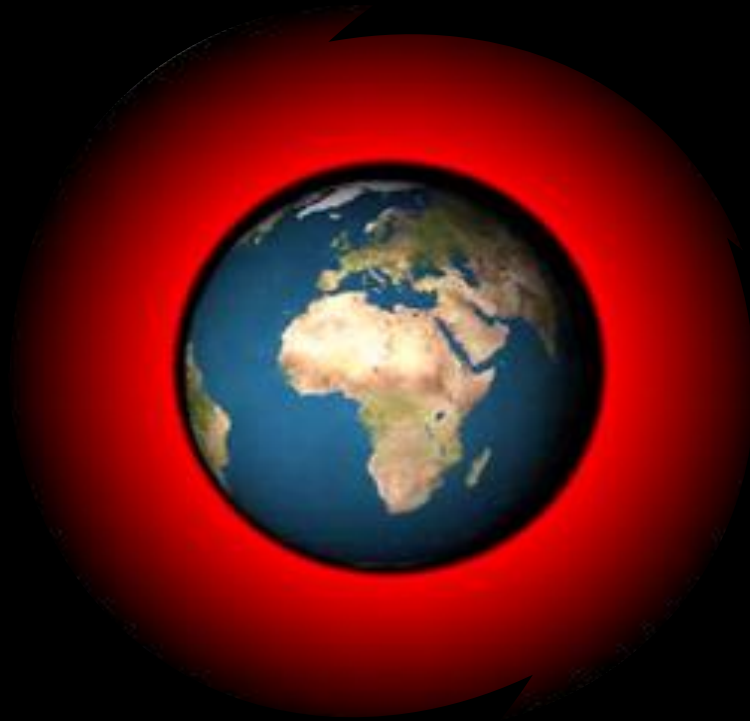
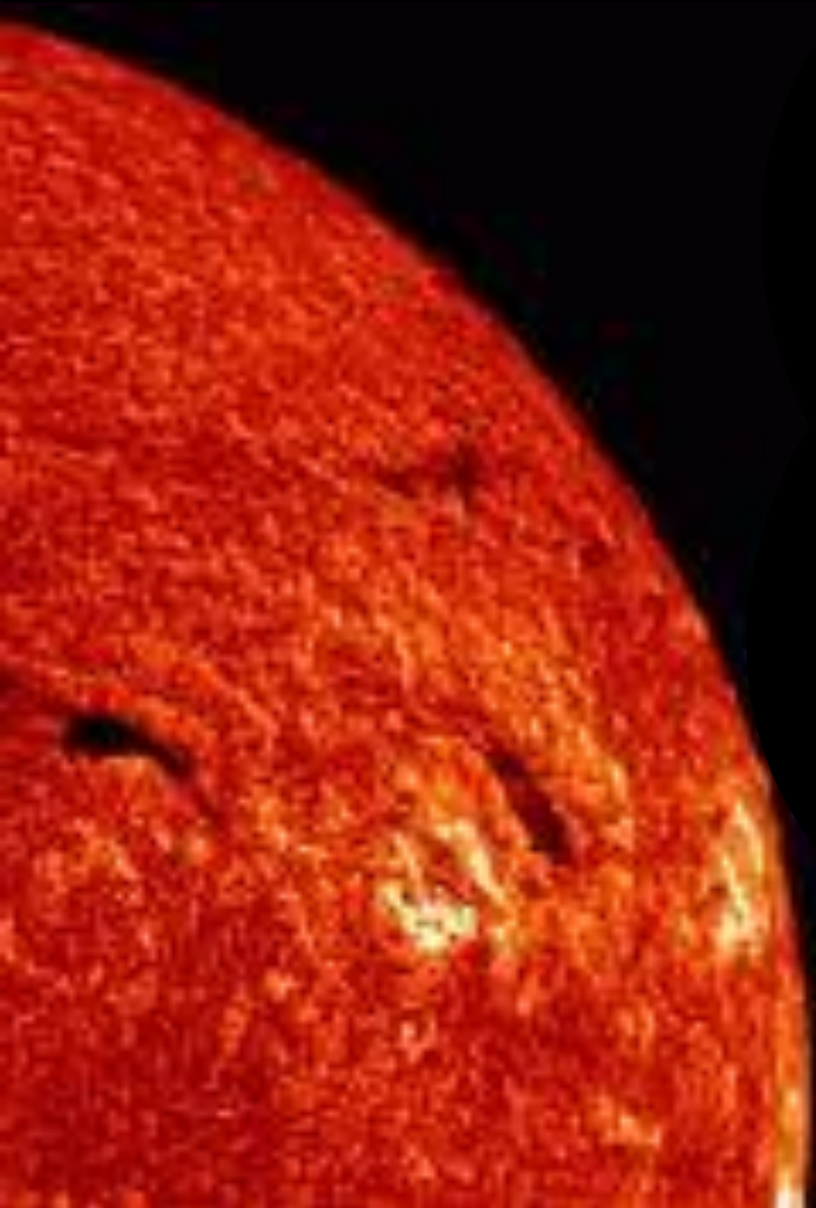


