

Some Simplistic Thoughts About Sustainability

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Summary

The relationships between commerce, society, government and the environment are redrawn to emphasise the importance of government in managing resources and how we use them.

We live in an interesting relationship where we draw materials from the environment to enhance our quality of life, yet we discharge wastes from the processing of those materials back into the environment, which has the impact of reducing the quality of life for many people, often the poorest.

As this is a discussion paper, there are no thoughts about what we might do to make all four players more sustainable and support humankind; worrying examples include:

- UK government is overpaying itself, US government has borrowings 3.5 times GDP; could either, or both implode with China and Russia ready to dominate?
- Society continues to spend on travel and expand travel capabilities. Some of the countries that have been poor are becoming richer and now buying increasing volumes of consumer goods
- Chinese commerce continues to grow and needs energy to drive that growth ¹
- The environment is giving up resources, with scenarios of oil being replaced by coal, deforestation etc. and is accepting increasing volumes of pollutants especially CO₂ and in some places heavy metals.

The emerging relationships can each be drawn into a quadrant of a basic management grid:

- Emerging commercial organisations sales and marketing directed
- Asset driven/networked or franchised companies trying to dominate the market
- Government dependent on systems and procedures to control and guide
- People gaining an improved standard of living

The aim is to explore relationships and stimulate informed discussion.

The Current Scenario

The various aspects of sustainability currently appear to be divided into three camps:

- Environmental
- Commercial
- Societal

Yet the position of government seems to have been largely ignored.

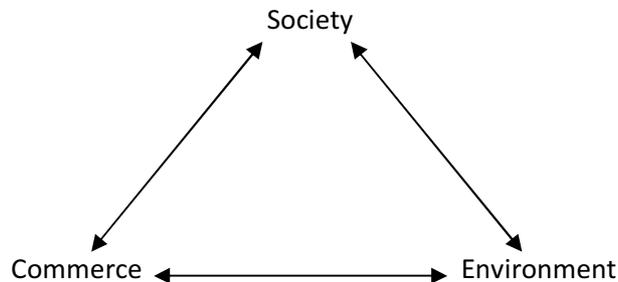
My take on the purpose of government is *'to protect the people it represents whilst striving to improve the lot of society through a maintained democracy;* whether local society through local councils or the country through central government – democratically elected and democratically managed.

¹ Although the recession is reducing purchases in the west and plants are closing, going on short time or reducing wages; China is still opening new coal-fired power stations

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As government is, or at least should be, an elected collective with a common goal with no space for nest-feathering or personal legacies (although ego drives otherwise), shouldn't energy be channelled into managing and supporting society; for example, waste collection and removal is a significant responsibility, as is the health service.

Figure 1 – the traditional dynamic

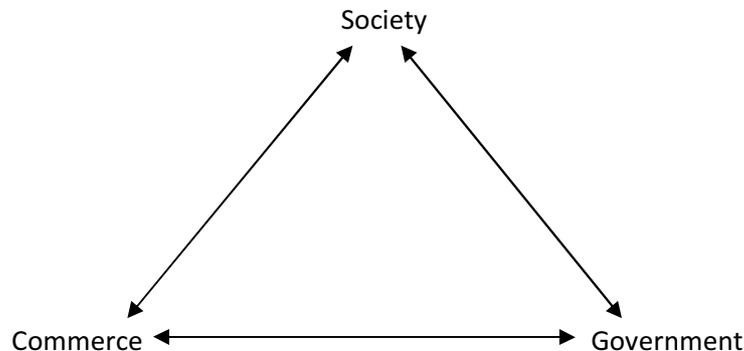


With government taking a position that can be described, at best, as semi-detached

Including Government As One Of The Dynamics

In supporting the society it represents, government needs to collect taxes from commerce and individuals to redeploy in society; part of that redeployment is in the education and preparation of the people for commercial needs in the future (schools, universities, apprenticeships etc.) and the support for those who have contributed in the past (pensions, welfare, hospitals etc.)

