

Sustainability Performance and Metrics

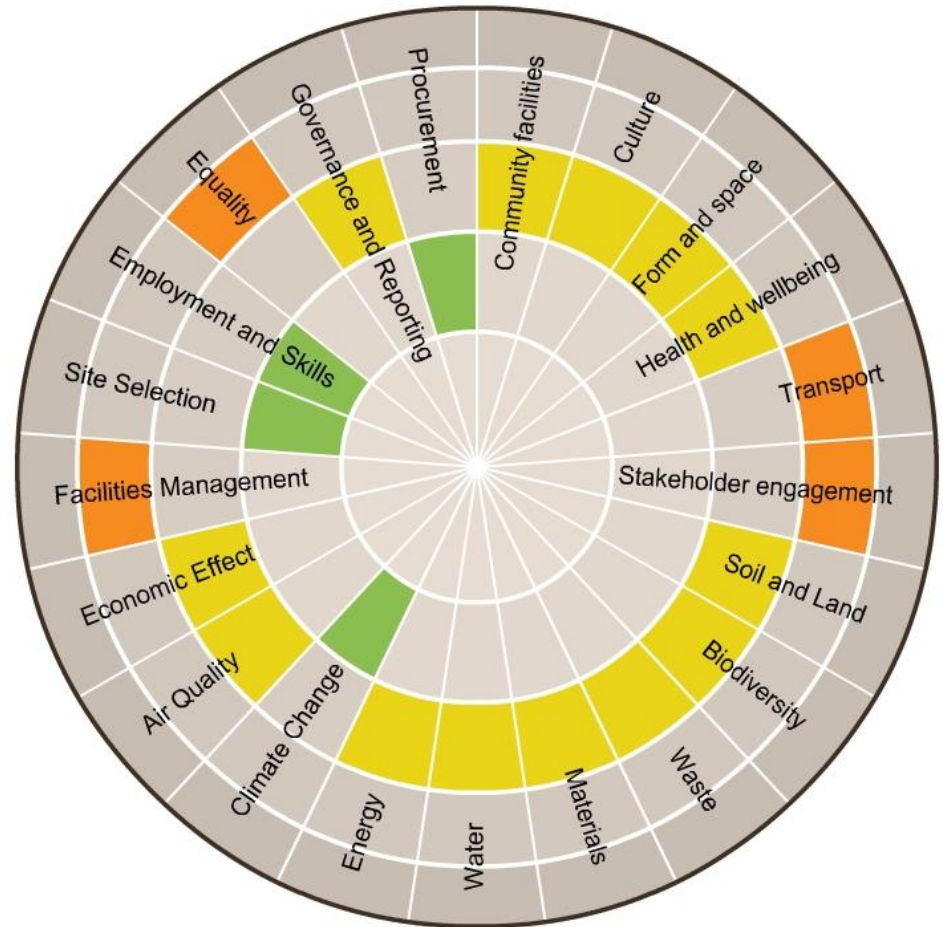
Fiona Cousins | 12 November 2015 | Washington, DC

Introduction



Early sustainability metrics - SPeAR[®]

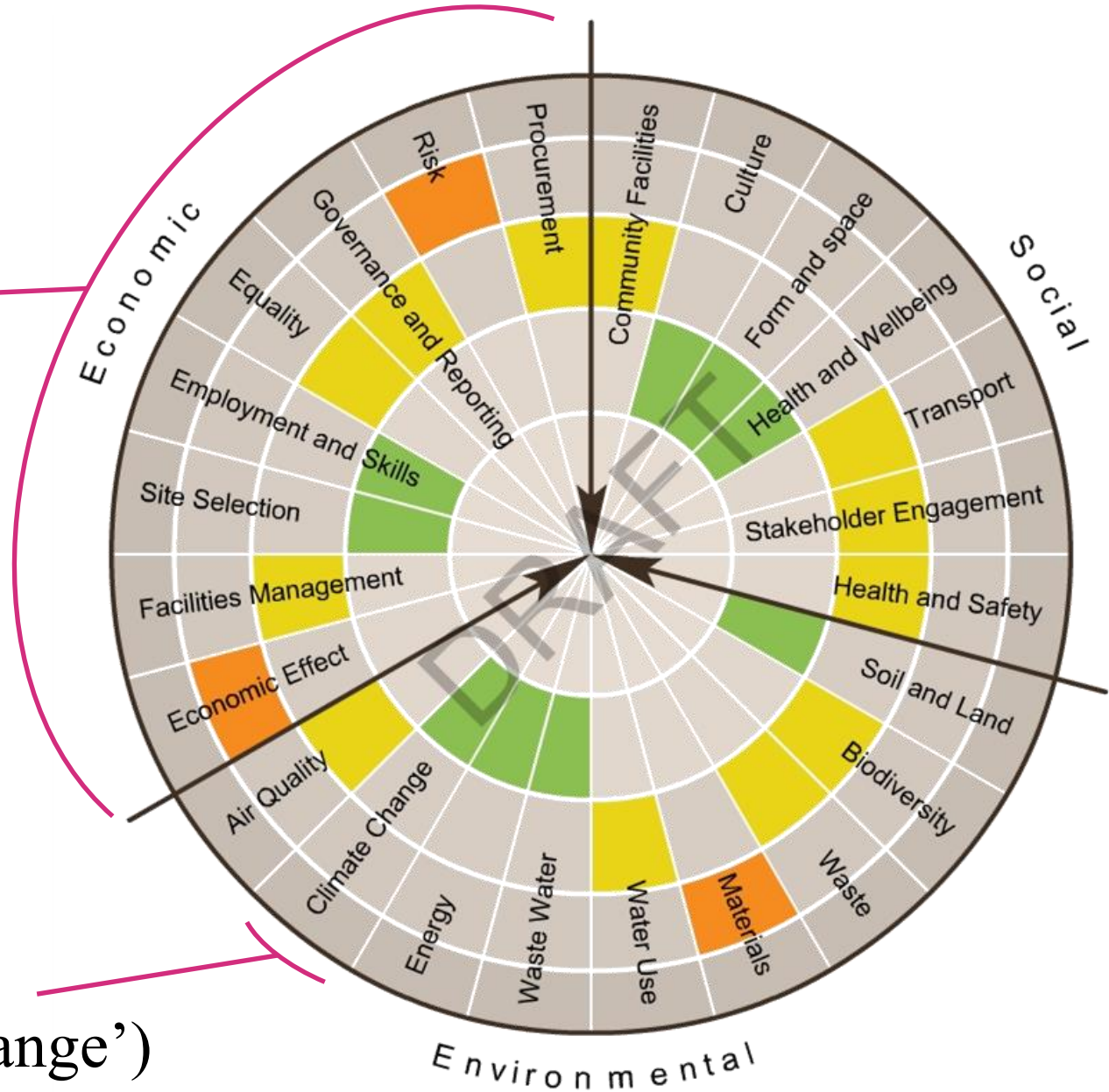
- Holistic sustainability decision-making framework to support project development and communicate outcomes
- Covers all aspects; **environmental, social and economic**