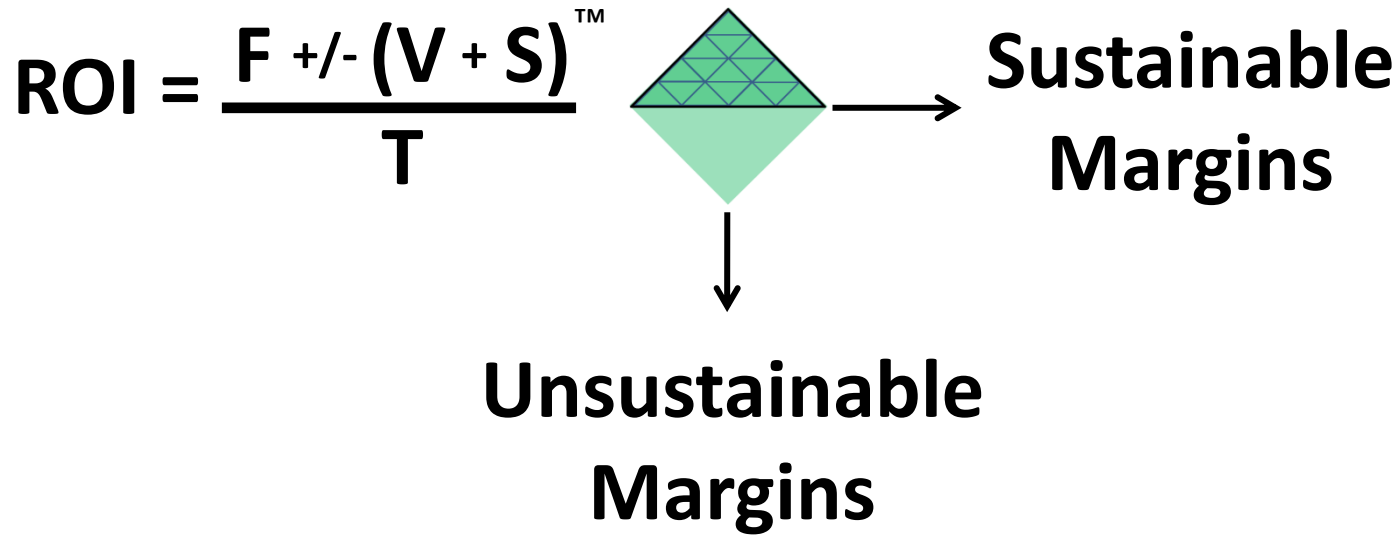
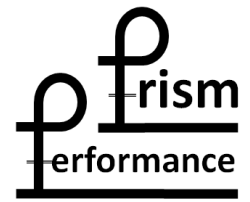
Sustainable Margin Development



Welcome to a
new business paradigm

Sustainable Margin Development

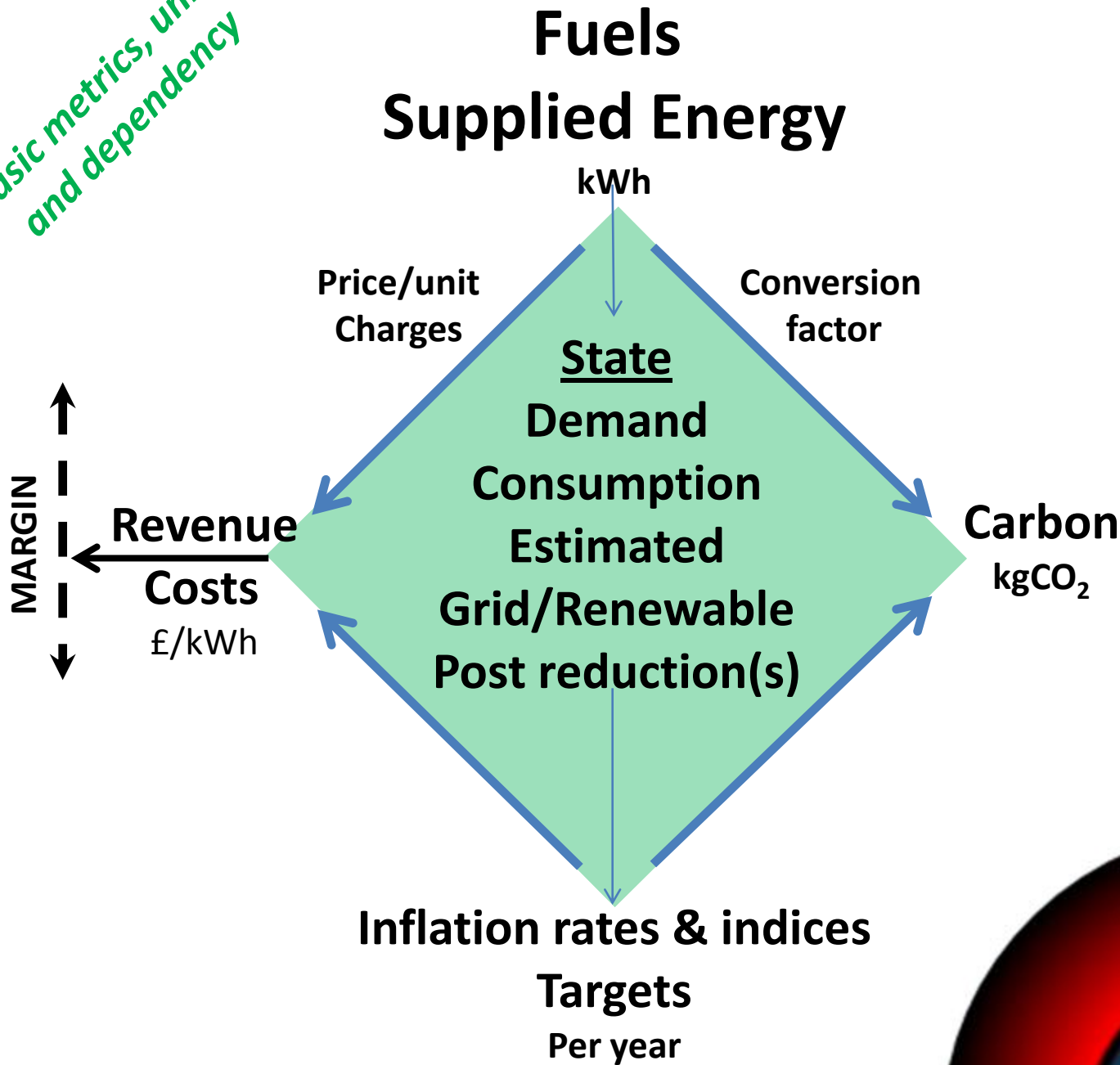
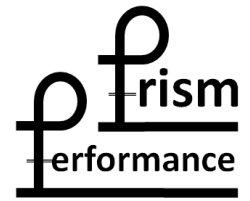
is a holistic data model & set of solution templates



