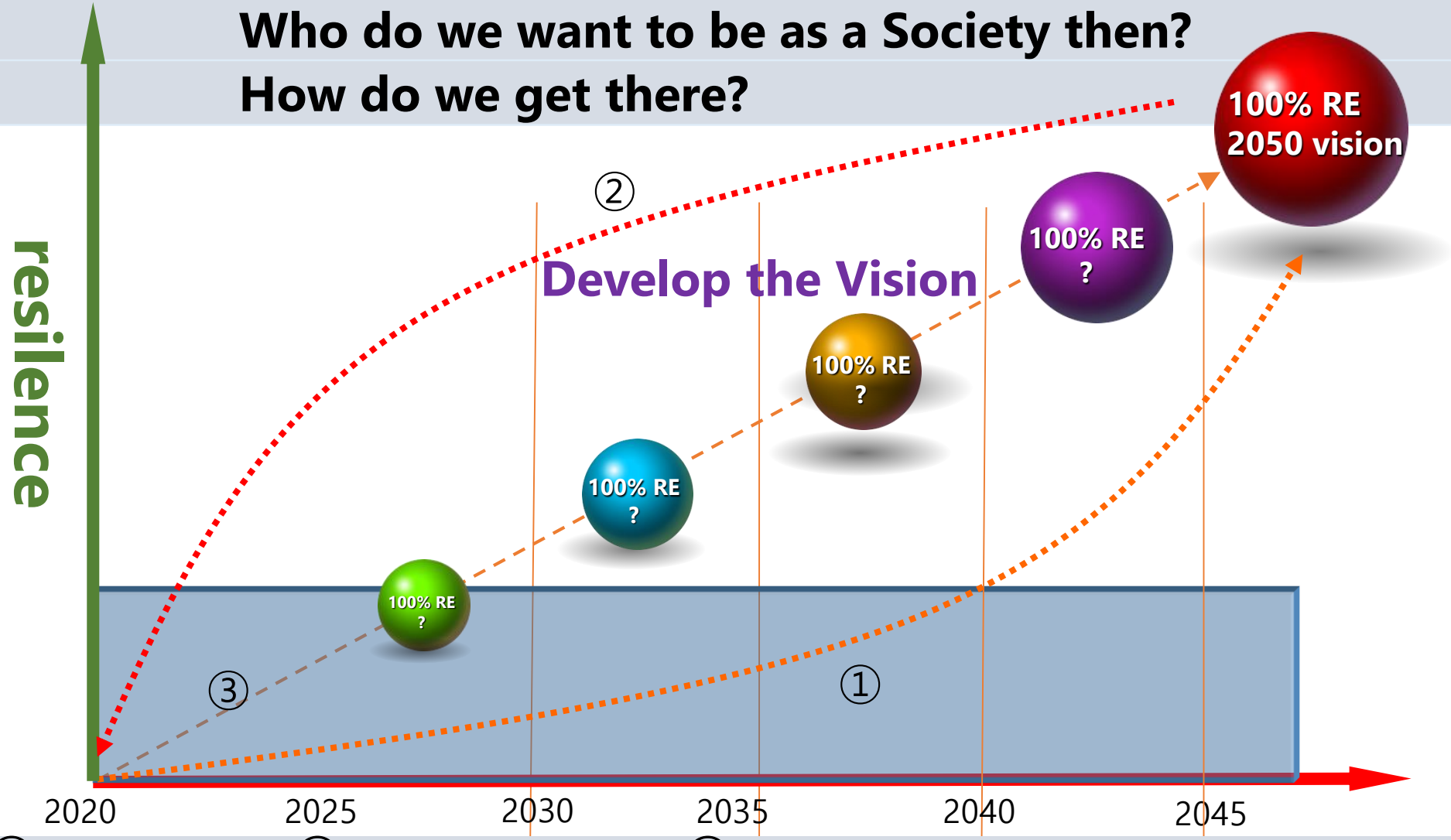
BUILDING AN ECO-SOCIETY: EQUITY – ECONOMY - RESILIENCE

Scotland: Why do we want to be 100% Renewable?

When do we want to be 100% Renewable?

Who do we want to be as a Society then?

How do we get there?