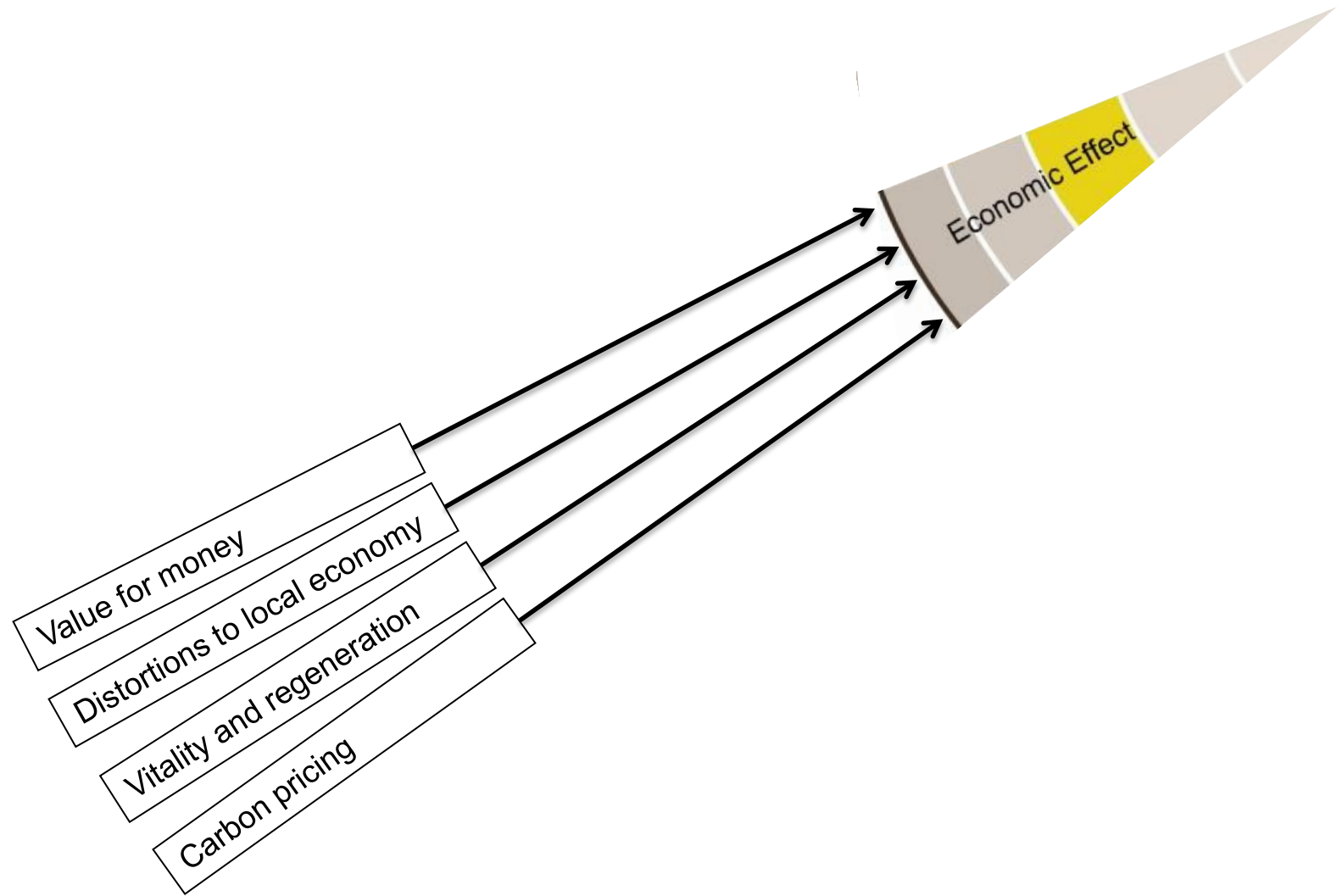
SPeAR

Segment
(i.e. 'Economic')

Core Indicator
(i.e. 'Climate Change')