Figure 2 – A dynamic involving government



- Commerce supports government through taxes (despite off-shoring), and contributes to society through wages and materials
- Government supports, protects and prepares society (despite personal goals) and allows commerce to trade
- Society provides staff to commerce, buys its goods and services (despite tactical thinking), gains pensions and provides tax to government to support investment in the future

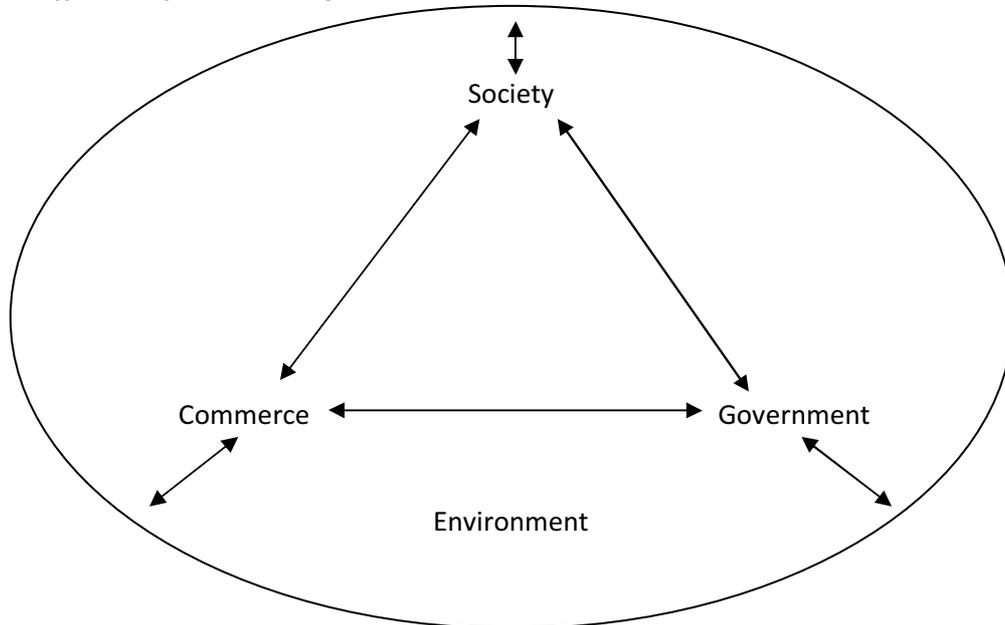
And The Environment?

Each of the parties to this dynamic relationship live in the environment; and take things from the environment (ore extraction, oxygen to burn, food and water) and also put into the environment the results of the various things taken (CO₂, Toxins, fertilisers etc.)

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However, to continue to improve the lot of the people, then extraction, conversion and wastage must continue and even increase if we maintain traditional ways of doing things² and continue to demonstrate status through material objects.

Figure 3 A different dynamic emerges



Society, commerce and western government can fairly readily be controlled by people, for example changes of policy, legislation, intervention; environment is much more unwieldy and must be managed by all three working in concert.

This should also include governments that might be described by the west as 'irresponsible', operating regardless of the consequences to others, or with ambitions of conquest.

Exploring Sustainability

Undermining Sustainability

The negative aspects are dealing with intentional waste, unintentional waste and waste that happens due to activities happening as a normal part of life. There is also the consideration of waste accumulating, and the present and future impact that will have on the environment that supports us.

The impact of waste may also be explored in relation to the total size of the various polluting populations; for example agriculture is vast, yet precious metal smelting per se is very small³

Wastage and Pollution

Wastage and pollution will normally find its way into the environment in three different areas:

- Into the air
- Into water
- Into the soil

² Einstein paraphrased – 'we can't solve problems with the same thinking that created them'

³ although the extraction requirements are immense

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Waste also finds its way into the environment in different ways; the table below uses some examples as a basic summary:

Waste and where it is normally released.

Such is the impact of natural physics chemistry and biology that waste material will migrate between all three areas. For example, solvents put into landfill will leach into the watercourses⁴ to find its way to the sea and be evaporated to atmosphere, in time to fall back to earth and cause unexpected damage – acid rain and tetra ethyl lead are two examples of this type of cycle.