① planned path ② evaluation of plan ③ reorganized path: backcasting method

https://icarb.org/2014/02/14/100-renewables-in-scotland-by-2030-an-energy-visioning-backcasting-exercise/

Daegu Vision 2006

Eco-Cultural City

- Healthy City
- New Life Styles
- U-Solar City

→ **Culturally Rich Livable City**

New Industrial City

- Solar Economy
- Wind Economy
- RE Clusters & Communities

→ **New Industry & Employment**

Energy Innovative City

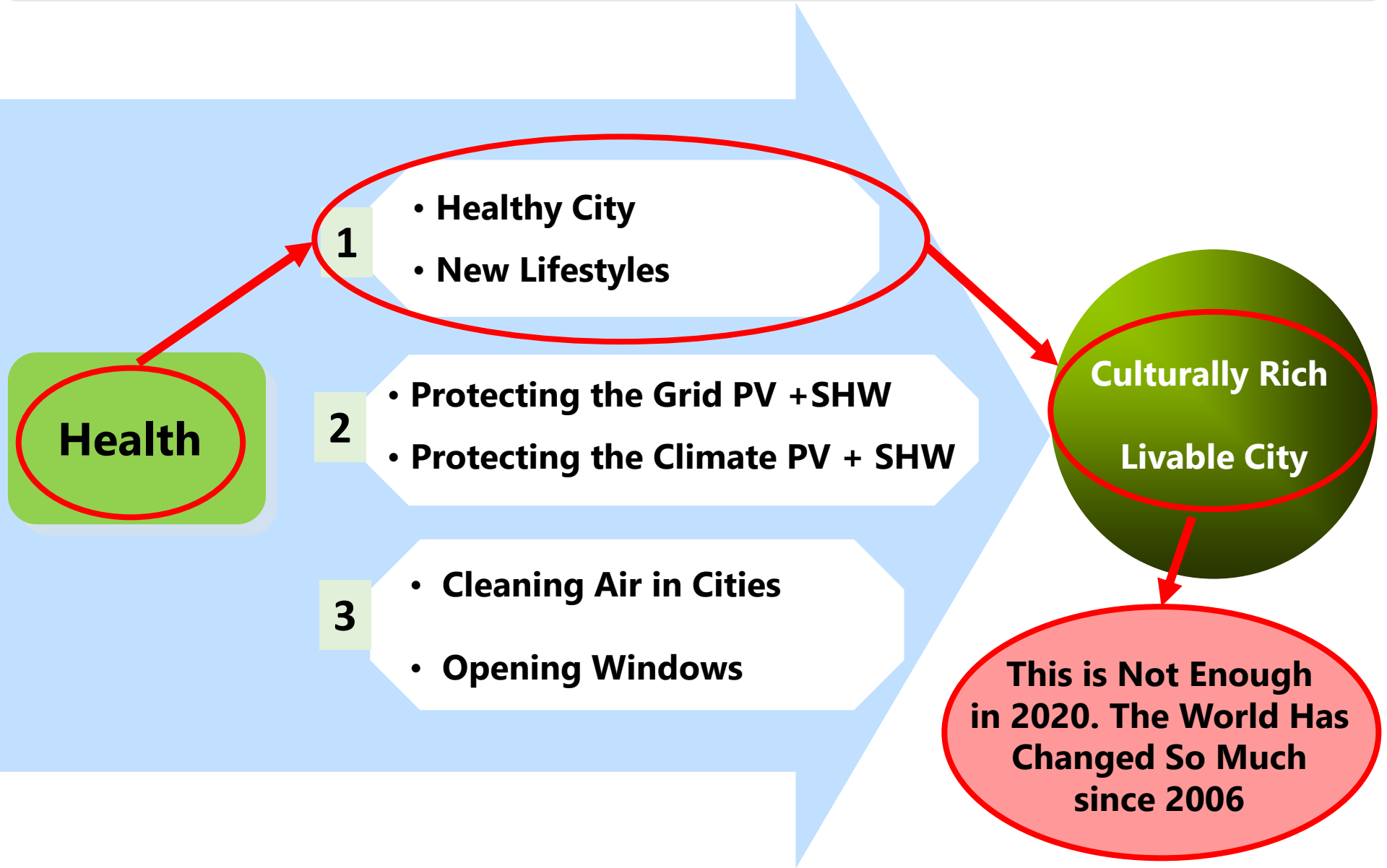
- Innovative RE
- DMS
- Innovative Governance

→ **New Energy New Economy**

DAEGU: THE SOLAR CITY DREAM

Kim, Jong-dall, Dong-hi Han and Jung-gyu Na (2006), The Solar City Daegu 2050 Project: Visions for a Sustainable City, Bulletin of Science and Technology, University of North Florida. https://doi.org/10.1177/0270467606287787