Sub-indicators

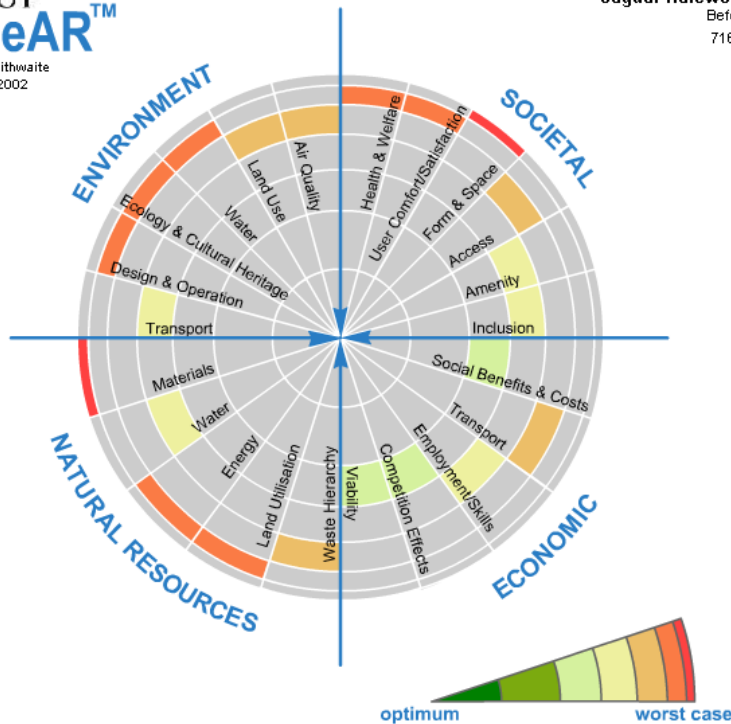


Tracking progress over time



ARUP
SPeAR™
peter braithwaite
02 April 2002

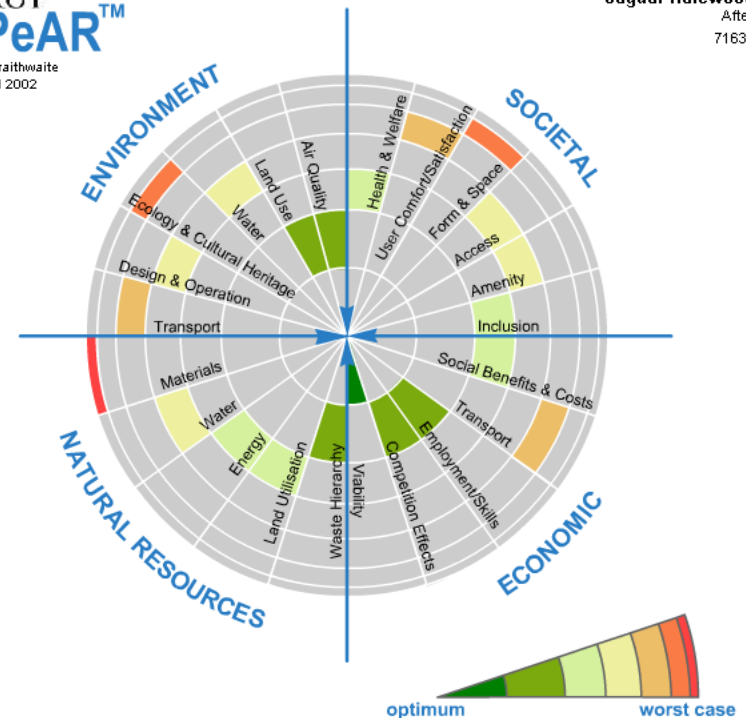
Jaguar Halewood
Before
71638



Sustainability Profile - *Before*

ARUP
SPeAR™
peter braithwaite
02 April 2002

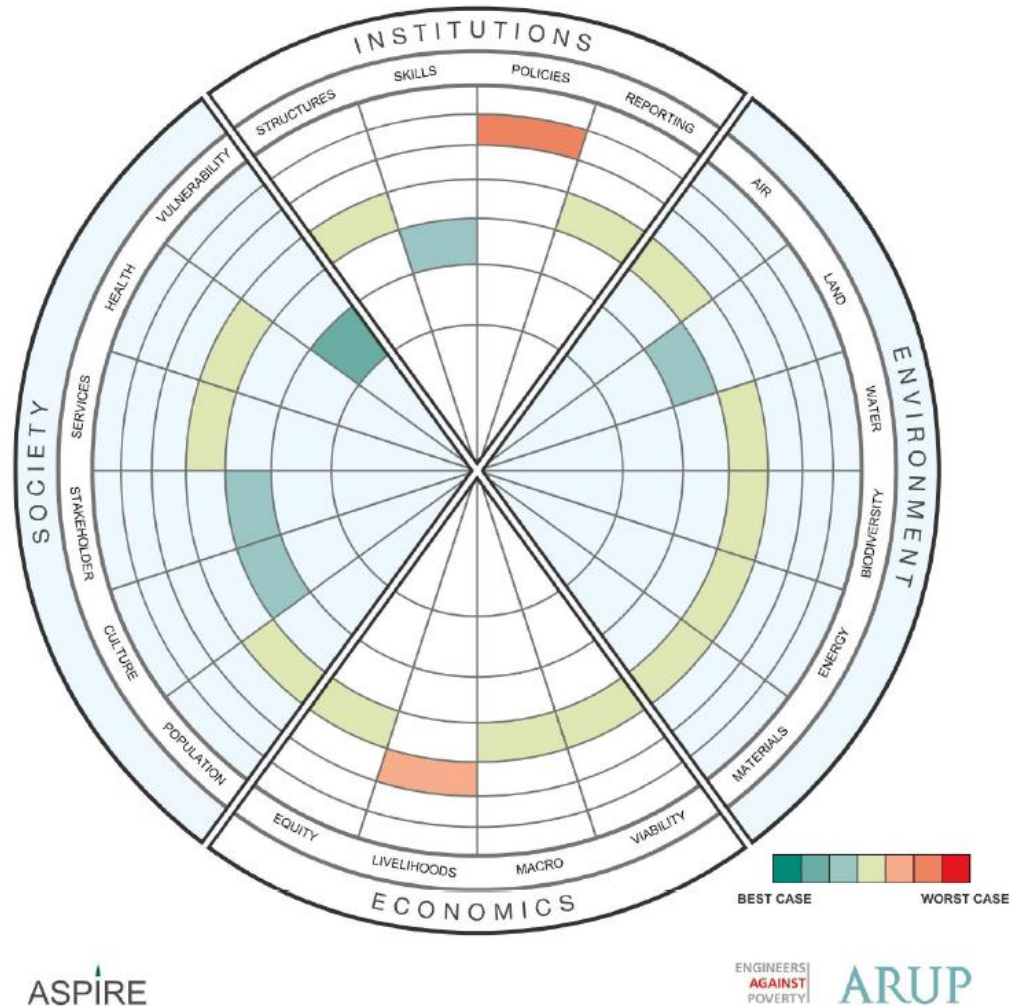
Jaguar Halewood
After
71638



Sustainability Profile - *After*

ASPIRE

- Applicable to all types and scales of infrastructure projects or programs
- Useful throughout the whole project life cycle
- Consistent framework enables objective comparison across countries or context



ASPIRE - Sabre Kindergarten School, Ghana

- The project was assessed using ASPIRE during concept design, detailed design and again during construction.
- Identified design improvements for implementation.



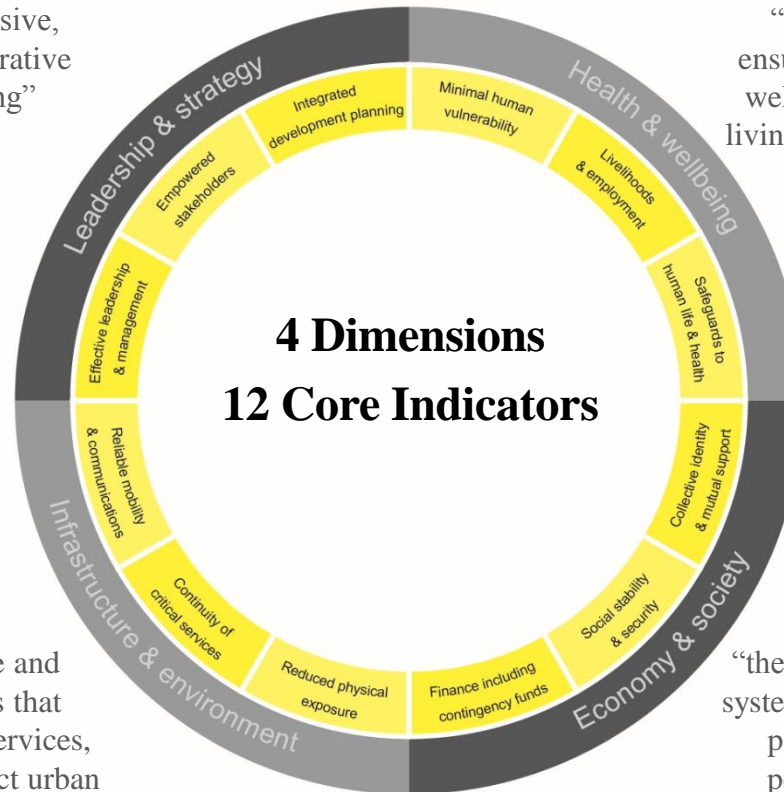
The City Resilience Framework - April 2014

Knowledge
“informed, inclusive,
integrated and iterative
decision making”

People
“the imperative of
ensuring the health and
wellbeing of everyone
living and working in the
city”

Place
“the man-made and
natural systems that
provide critical services,
protect and connect urban
citizens.”