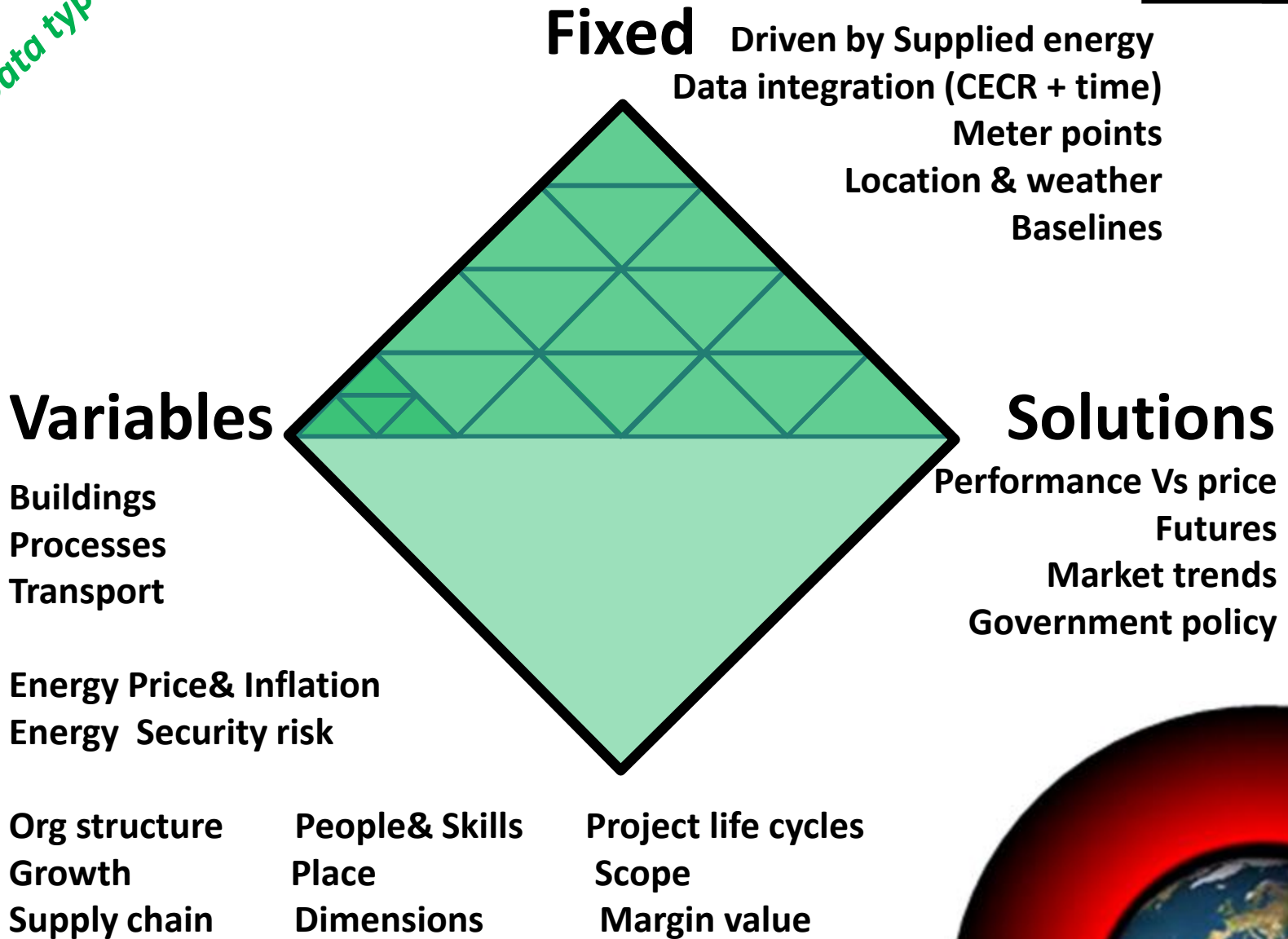
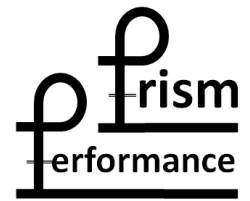
**Informed decision
that is in the numbers!!!**



Basic metrics, units and dependency

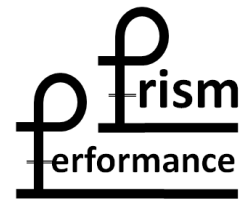


Data type summary



Fixed data

FIXED Site projected energy cost model 2012 – 2016 FIXED Baseline 2011



Fuel	Function	CEC Baseline year			Baseline year Inflation	5 years		10years		15 year		20years		25 years		
		Carbon kgCO ₂	kWh	True Cost		2012	2016	2021	2026	2031	2036					
Electricity	Hot water	48440.0709	88845	£7,368.11	11%	£8,178.60	£9,828.01	£12,365.14	£15,557.24	£19,573.38	£24,626.31					
	Lighting	13394.32	unresolved	£2,829.86		4.70%										
	Cooling		24566.815	£3,147.95												
	Space heating															
	Appliances															
Gas	Hot water	21467.7958	115898.05	£2,995.93	18%	£3,535.20	£4,248.15	£5,344.83	£6,724.61	£8,460.58	£10,644.71					
	Space heating					4.70%										
	Catering															
Water		0.22	8	£2,471.56	10%	£2,718.72										
Petrol		53087.29	5505.96	£26,760.00	10%	£29,436.00										
Diesel																
CEC baseline footprint		136389.69	234823.8204	£45,573.40		£52,000.00										