Waste	Into Air	Into Water	Into Soil
Normally non-toxic	CO ₂ , CH ₄	Fish food	Slurry
Normally toxic	NO _x , SO _x	Solvents	Heavy metals
Unintentionally toxic	O ₃ , CFCs, by-products	BOD, COD	Fertiliser, detergents
Toxic in the future?	Radioactive waste	Growth hormones	Landfill
Degradable?	Pesticides	Fungicides	Fertiliser

Supporting Sustainability – but with a few caveats

Much work is being done for CO₂ emissions and the accumulation in the environment, however much of this work is, in geological time, temporary.

Alternative energy provides a means to reduce the rate of growth of atmospheric CO₂ but not to eliminate it.

Nuclear is being explored as a way to generate significant energy in a relatively quick time, but the uranium resources are dwindling

Alternative modes of transport are being explored but not fully developed (vested interest?)

Alternative food sources e.g. vegetarianism is being promoted to reduce the deforestation and methane; poorer countries, now becoming rich, are demanding more meat

A note about things that are happening – pretty obvious really

Much of the release of CO₂ is from fossil fuels where it had been bound up in the lithosphere as coal or oil (also held in the lithosphere in limestone). In promoting woodlands to absorb CO₂ the effect is temporary as the trees will, in time, fall and decay releasing the gas back to the atmosphere compounding problems for the future. We haven't yet found a way to move the carbon from the biosphere back to the lithosphere.

A much underestimated issue is the acidification of the oceans, which will impact on plankton and krill growth and hence the entire oceanic food chain; reducing the opportunities to bind carbon into the lithosphere as limestone in animal shells. There is a fear that the decay that will occur will release methane as well as CO₂ and significantly accelerate the rate of climate change.

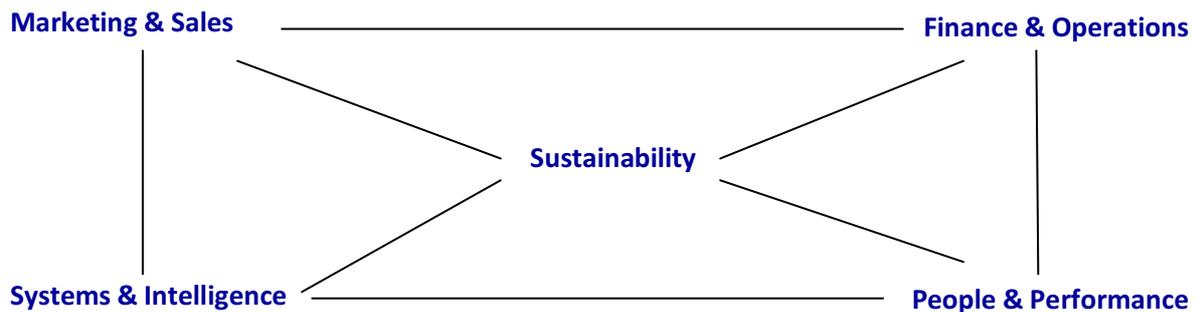
⁴ The land in and around the Po basin is contaminated to a depth of over 30m.
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Global warming is depleting lakes and glaciers – the reservoirs are running dry and the additional run-off is scouring agricultural land; the rising oceans will obliterate the Maldives and Bangla Desh and warming the tundra will put additional methane into the atmosphere.

A simplified framework

In order to give some additional structure to the discussion above, a business model has been developed which assigns core business functions to a logical framework (the detail is available elsewhere) which has the form:



Sustainability for a commercial organisation is maintaining (and growing) profitability to a level that continues to support shareholders, employees and past employees.

This model supports an evolving strategic focus, for example:

- **Inventive:** A fledgling company with a new idea is dependent on a very few dedicated people. High price, poor reliability; sustainability in intellectual protection
- **Responsive:** An evolving idea depends on the performance of a (slightly wayward) team. Medium price, great variety, sustainability in speed to market and flexibility
- **Asset Driven:** An evolved idea depends on operations to deliver increasing numbers of identical articles. Sustainability is in price/value competitiveness, putting a minimum of one's assets into the product for sale (e.g. Mars bars)
- **Networked or Franchised:** A fully developed product can be supplied through others, the parent company having an eye to finance. Sustainability is in brand strength

The inventive and responsive companies are normally substantially driven by the market, the asset driven and networked companies usually try to dominate the market. At each of these strategic foci (potentially stops along a journey) there is an environmental impact.