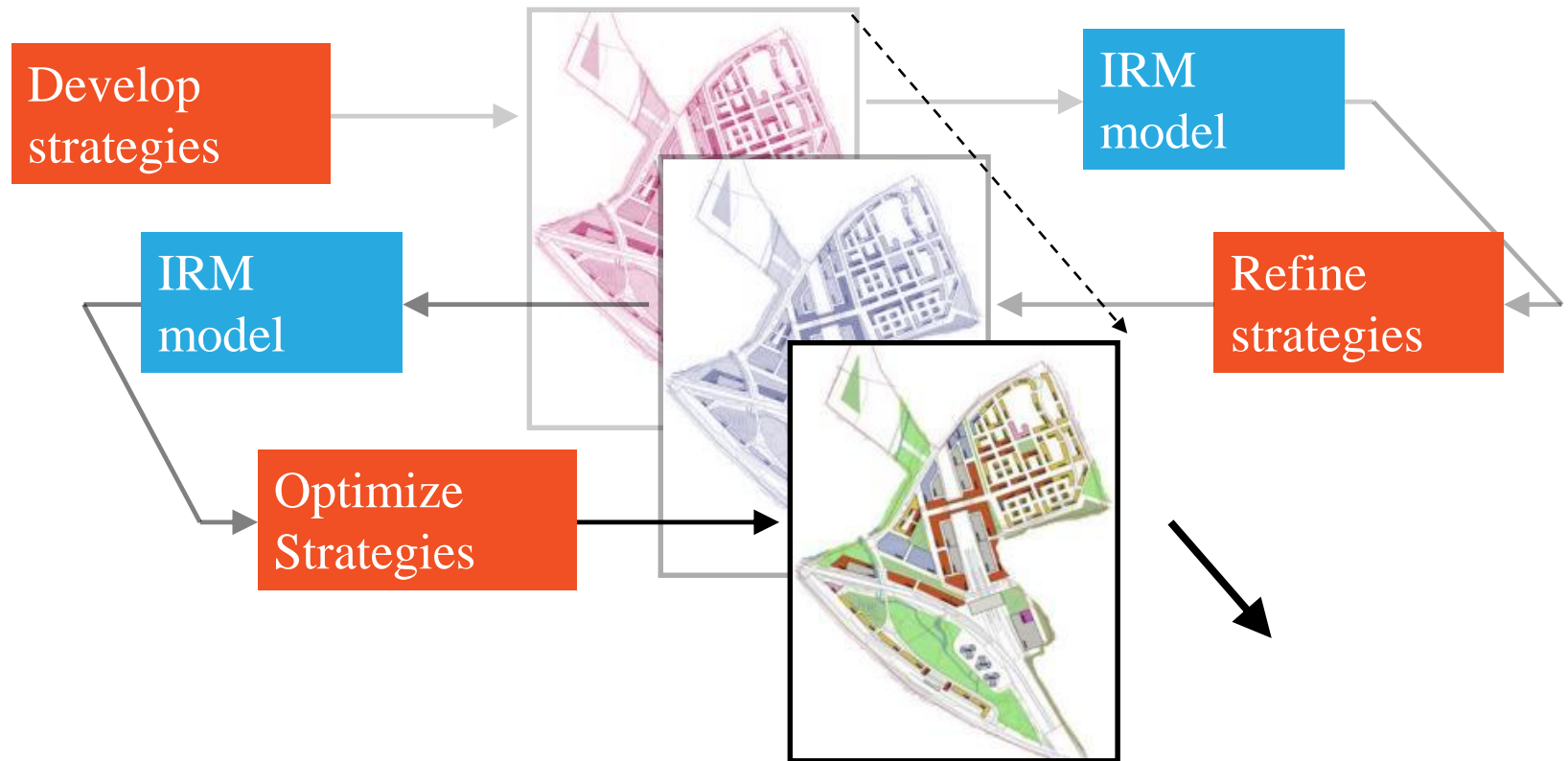
Organisation
“the social and financial
systems that enable urban
populations to live
peacefully, and act
collectively”