Client name	The Parks Trust			
Client Address	Campbell Park, MK9			
Site address	Pavilion	Flat	Annual Totals	NEF total
Annual nett cost	£1,264.39	£496.91	£1,761.30	
Annual kWh	44676.01361	£496.91	65569.06361	106,587
Annual carbon kg CO ₂	8275.338001	3870.02	12145.35765	19743.11001
Carbon conversion rate	0.18523	0.18523		
Price per unit kWh	0.0236	0.0236		
Charges	0.0283	0.0238		
Supplier(s)	British gas 600370355 8813403110 4564870	British gas 600370354 3998750700 46174645		
	no	no		

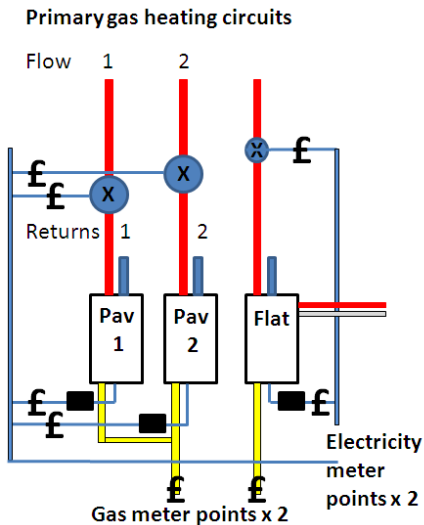
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Bill date	01/04/2011	01/04/2012	01/04/2013	01/04/2014	01/04/2015	01/04/2016	01/04/2017	01/04/2018	01/04/2019	01/04/2020	01/04/2021	01/04/2022	01/04/2023	01/04/2024	01/04/2025	01/04/2026
Volume billed	442.87	52.33	52.33	52.33	100.00	136	140	281	330	442.87	379.67	379.67	2801.64			
Volume used	14548.74	3054.64	3054.64	3054.64	3054.64	4469.79	4661.26	9361.11	10588.50	14548.74	12478.17	12478.17	12478.17			
Gas charge rate	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209	£0.0209			
Gas charges	£0.9255	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755			
Standing charge	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00			
Climate change Levy rate	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00			
VAT	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00			
prompt billing discount	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00			
Total billed	£0.9255	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755			
Total net VAT	£0.9255	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755	£0.6755			

Consumption profiling per building Electricity and Gas

FIXED Building Energy Baselines 2011

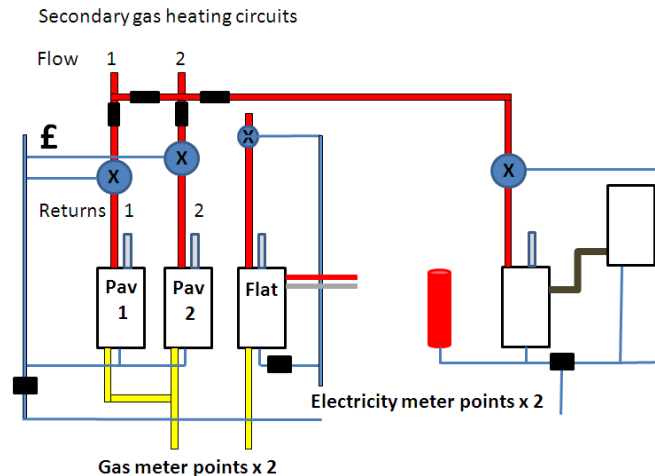
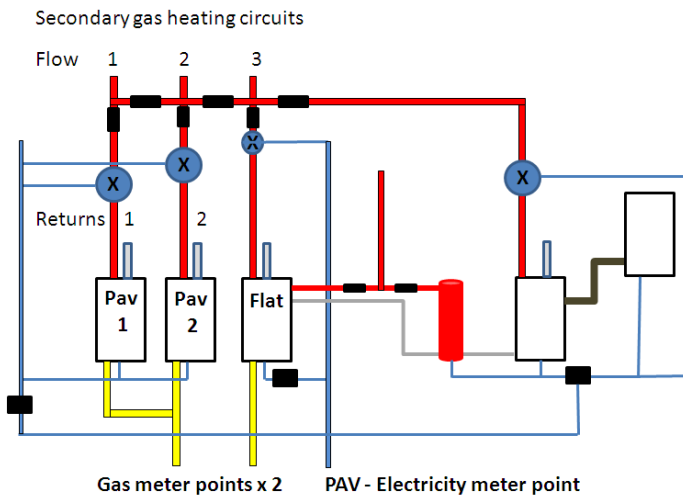


Variable systems
data



Current GAS Boiler configuration:
 2 x heating systems for the Pavilion – heating only
 1 x system for the Flat – heating and hot water

Energy £Cost points:
 Gas x 2 Electricity x 6 minimum

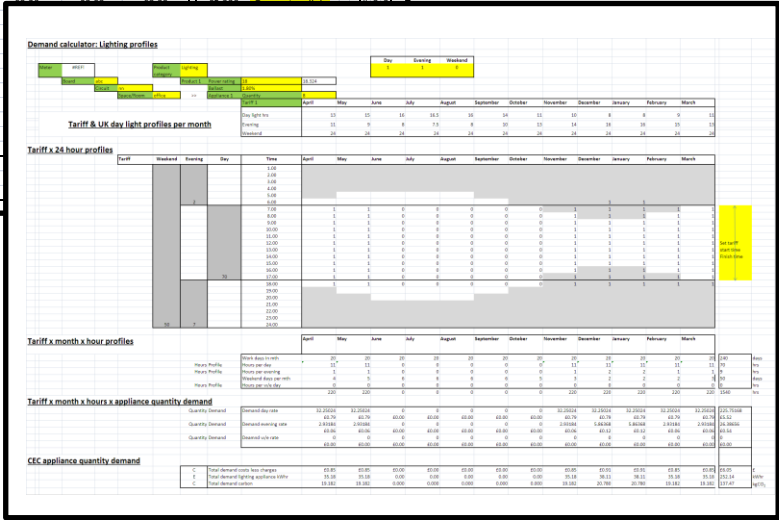


Variable function data

Space heating (hot water not inc.)