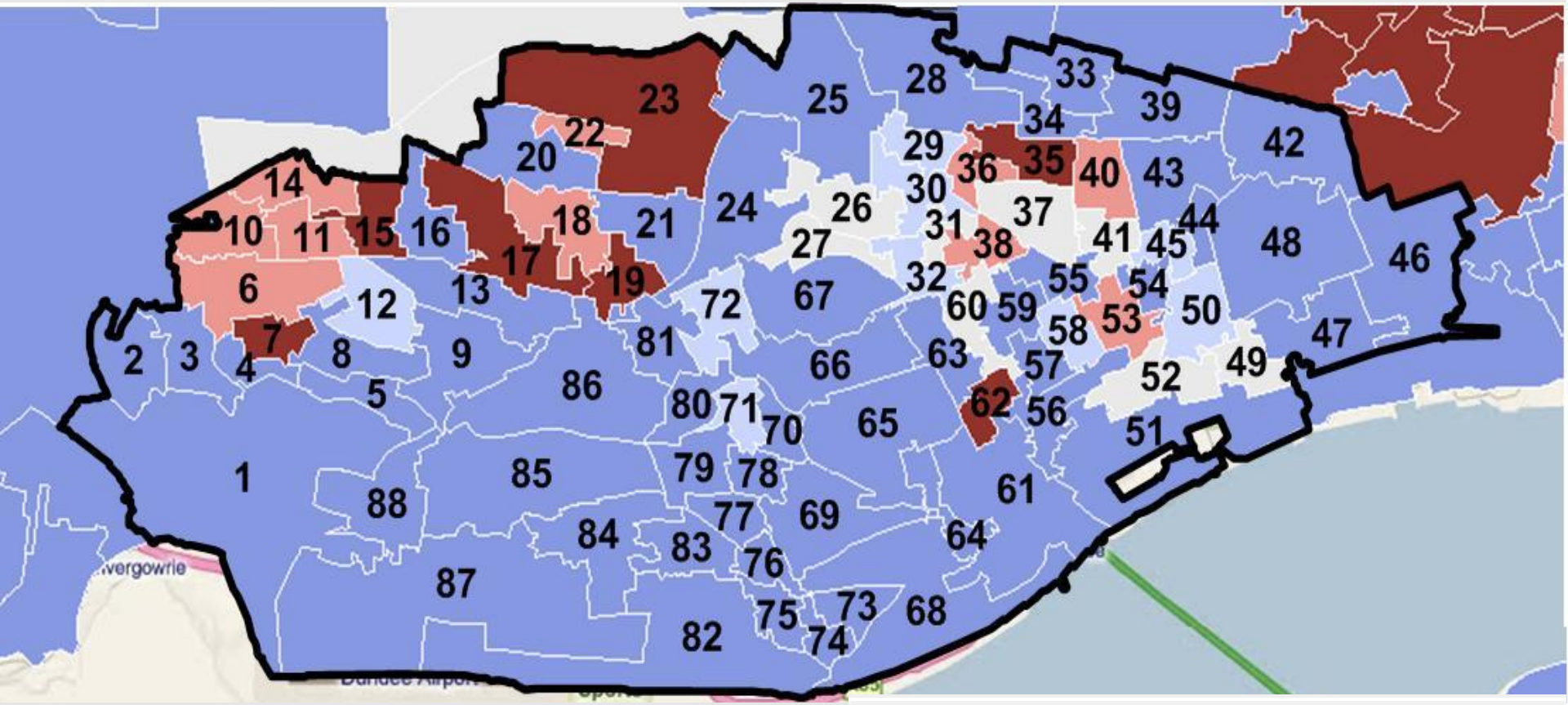
Eco-Cultural Thinking for Scotland



REFS: Roaf, S. and F. Nicol (Eds) (2018). Running Buildings on Natural Energy, Routledge HB ISBN: 9780815396031
Roaf, S., D. Crichton and F. Nicol (2009). *Adapting Buildings and Cities for Climate Change*, Architectural Press.

1. AIM HIGH Energy Equity: Eliminate Fuel Poverty

We Can: Eliminate Fuel Poverty in Dundee with Solar



Scotland has 32.5% of homes in Fuel Poverty

In Dundee this is higher

Map data from the Scottish Index of Multiple Deprivation (SIMD) website.