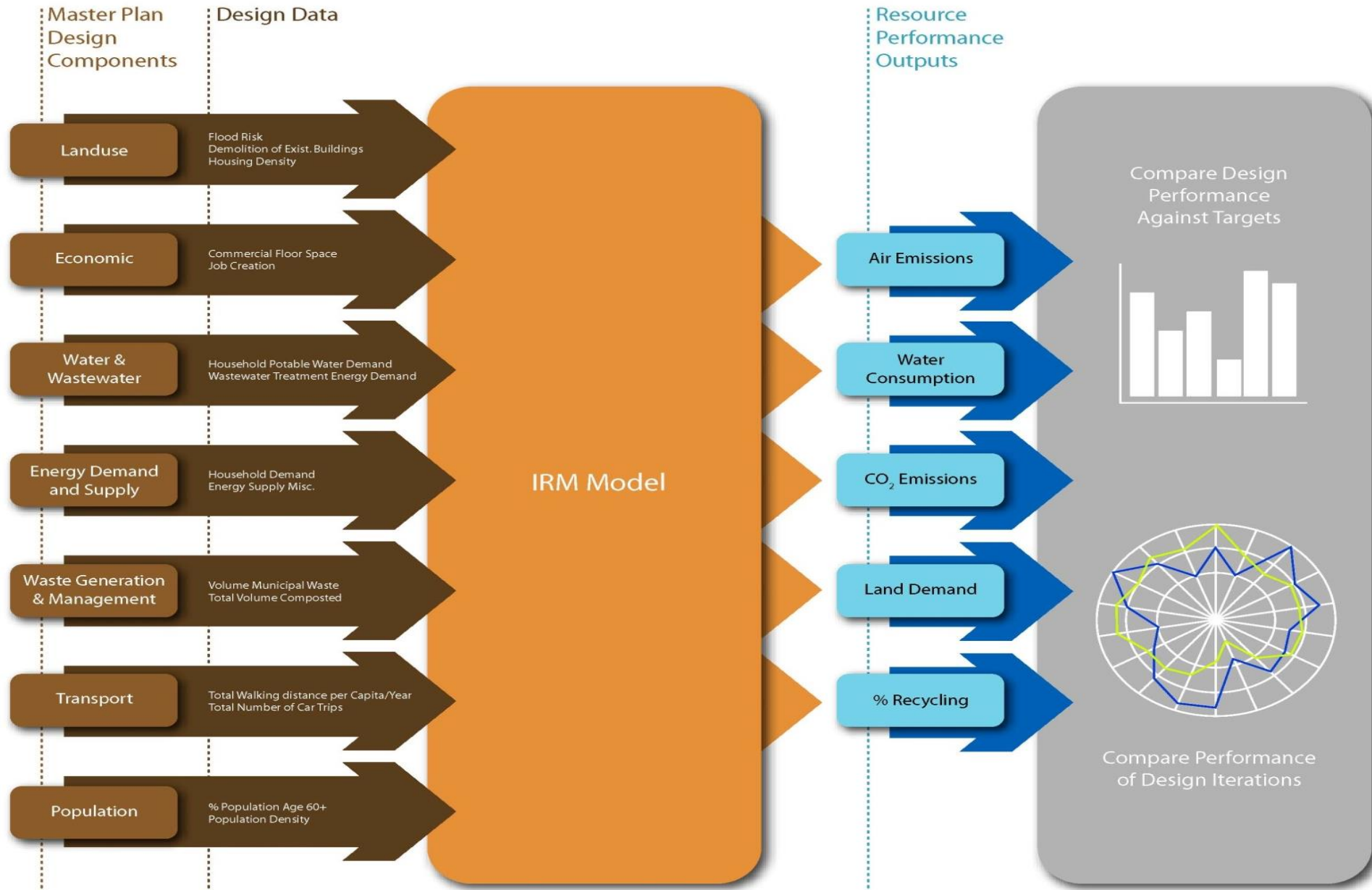
THE
ROCKEFELLER
FOUNDATION



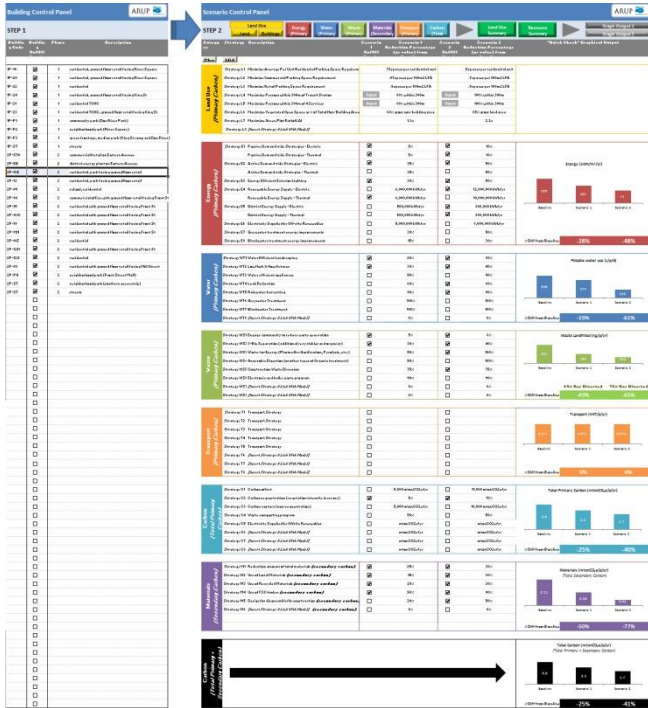
Optimized and informed planning – Integrated Resource Management (IRM)



Integrated Resource Management (IRM)



Control Panel



Baseline Inputs

Land/Bdgs

Energy

Water

Waste

Transport

Carbon

Construction

Calculations

Land/Bdgs

Energy

Water

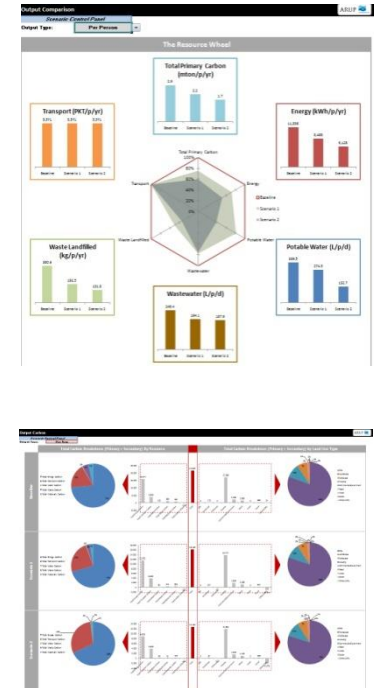
Waste

Transport

Carbon

Construction

Output



SoWa EcoDistrict

CLIMATE



LEED

- At a more analytical, but smaller scale.
- Set a baseline for quality in the market and a way of aspiring to something higher.
- Emphasis on energy and environment.
- What might LEED miss?