Appliance ref #	Meter	Sub meter (optional)	Board	Circuit	Appliance	Appliance type	Power rating	Qty	CEC Baseline			Install costs	Changes	Reduced costs			
									Cost £	kWh	Carbon kgCO ₂			P	D	C	
0	(1)	(1:m)	(1:m)	(1:m)	(1:m) ignore	(1:m) ignore	(1:1)	(1)									
1	98M297745		tbc	nn	Boiler 1		2000	1	£474.79	3600.00	1962.79	£0	Link to one timer control	#	#	#	
					Pump 1		3000	1	£712.19	5400.00	2944.19			#	#	#	
2					Boiler 2		2000	1	£474.79	3600.00	1962.79			#	#	#	
					Pump 2		3000	1	£712.19	5400.00	2944.19			#	#	#	
3	98M297747				Boiler 3		1000	1	£205.77	1752.00	955.22544			#	#	#	
					Pump 3		1500	1	£308.66	2628.00	1432.83816			#	#	#	
Space heating									£2,888.39	22380.00	12202.02	£0.00		#	#	#	

Comparing different primary and secondary space heating options



Consumption savings Demand for new solutions

Heating profile per hour, day and month and energy tariff profile.

Power ratings of appliances, boilers, pumps and timers



Solution variables

Technology specification

Gas consumption	44676.01 kWh/year	
Calculation wood chips consumption		
NCV of wood chips (M@30%)	3.4 kWh/kg	
Plant efficiency	0.80 %	
Wood chip requirement =	16425.01 kg	16.43
Approx boiler capacity		
Operating hours	1540 hrs	See biomass appliance timing planner
kW =	36.263 kW	

Solution overheads

- Planning & buildings regs
- Construction through commissioning
- Decommissioning old systems
- Off site bulk storage & transport to site
- Maintenance



Margin

Margin model for alternative solution:

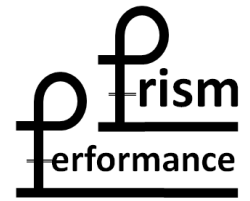
The current volume of wasted usable timber = 2100 tons
The recommendation was to brand and sell their waste
Logs, chips, fence posts etc..

In 2 weeks, 2 contracts selling at £20 per ton

Given that the costs to fell and chip are sunk costs.

Business Margin increase is £42000 in baseline year,
increasing year on year.

Now that's sustainable!

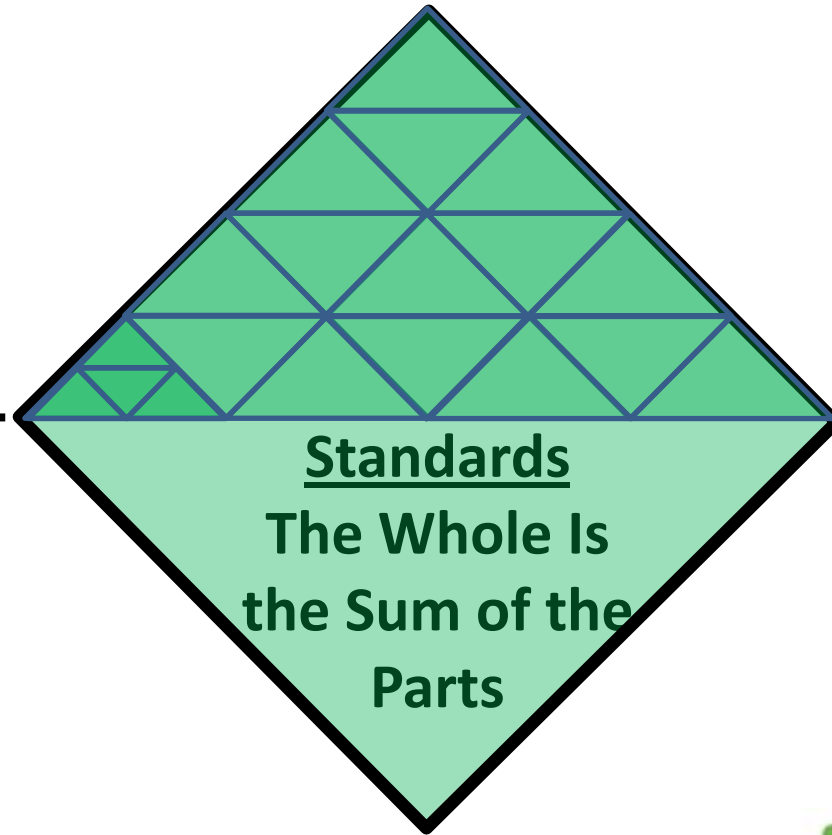


Scalable reduction
model
Year on Year

Fuels Supplied Energy

kWh

MARGIN ↑
Revenue
↓ Costs
£/kWh



Carbon
kgCO₂

Inflation rates & indices
Targets
Per year



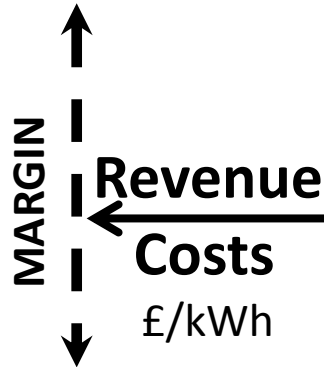
Typical parallel activities

Fuels Supplied Energy

kWh

Programs

Sustainability strategy
Energy management (fuels (and water))
Energy efficiency and reduction programs
Carbon reduction programs