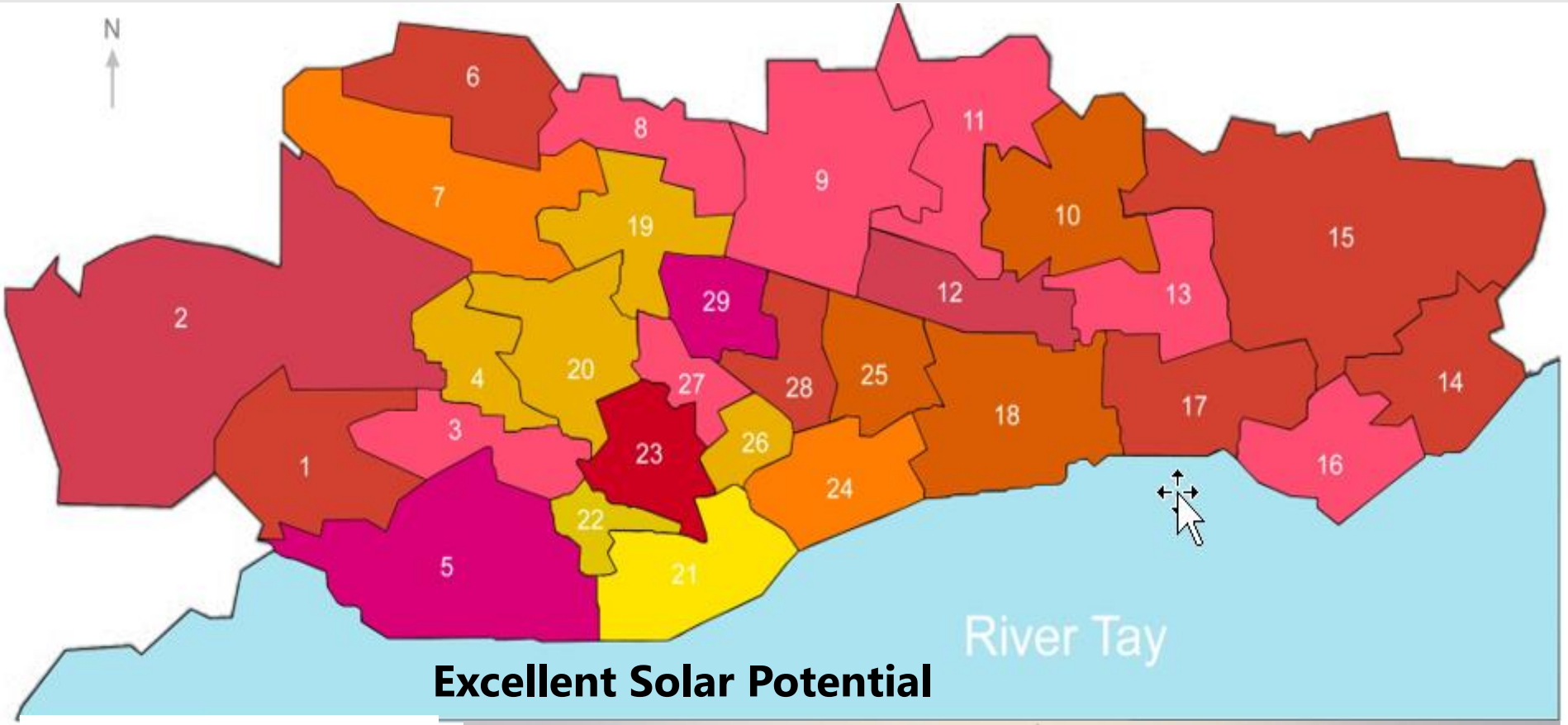
Map Legend

0%-5% 5%-10% 10%-15%
15%-20% 20%-100%

0–5% percentage denotes the most deprived percentage of the total datazone population.

DUNDEE: Baseline Solar Potential – 2006

% Domestic Properties in Dundee Electoral Wards Oriented S.W. to S.E.



Excellent Solar Potential

Colour Key

30%	60%
40%	65%
45%	70%
50%	75%
55%	80%

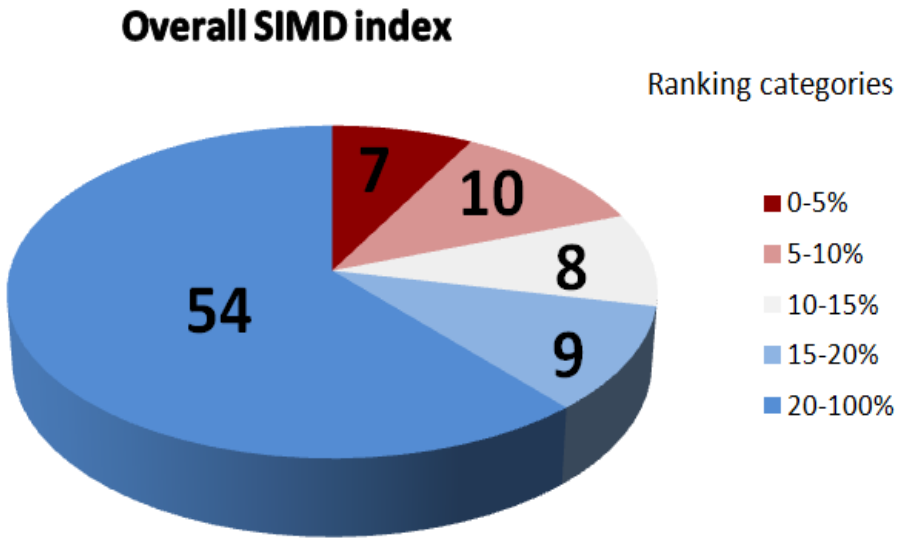
LARGELY DOMESTIC AREA CHOSEN

Andreadis, G., S. Roaf and T. Mallick (2013). Tackling fuel poverty with building-integrated solar technologies: The case of the city of Dundee in Scotland, Energy and Buildings 59 (2013) 310–320.

DUNDEE STUDY AREA STATISTICS

88 datazones considered in Dundee:

7 fall in the 5% most deprived in Scotland
10 within the 5-10%,
8 within the 10-15%,
9 within the 15-20%
54 within the rest (20-100%).