30% reduction in water use

29% reduction in energy use

15% of the building came from recycled material

Image source: Arizona State University

LEED FACTS

Biodesign Building A
Tempe campus

LEED for New Construction
Certification awarded
5/21/2007

Gold

40*

Sustainable Sites

12/14

Water Efficiency

4/5

Energy & Atmosphere

6/17

Materials & Resources

3/13

Indoor Environmental
Quality

10/15

Innovation & Design

5/5

**GREEN BUILDINGS
FOR EVERYONE
WITHIN THIS
GENERATION**



4.25 BILLION+ SQUARE FEET



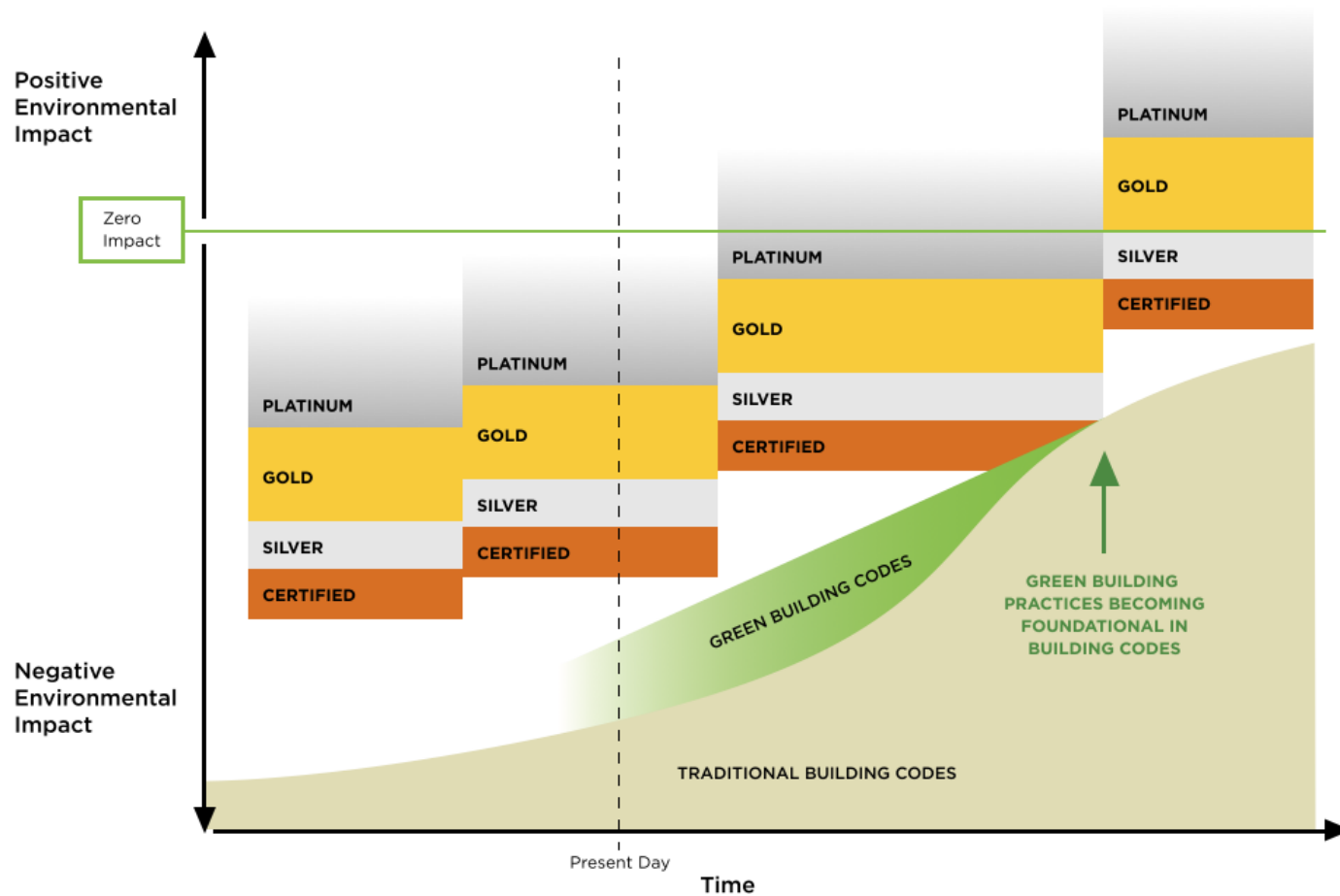
ARUP

150+ COUNTRIES & TERRITORIES



ARUP

We Are Going to Take You Here



The future of measuring sustainability

- Dynamic metrics that are data-driven
- Human-centered
- Socioeconomic equity

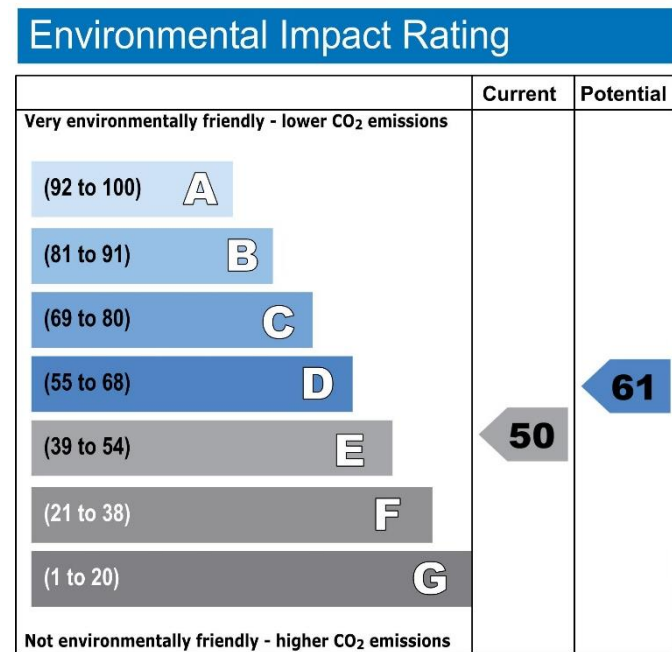
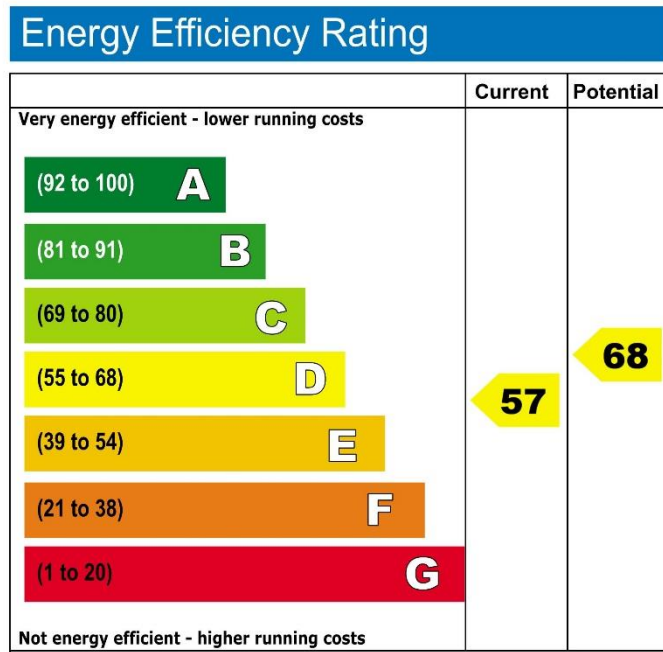


WELL SCORECARD

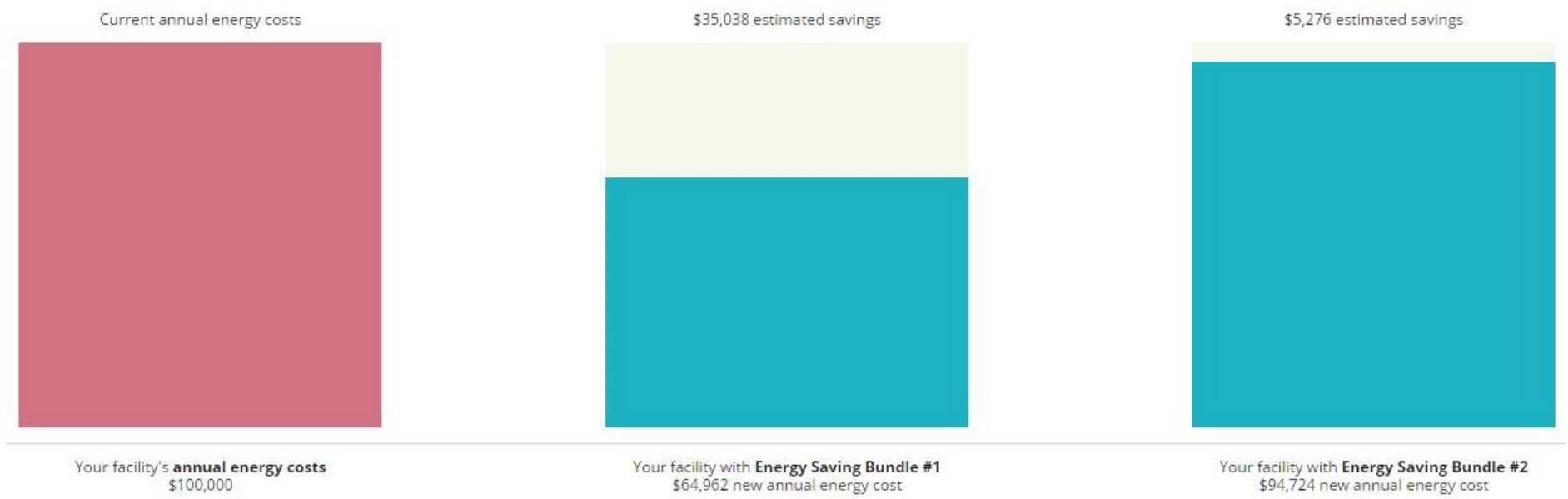
AIR										
WATER										
NOURISHMENT										
LIGHT										
FITNESS										
COMFORT										
MIND										
	1	2	3	4	5	6	7	8	9	10

EU Energy Performance of Buildings Directive

- The Europeans had a different approach and used the EPBD to set asset metrics and performance metrics.
- They tend to look rather similar in their graphic display, but are clearly different, and the performance metrics started to give feedback.



Energy Retrofits for Caribbean Hospitals - RMI



Bundle #1

Highest Potential Energy Savings

Total annual energy savings (average)	47.7%
Total annual cost savings	\$30,513 (USD)
Capital cost	\$28,626 (USD)
Payback (average years) ⓘ	0.94

View Bundle #1

Bundle #2

Shortest Payback

Total annual energy savings (average)	43.1%
Total annual cost savings	\$27,607 (USD)
Capital cost	\$7,883 (USD)
Payback (average years) ⓘ	0.29

View Bundle #2

Energy Retrofits for Caribbean Hospitals - RMI

Click on the categories below to show or hide:

Building Envelope

Compressed Air System

Controls & Motors

Electrical Distribution Systems

HVAC

Plug & Process Loads

Recommission & Maintenance

Renewable Energy

Hot Water

Lighting

☐ Prioritize EEMs into complementary groups? [?]