The scenarios described below may be for a manufacturing division – drawing materials from the environment, processing those materials to supply to society in order to improve the standard of living. In the process, by-products and product obsolescence finds their way into the environment. Other organisations rise up to support this activity, such as accountancy, law, consultancy etc.

Business size

In UK 50% of GDP is from the SME sector, therefore the issue is not one of company size, but one of industry size; for example there are many small high-tech organisations which between them can create significant volumes of toxic waste, yet each one would claim to be so small as to be negligible. There are also many service companies such as accountants whose direct impact is quite minimal.

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Agriculture has a special place, as each farm could be described as a small business, yet the size and impact can be more profound than a major organisation; this argument may be extended to fish farming which uses significant amounts of feedstock and anti-fungal preparations.

The potential linkages of environment with commerce

Some examples to explore:

		Strategic Focus			
	Waste	<i>Inventive(I)</i>	<i>Responsive⁵(R)</i>	<i>Asset driven (A)</i>	<i>Franchise(F)</i>
1	Normally non-toxic		CH ₄ (Farms)	CO ₂ (energy/travel)	Cooking waste
2	Normally toxic	Heavy metals	Solvents	NO _x SO _x (oil, smelting)	
3	Unintentionally toxic	By-products	Fertiliser	BOD, COD, CFCs	Detergents
4	Toxic in the future?		Hormones	Radioactive waste	
5	Degradable?		Pesticides	Bleaches and colours	

In examining the strategic focus for a manufacturing or retail organisation, the general position in the UK is that:

- The **franchised or networked** companies work to tight specifications and operating standards because the sustainability of the organisation is in brand strength and reputation
- The bigger companies which are **asset driven** normally have a very high profile, so are under continual scrutiny, and have the resources to manage raw materials and waste in a responsible manner.
- The **responsive** companies' sustainability is in rate of response as they are in an intensely competitive environment, possibly using whatever it takes to stay ahead of the competition
- The **innovative** companies are responding to an emerging, as yet, unanswered need (for product, or in the locality) where sustainability is in intellectual protection that will be closely scrutinised before being granted; these companies will tend to act very responsibly.

Other companies such as the support (banking) or compliance (legislation) use little in the way of raw materials and create little waste from their activities.

In relating environmental impact to business activities there is an emerging relationship about the type of organisation and what generates the impact, for example an alternative raw material may be used to improve competitiveness, or a change in disposal methods to cut costs.

Marketing & Sales

F1, I2,R3, A3 (CFC), R5, A5

Finance & Operations

R1, A1, R2, A2, I3,
A3(BOD), A4

Sustainability

Systems & Intelligence

People & Performance

⁵ Includes farms which normally grow for best market price

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In the commercial setting the environmental impact (positive and negative) is confined mainly to the *Finance & Operations* and *Marketing & sales* sectors.

From the perspective of society

Society becomes increasingly demanding and adventurous in the things bought and consumed; commerce, to remain sustainable, endeavours to supply that demand and which, in some instances, may be expedient rather than responsible.

In order to provide a way to approach the environmental issues, society is assumed to use the end-products of commerce and not to influence how the goods are created. These end-products include the packaging so necessary to transport goods and, in the food industry, to keep things fresh⁶.

The production of environmentally damaging RAW material may be considered from the standpoint of the industry that supplies it.

	Waste	Food & drink (F)	Living space (L)	Building (B)	Other (O)
A	Normally non-toxic	Household waste	CO ₂ (Heating)	Heat loss	Travel
B	Normally toxic			Solvents	Weed killer etc.
C	Unintentionally toxic		Old refrigerators	Foams e.g. polyurethane	Detergents
D	Toxic in the future?	Packaging		Building material	
E	Degradable?				Paper items ⁷

Clothing manufacture and exploitation are not included as the environmental impact will come from the poorer societies getting richer, so consuming and wasting more which will be reflected in the table above.