Roofray software was used

This allows the user to draw the roof size and orientation of each building on the Google map & calculates the area of the roof.

STUDY AREA:

Population considered	% deprived individuals	households without central heating	% Employed
72,329 (88 datazones)	14,580 (20.16%)	9,880 (13.66%)	7,649 (10.57%)

Note: The total population in Dundee was 133,325 in 2010.

RESULTS FOR 1300 ROOFS:

Total roof area estimated: 88,313 m^2

Total solar radiation available for harvesting: 97,914,848 kWh

Total PV electricity output : 9,380,242 kWh

Estimated PV power capacity: 9.6 MW_p

Solar Hot Water system capacity: 2,500,000 kWh

+ energy efficiency actions like wall insulation and modern boilers

WHAT WILL IT COST?

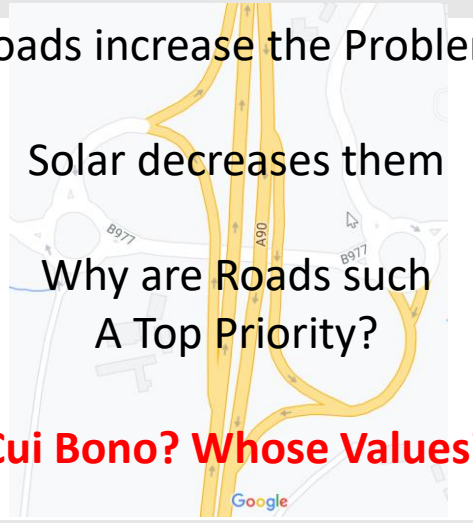
To eliminate Fuel Poverty in Dundee using Solar

£67 million for PV + SHW + Battery for 4500 homes*

HOW MUCH CARBON WILL IT SAVE ?

From PV and solar hot water installations = 10 million kg of CO2

ABERDEEN BYPASS COST OVERRUN £67 million – TOTAL COST OVER £1billion



* Updated costs approximately updated to include 2kW battery for each home

WHAT IS NOT COUNTED IN THOSE FIGURES?