Include in calculations?	Total Annual			
	Energy Savings	Cost Savings	Capital Cost	Payback (years)
<input checked="" type="checkbox"/> Install low solar gain window films	0.6%	\$2,699	\$43,388	16.1
<input checked="" type="checkbox"/> Add a reflective roof covering	4.1%	\$17,182	\$38,565	2.2
<input type="checkbox"/> Replace windows and frames with double-paned low-e, thermally broken, vinyl-framed windows, with high visible light transmittance	0.6%	\$2,616	\$31,235	11.9
<input type="checkbox"/> Install automated louver shading systems on all sun-exposed windows	2.8%	\$11,455	\$47,172	4.1
<input checked="" type="checkbox"/> Install exterior window shading	2.8%	\$11,455	\$33,056	2.9
<input type="checkbox"/> Perform blower testing and sealing of envelope	0.4%	\$1,461	\$3,391	2.3

Totals

Total annual energy savings (average) 7.38%

Total annual cost savings \$30,678 (USD)

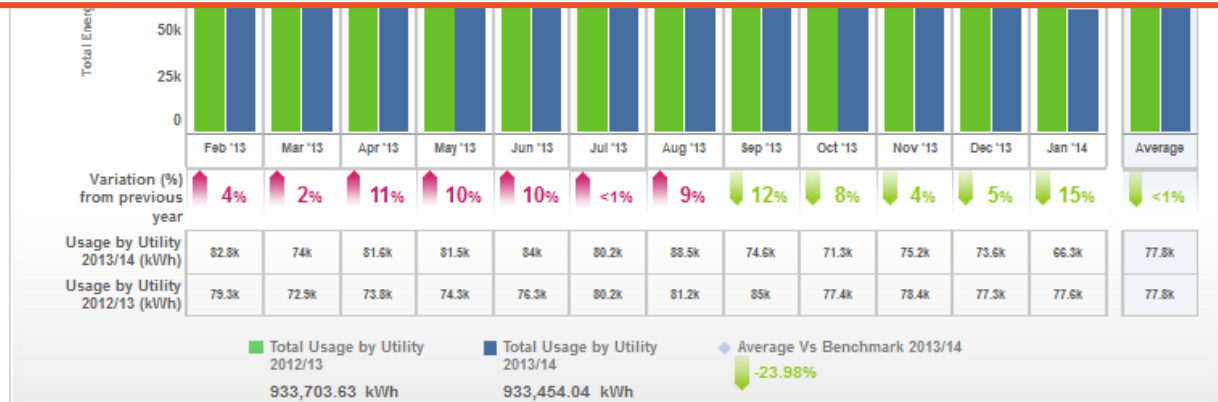
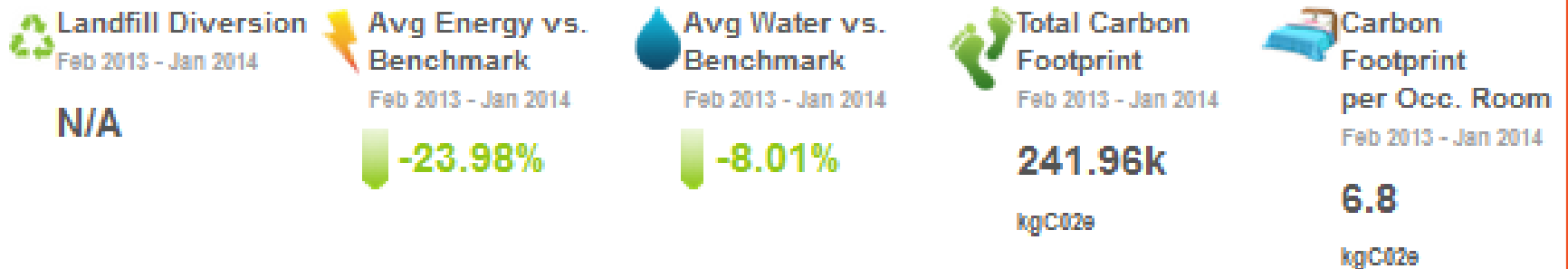
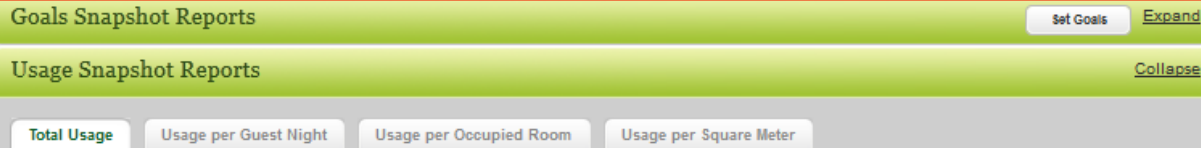
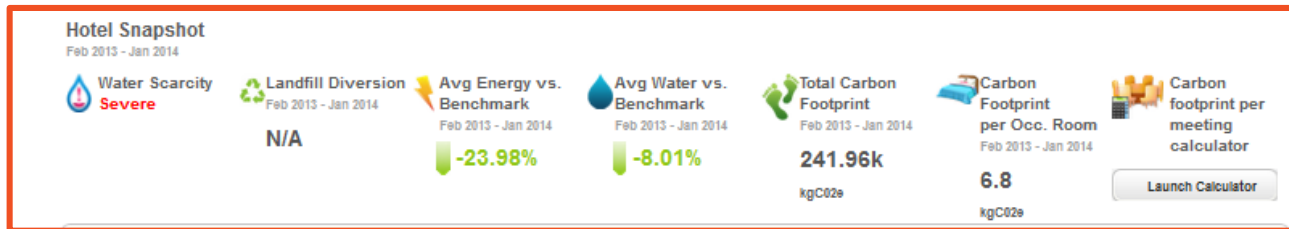
Capital cost \$115,009 (USD)