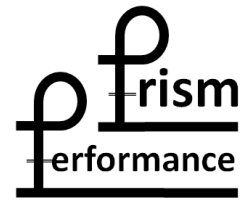
In relation to

Business as usual
Tactical and Strategic

Carbon
kgCO₂

Inflation rates & indices

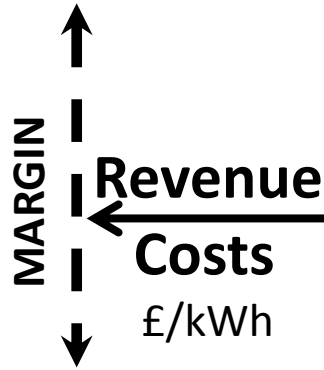
Targets
Per year



*Cost & redundancy
model
Year on Year*

Fuels Supplied Energy

kWh



Silos
Duplicity
Inconsistency
Scope overlap
Waste of time & effort
Race to buy

Carbon
kgCO₂

Inflation rates & indices
Targets
Per year





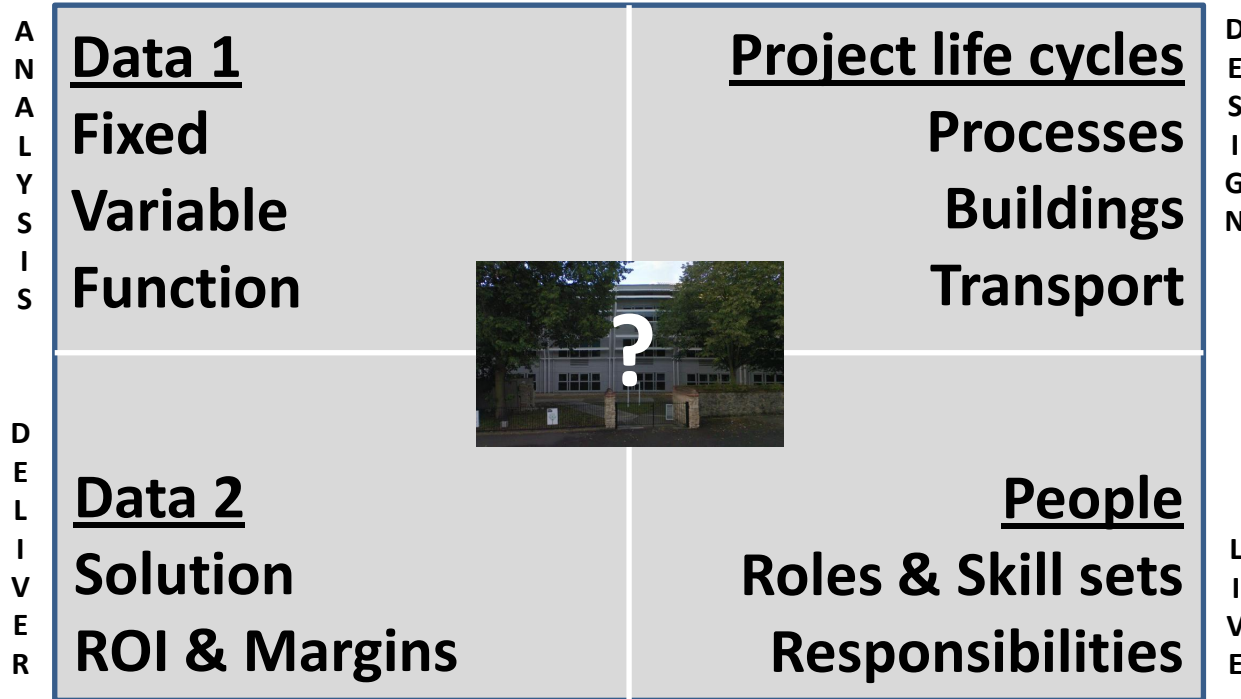
Why is the picture so dark and gloomy?

Because the sun is shining on the other side of the building?

- No concept of the performance of the building?**
- No concept of the performance of the processes?**
- No concept of Sustainability?**



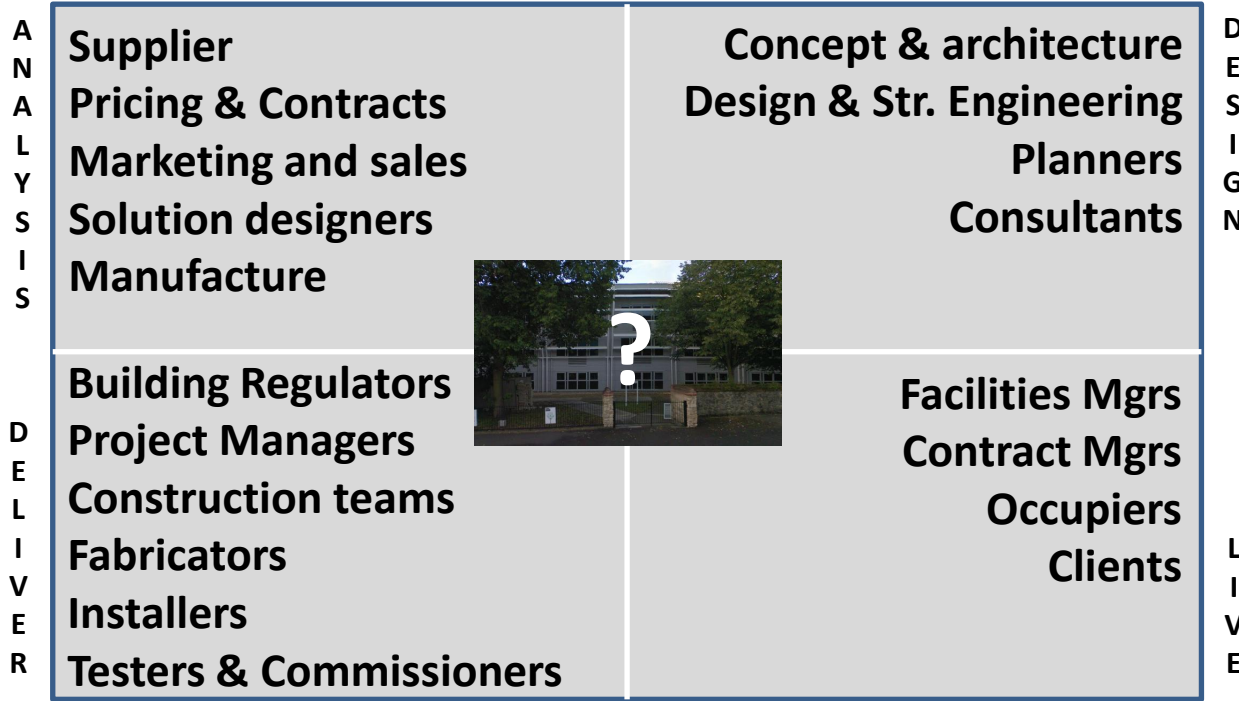
Relating Projects to Margins (applies to any project)



$$ROI = \frac{F \ +/- \ (V + S)^{TM}}{T}$$



Relating Role responsibility to Margins (applies to all projects)



$$ROI = \frac{F \text{ +/- } (V + S)^{TM}}{T}$$



Relating Solutions to Margins (life cycle applies to any project)