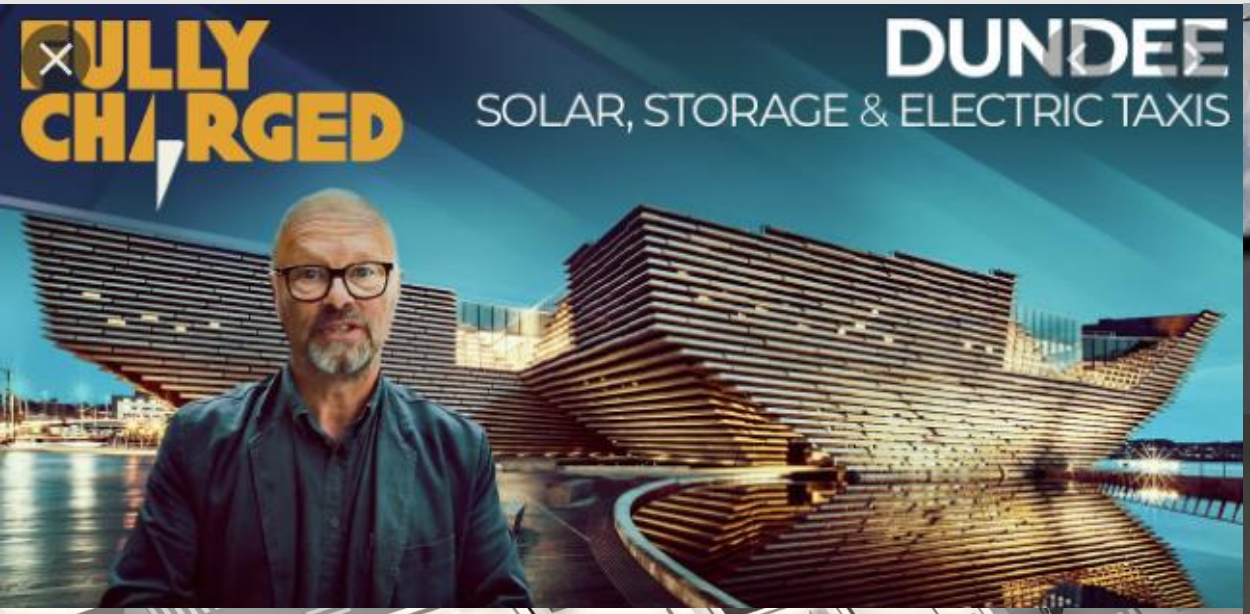
Jobs in a Local Solar Industry

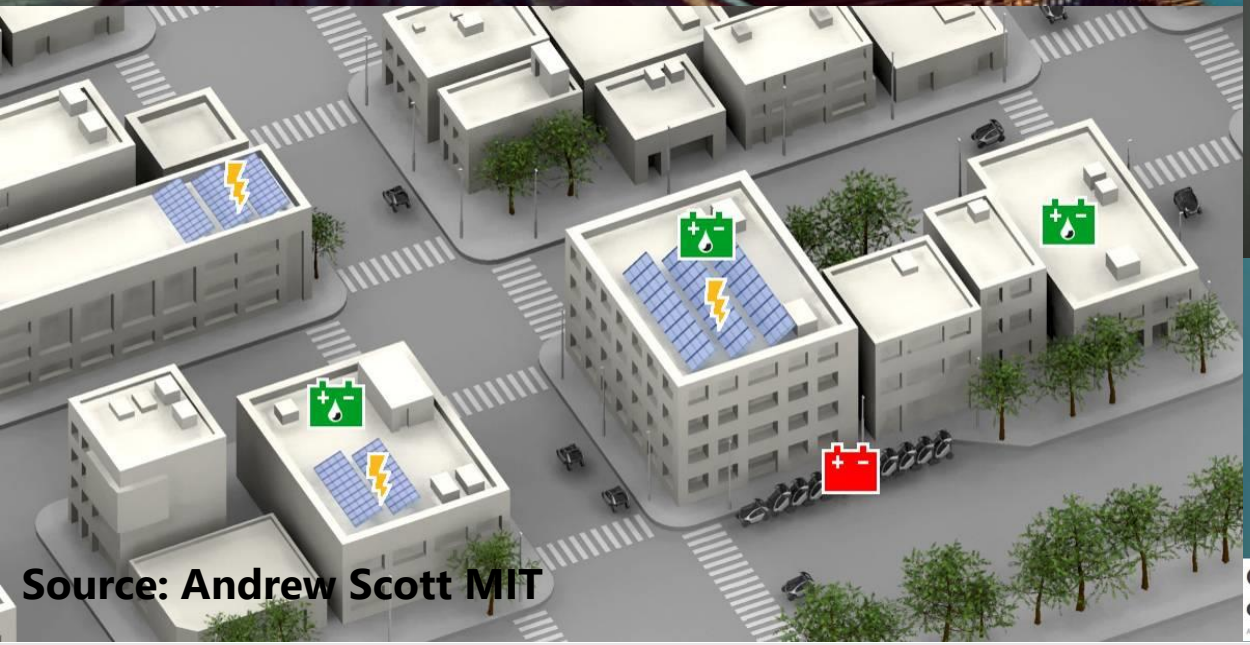
Fewer Hospital Visits – better Health

Fewer Evictions For unpaid bills

Educational improvements

WHOLE NEW INDUSTRIES AND CLEAN AIR





https://theconversation.com/open-windows-to-help-stop-the-spread-of-coronavirus-advises-architectural-engineer-142579