Payback (average years) 3.7

Save Custom Bundle

< Back to Results

IHG – Green Engage Sustainability Metrics



Mission & Vision

Actionable transparency for institutional investors

Systematic assessment for
companies and funds

Objective scoring for ESG
management and
performance

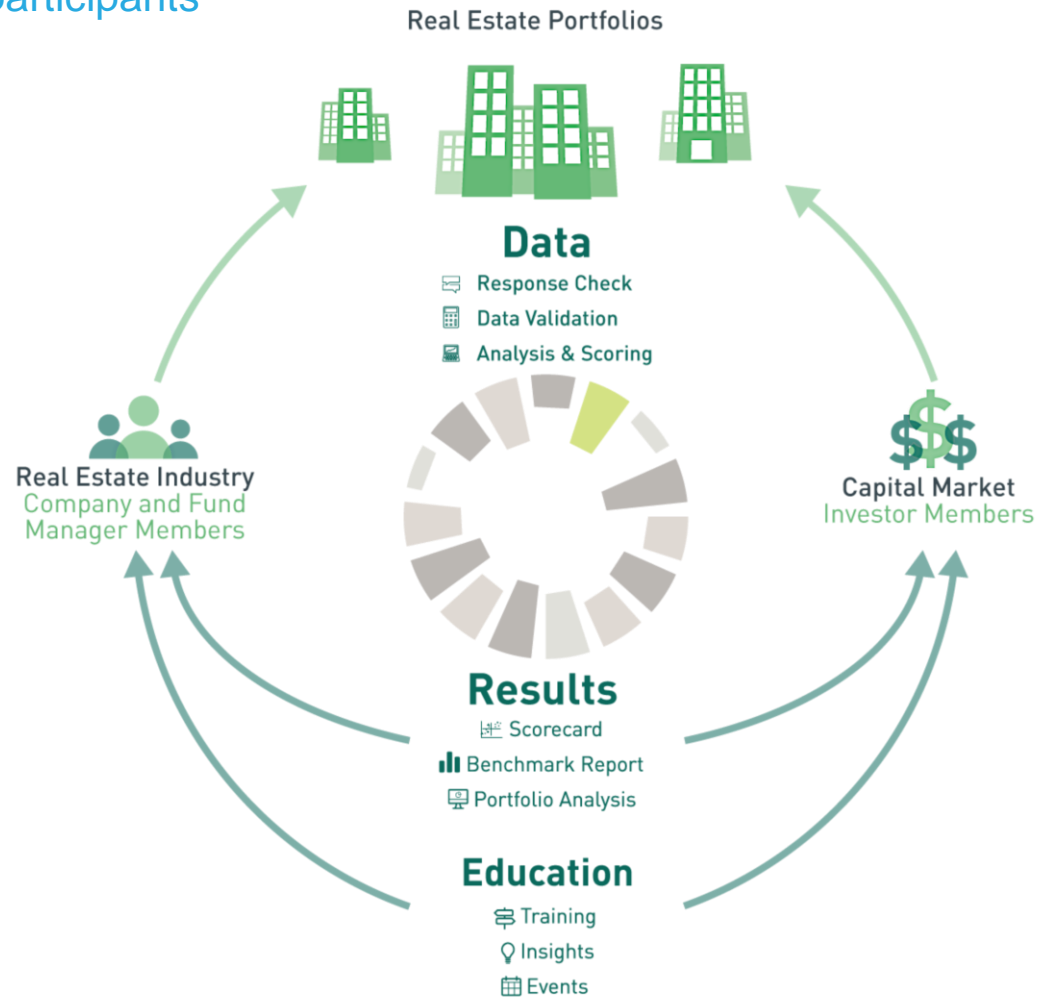
Benchmarking among global,
regional, and sectoral peers



“GRESB’s mission is to enhance and protect shareholder value by evaluating and improving sustainability best practices in the global real estate sector.”

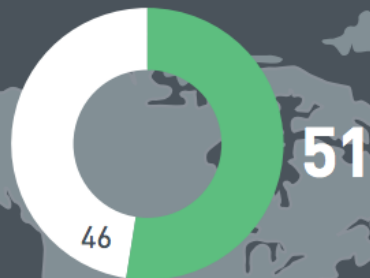
Process

Connecting market participants



2014 2015

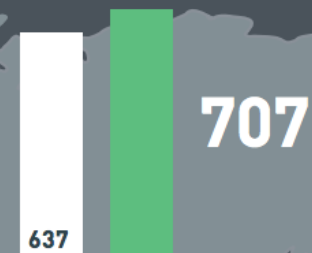
Investor Members



Institutional Capital

\$6.1 trillion
\$5.5 trillion

GRESB Participants



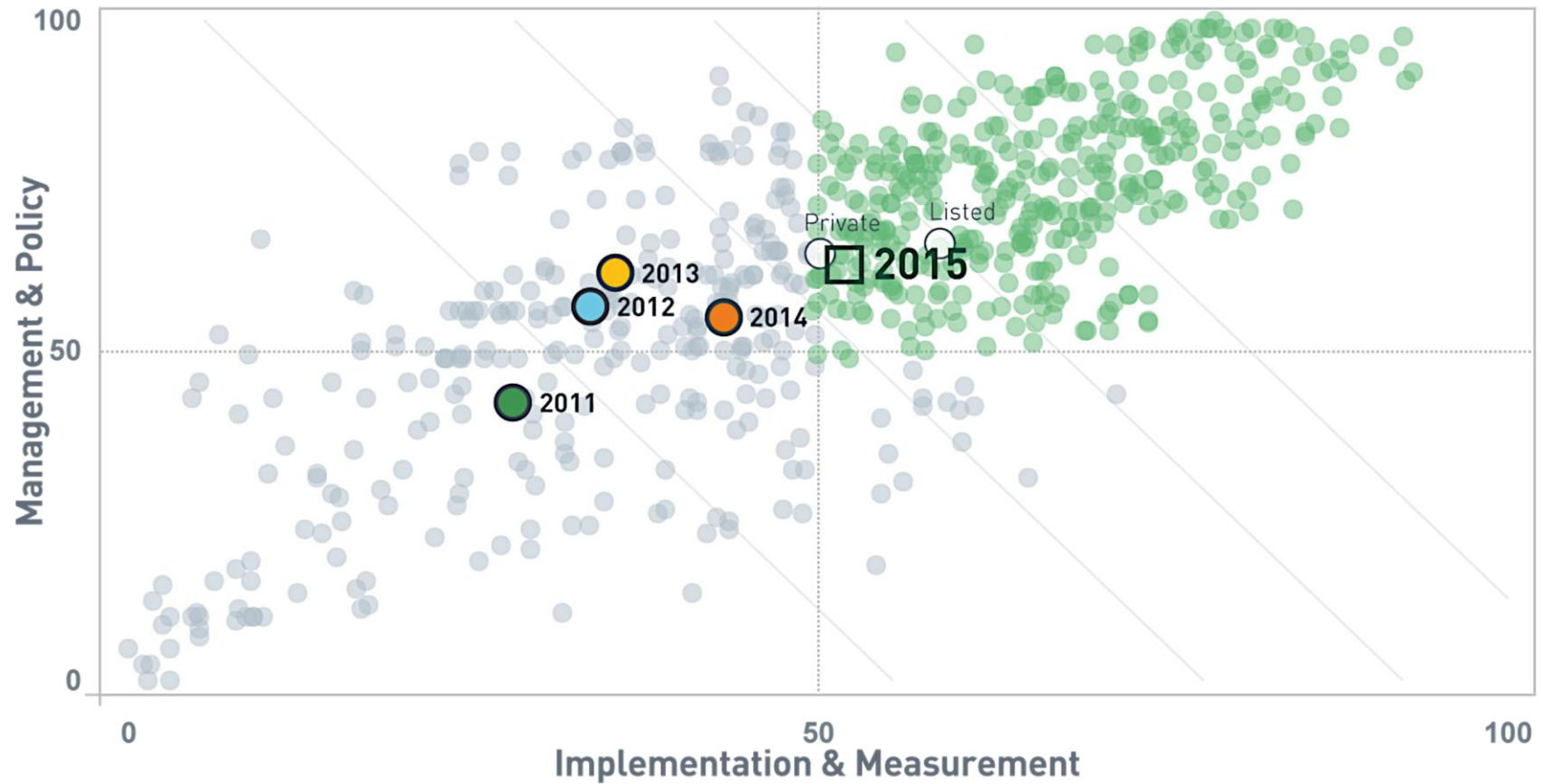
Property value

\$2.1 trillion

\$2.3 trillion

Quadrant Model

Global history



Thank you

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