ANALYSIS	<p>What are the solution's efficiency & performance values?</p>	<p>What are the demand values of performance by design?</p>	DESIGN
DELIVER	<p>What are the project life cycle process overheads?</p>	<p>How sustainable is the solution?</p>	LIVE

$$ROI = \frac{F \ +/- \ (V + S)^{TM}}{T}$$



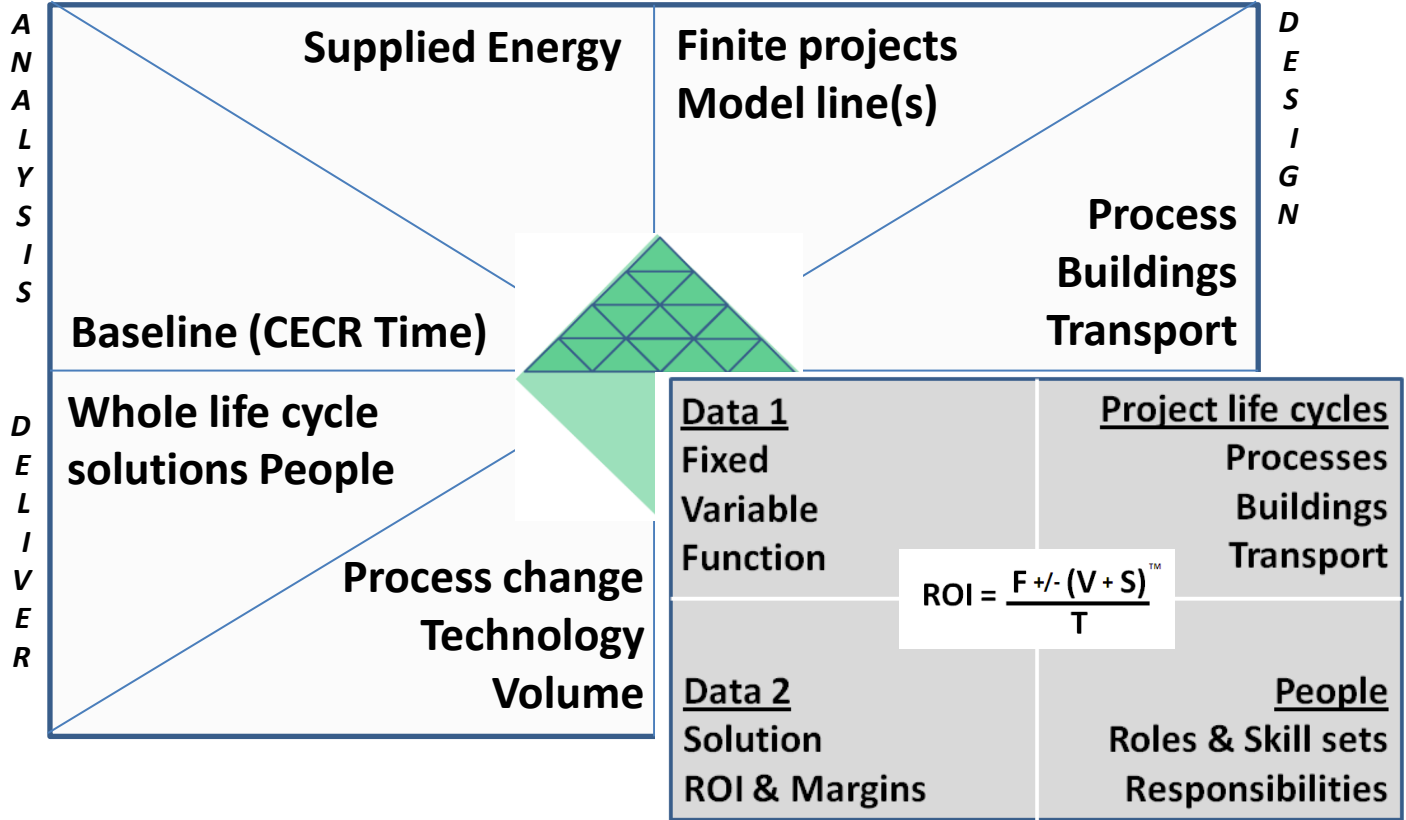
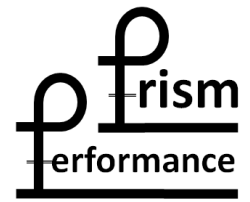


So which solutions fit sustainable margins?