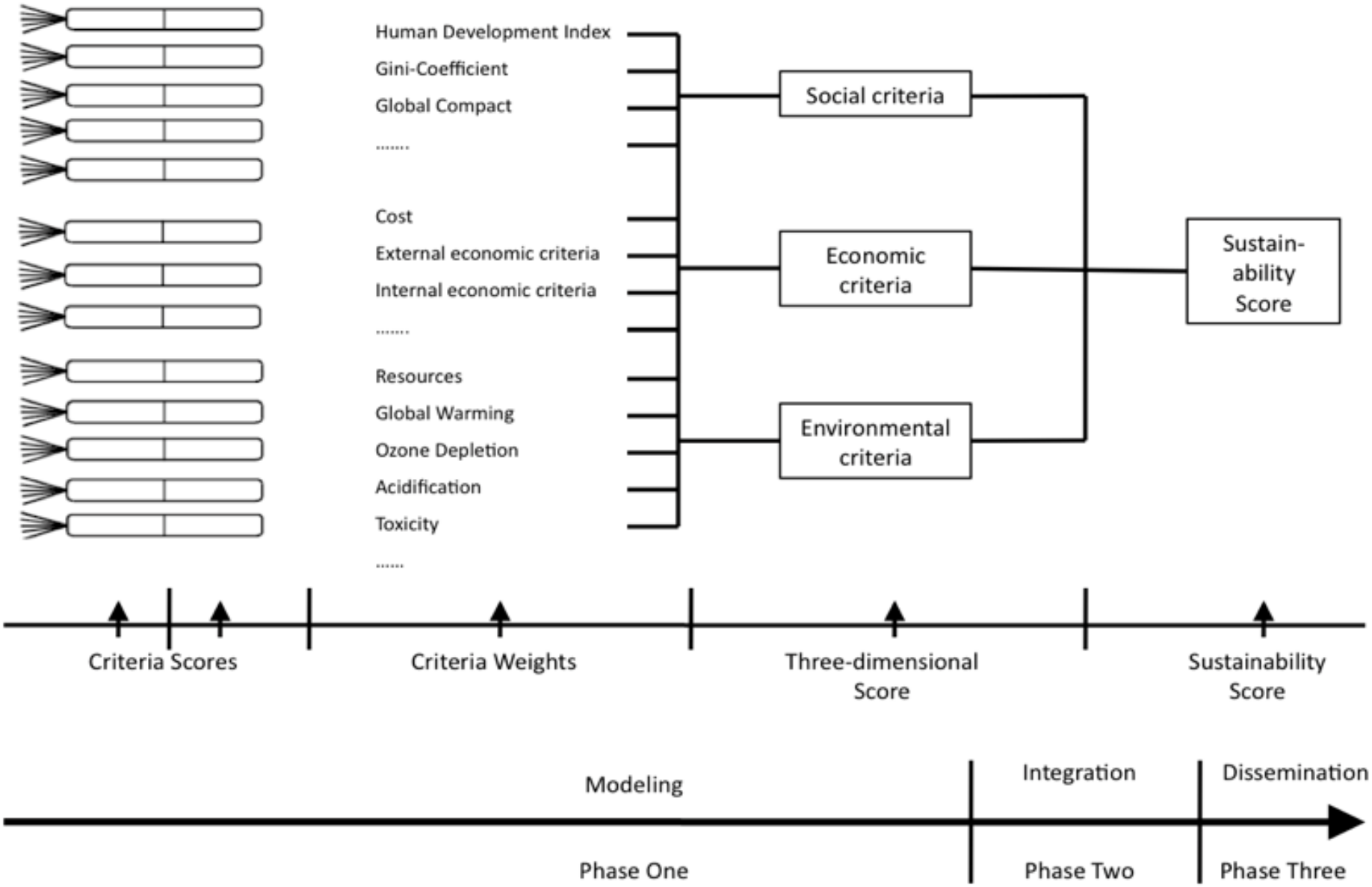
Key Tool: Owning the Metrics

In idealised worlds aspirations often centre on moving citizens ever closer to 'greener' and more 'equitable' lifestyles where the wellbeing of individuals, and the eco-industrial systems they inhabit, are both high on political agendas.

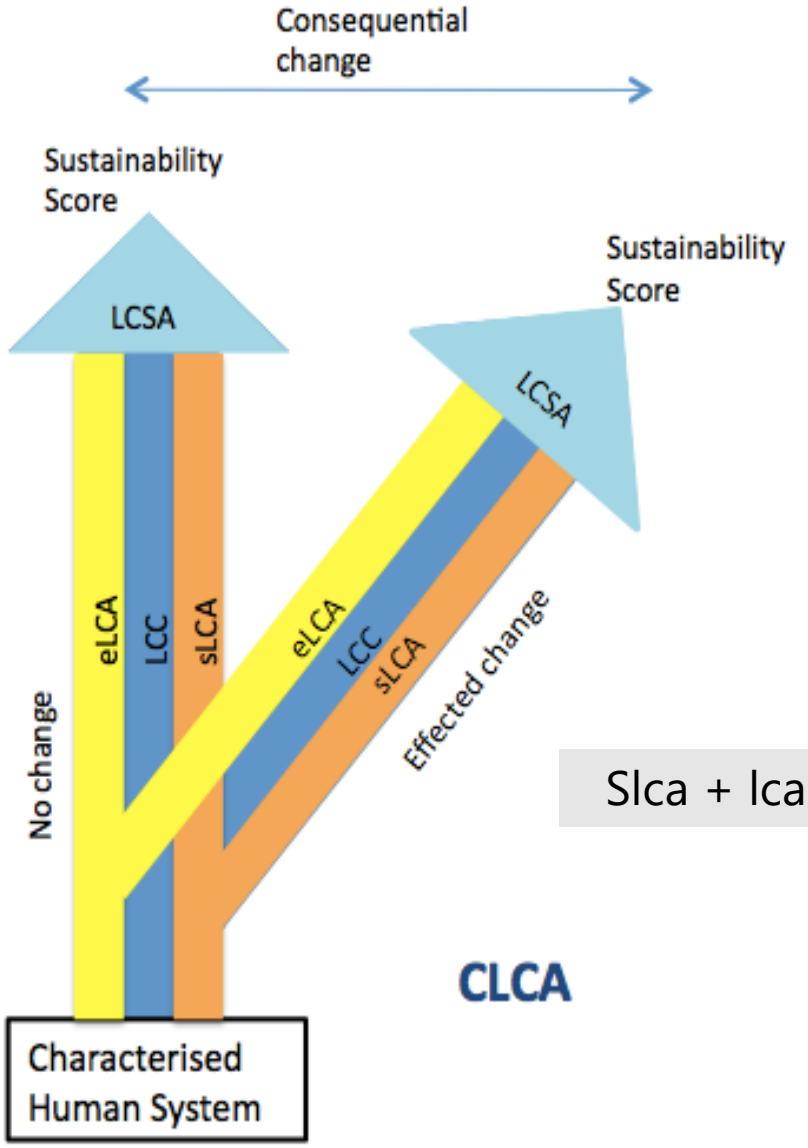
The Global Economic Crisis, the Covid Pandemic and Climate Change show us that how we Value things will have huge Consequences on the Health and Resilience of People and the Planet