Marketing & Sales

FD

Finance & Operations

BC, BD, OB⁸

Sustainability

OE

FA, LA, LC, BA, BB, OA, OC

Systems & Intelligence

People & Performance

Unsurprisingly, much of the impact is directed to *people and performance* which in this instance, is lifestyle directed

⁶ In Russia, which uses very little packaging it is estimated that 30% of food rots or has to be destroyed, emitting CO₂ and other gases.

⁷ Undegraded paper has been found in landfill sites over 40 years old; there are also projects to collect and burn the methane emitted from landfill.

⁸ Increasing the value of the property

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From the perspective of government

One of the core functions of government is regulation to ensure all members of its society have the opportunity to be treated fairly; this involves keeping a weather eye open for initiatives and activities that might disadvantage sectors of the population as well as maintaining regulation and ensuring banned substances do not get into the environment.

Much of the waste created by government per se is often in the form of paper and CO₂ which can be dealt with elsewhere

	Waste	Regulate (R)	License (L)	Ban (B)	Remove (R)
α	Normally non-toxic	CO ₂ emission			Paper, plastic etc
β	Normally toxic	Medicines	Military materials	Heavy metals	CFCs
γ	Unintentionally toxic	Oils/organics			Detergents
δ	Toxic in the future?	Genetic modification	Radioactive storage		Solvents
ε	Degradable?				Paper

Marketing & Sales

Finance & Operations

Rα, Bβ

Sustainability

Rα Rβ, Rγ, Rδ, Lβ, Lδ Bβ

Rβ, Lβ⁹

Systems & Intelligence

People & Performance

As well as creating waste, government has a responsibility to secure and improve the conditions of its electorate; part of this responsibility is removing the waste in a responsible manner for both domestic and commercial operations as well as from itself; this includes centrally managed activities such as drainage in addition to controlled waste collection

Starting to draw it together

Surely, one way to deal with waste is not to create it in the first place; however, this could result in a reduction in the standard of living for many people and would be unacceptable. There is also the issue of vested interest with pensions and dividends being paid for out of commercial endeavour.

There is also some responsibility on government to collect, store and safely dispose of waste – often through local government in their collection programmes, as well as to regulate and police commercial and social activities.

⁹ Military materials are ostensibly developed for the protection and welfare of the people, hence improved social performance

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In summary, the different parties have a preference for one of the quadrants in the framework described below; industry spans all elements of the strategic spectrum, emphasised here by the innovative and responsive companies being very market focused; the asset driven and networked companies being more driven by finance and operations.

Government needs the systems and intelligence to maintain effective regulation and stay in touch with events and to be able to identify things emerging that are not considered good practice, people perform better with improving standards of living and a real sense of involvement.

Marketing & Sales

Industry
(inventive, responsive)

Finance & Operations

Industry
(Asset driven, networked)

Sustainability

Government

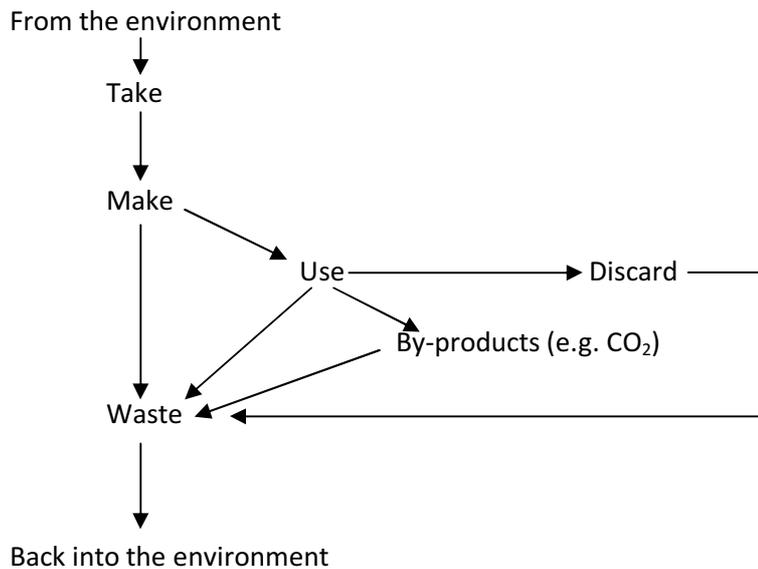
Society

Systems & Intelligence

People & Performance

Beginning to manage our commercial activities

If we take a more responsible view we move from the 18th century production model of:

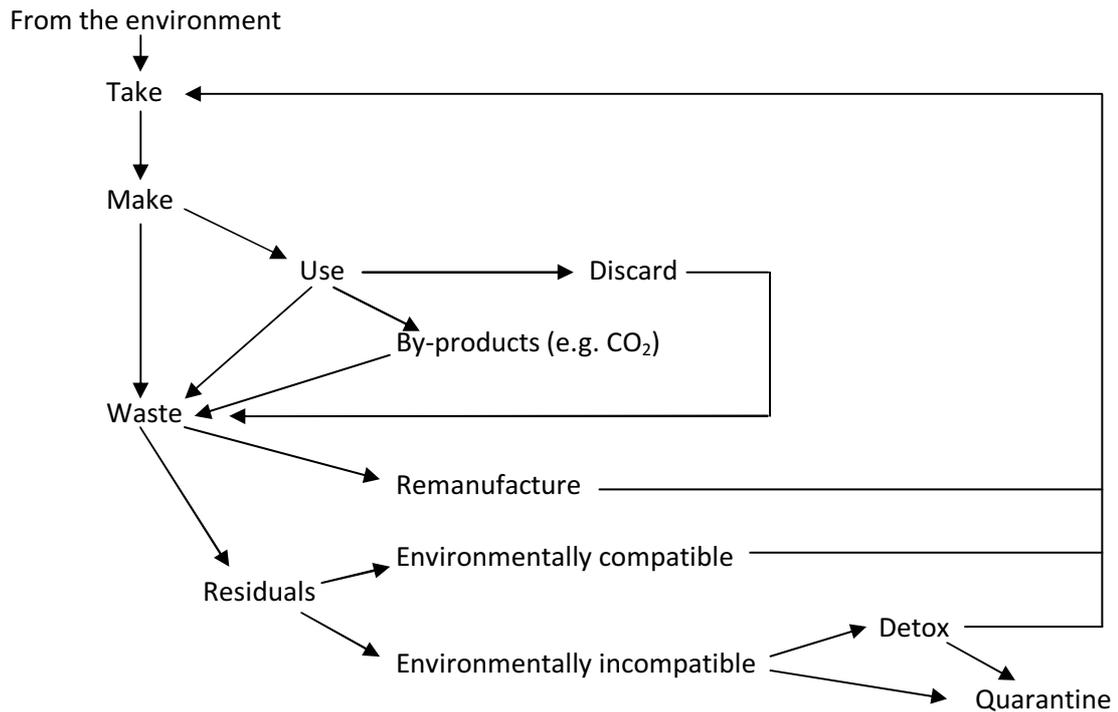


To a model which will support recycling and also easy control, perhaps using an approach similar to HACCP¹⁰ - see below

¹⁰ (HACCP is a method of quality management used by the food industry where only those aspects that can affect the final product are monitored; for example, there is no benefit in measuring raw chickens as they will naturally have salmonella, however the pies going into the supermarket need to be most rigorously tested, might the same principles be applied to our management of environmental matters?)

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A more aware management process



Some unresolved questions - and opportunities?

- Why can't we use paper and plastic, mixed and heated together to create light waterproof building materials?
- What happens when China approaches America to redeem the bonds given in return for payment or loans?
- What would happen if we got rid of money/debt-driven economics, and what could replace it?

Some of the next challenges (incomplete)

To get this pattern into balance in a way that each participant supports each other participant in a positive way so that:

- Inventive and responsive business grow faster
- Asset driven and franchised companies become more profitable
- Government manage and police things more appropriately and effectively
- People perform better and enjoy a growing standard of living

Across the board we need to better manage by-products and waste (HACCP?)

We need to put some more drive into alternative energy and reduce dependency on fossil fuel

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