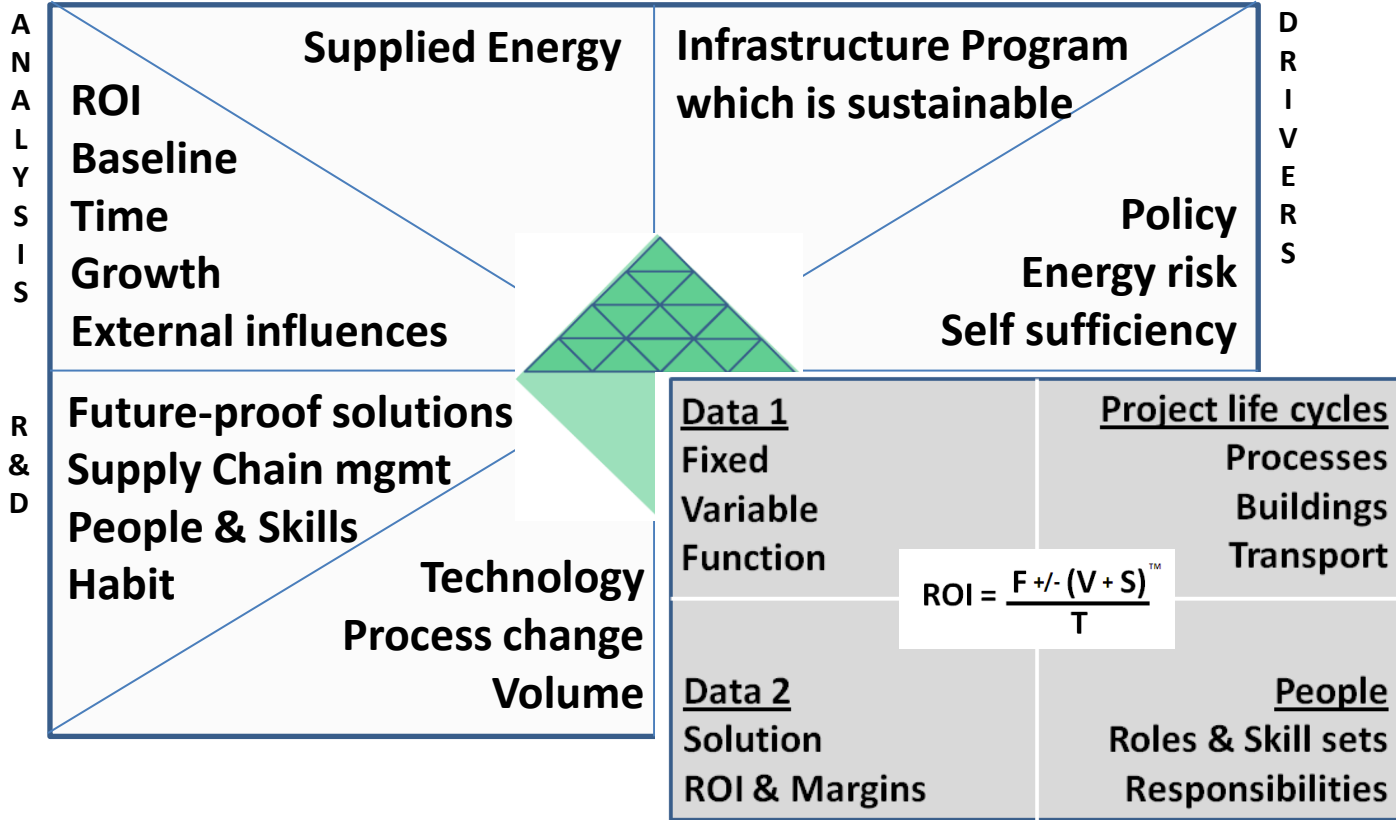
1. Basic error
2. The correct technical solution on the south side
3. The optimum orientation of the building
4. The alternative Passive solution



Where to start? Tactical Successes

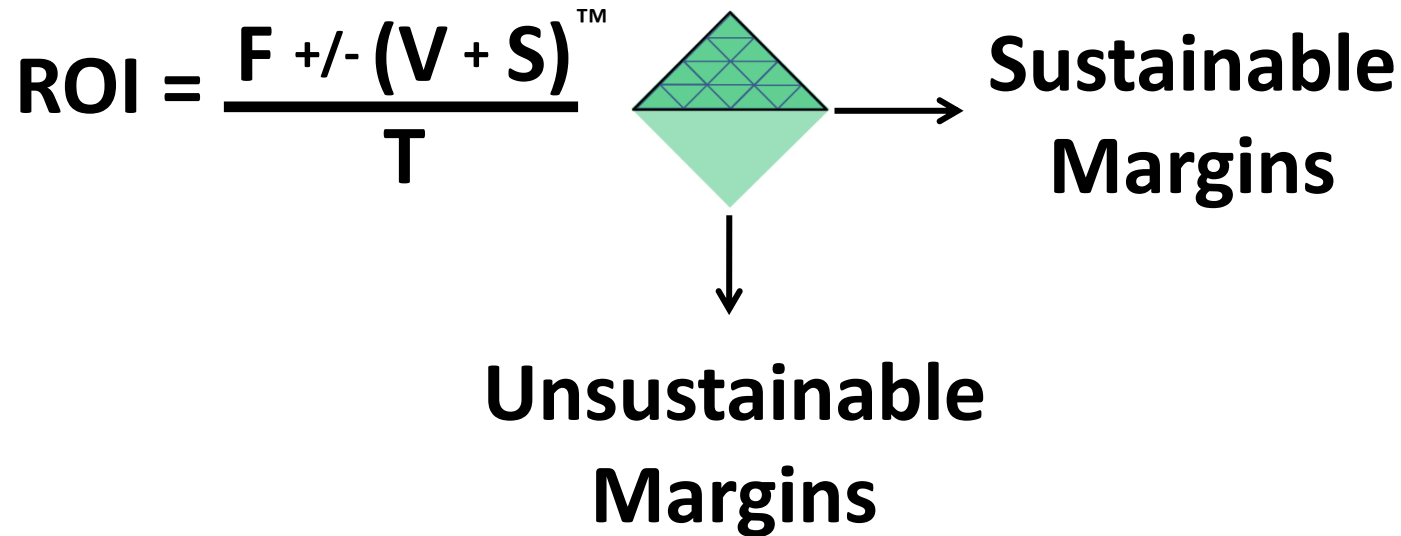


Where to start? Strategic vision



Sustainable Margin Development

It's what you *cannot afford* to ignore



**Informed decision
that is in the numbers!!!**