www.icarb.org

Conventional Accounting Tools Miss Out what Really Matters



We need to be able to Count what Counts



Slca + lca + alca = lcsa (enabling) = c-lcsa

Guinée J. (2016) Life Cycle Sustainability Assessment: What Is It and What Are Its Challenges?. In: Clift R., Druckman A. (eds) *Taking Stock of Industrial Ecology*. Springer. https://doi.org/10.1007/978-3-319-20571-7_3

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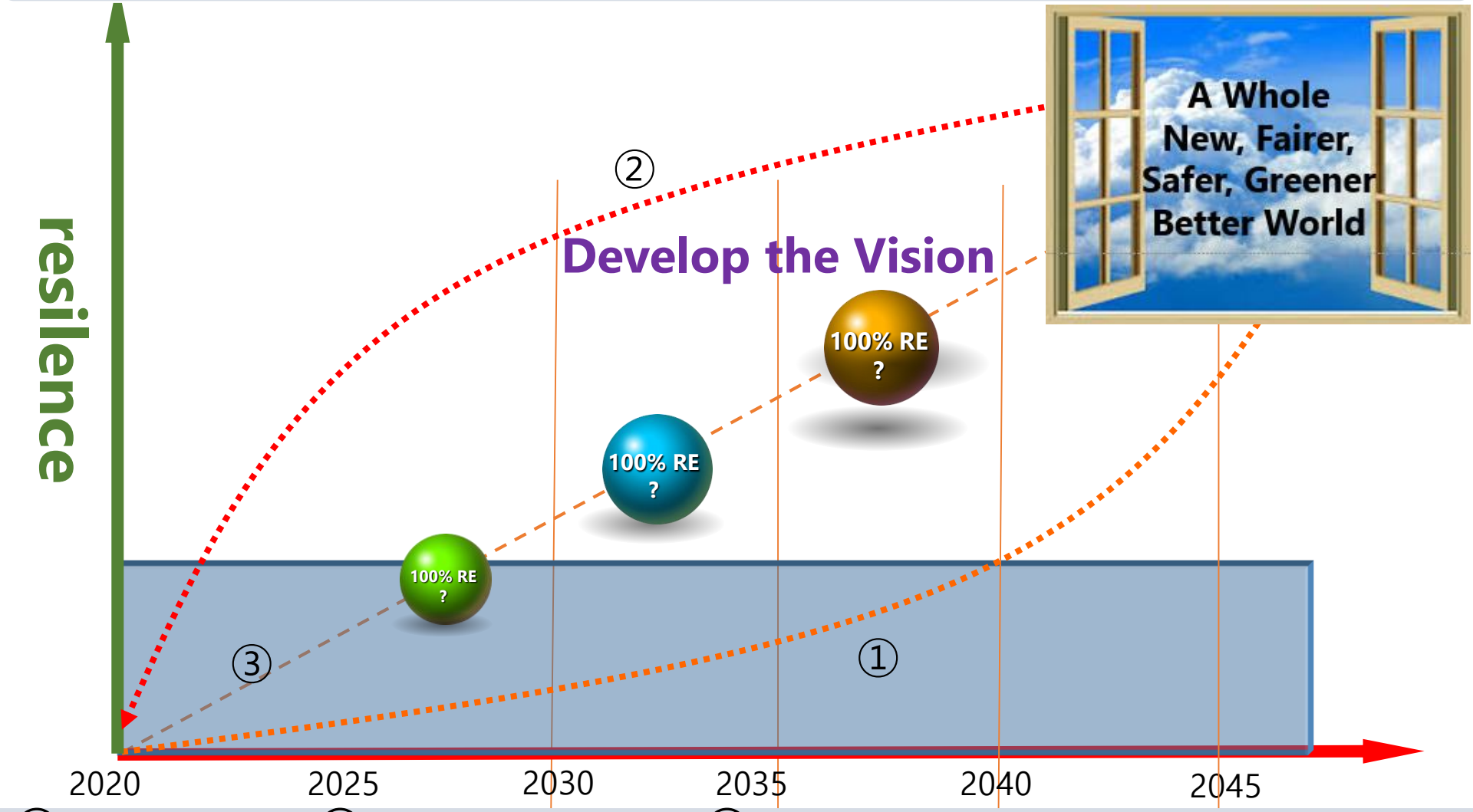
Scotland: Invest in What Really Matters Our People

The Rest will Follow



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