**Sustainability – WSSF, September 2008**

The Mt St Helens volcano shows us that Nature is robust – if we understand it and work within its boundaries it can recover from apparent devastation. It may help to hold this positive thought, because much of the rest of what I have to tell you is not so positive.

I also stress that these are my views, not those of the SWT. Indeed much of what I have to say relates to wider environmental issues than nature conservation in isolation.

Sustainability:

Achieving sustainability is not a matter of fashion or taste; it is an essential requirement for a future. The term "unsustainable" may often be dismissed as trendy jargon; perhaps we should therefore use the more accurate term - "temporary". Thus if a system is unsustainable, it is not merely unfashionable, it is temporary.

Converging issues that illustrate the temporary nature of our current society fall into three main groups:

1. Resource depletion
2. Waste and pollution
3. Environmental quality / ecosystem services

However each of these is best illustrated by particular key issues:

1. **"Peak oil"** is one aspect of the limited availability of resources. Peak oil relates to the point when about half the worlds oil resources have been used. After that the resource is in decline, increasingly difficult sources have to be exploited and demand progressively runs ahead of supply, resulting in escalating price (See, for example, recent articles in National Geographic, June 2008, and New Scientist, June 2008)). Even the most optimistic projections (from government and vested interests) place peak oil as at some time after 2020. An increasing number of oil geologists (eg Jeremy Leggett and Colin Campbell) consider that this may already be happening. This issue may not be limited to oil, the same phenomenon is likely for many finite materials, and it therefore has repercussions regarding the availability of a wide range of resources (see for example, Richard Heinberg "Peak Everything", 2007). Thus it is not only energy efficiency that should concern us; it is efficiency in the use of all resources. An economy must therefore be able to flourish against a backdrop of quickly reducing resource use (energy and materials).

    Increasing economic growth is directly related to increasing resource use. With increasing efficiency there is a reduction in resource use per unit GDP, but this is overwhelmed by growth in demand. ***Staggering fact No 1***. Take a figure for economic growth of 3% per year. This gives a doubling time of 23 years. This means in 23 years we will be using double of everything, compared to today. Because of the nature of exponential growth this means that between now and 23 years time (ie by 2031) we will have used as many resources as we did in the entire history of mankind up to 2008 (Professor Rod Smith, Imperial College in a lecture given to the Royal Academy of Engineering). With materials such as oil peaking now it is clear that our current approach is temporary.

2. **Climate change** through greenhouse gas emissions is one (probably the greatest) concern relating to the emission of waste or pollution (although $CO_2$ may not normally be considered a pollutant). Climate change is happening and as evidence gathers it appears that it is likely to be worse and faster than we thought even a few years ago. The vast majority of our energy still comes from sources that produce climate change. Nevertheless, although $CO_2$ emissions may be our greatest concern, the issue is a general one regarding the production of waste from the nature of our society. A future economy must therefore function in a situation where all waste / emissions are reduced to a level that is environmentally sustainable.

   ***Staggering fact No 2***. $CO_2$ concentrations have increased from 280ppm before the industrial revolution to nearly 400ppm now. Many scientists consider that anything much above 400ppm will be a tipping point taking us into an unknown and unpredictable climate (see, for example, the Intergovernmental Panel on Climate Change 4th report). There is a developing consensus that we have to reduce our emissions by at least 80%, with some scientists suggesting that we need to develop an entirely carbon-neutral economy. In spite of all our efforts we now produce 30% more $CO_2$ than we did 20 years ago.

3. **Environmental quality** relates to the ability of the environment to deliver ecosystem services. These include **provisional services**, such as food, **support services**, such as soil formation and oxygen production, **regulatory services** such as climate regulation and **cultural services** such as recreation and knowledge (detailed in the Millennium Ecosystem Assessment, 2005). Biodiversity is a key constituent and key indicator of a high quality environment. Reducing biodiversity is an indicator of collapsing ecosystem services, and these have an economic and human cost. The idea of an environmental vision for an area, that includes the rebuilding and enhancement of the local environment, should be central to a future agenda.

   ***Staggering fact No 3***. Statistics about biodiversity loss are many and depressing. The Millennium Ecosystem Assessment estimates that current extinction rates are about 1000 times the expected background level (E O Wilson, the "Father" of the concept of biodiversity" estimates at least 10,000 times), that 68% of the worlds ecosystem are damaged and that basic ecosystem services are in decline. This places us in the middle of the 6th great global mass extinction (comparable to the loss of the dinosaurs 65 million years ago). Extinction isn't just something that happens to other species!

**Principles to come out of this background.**

The point of outlining this is not to stimulate discussion about these specific issues, or to create despair, but to outline the realistic background against which our future will have to play out. It should give an idea of the hill we have to climb and the urgency for stimulating change. We need systems, locally, regionally and globally that achieve the following:

- Hyper-efficient energy and resource use mainly based on naturally recycled materials, resulting in a hugely reduced material / energy use footprint.
- Smart energy production, probably decentralised and local, based on renewable technologies.

- Pollution and waste production reduced massively to within levels that are environmentally sustainable. (ie not doing less damage, but doing no damage)
- Environmental quality as the underpinning principle with a strong recognition of the fact that ecological processes deliver the ecosystem services on which we all depend. So much has been lost that the principle should now be of rebuilding biodiversity – nature development as well as nature conservation.

Again these are rather broad principles not directly helpful in relation to how local business can develop and flourish in a changing world. They may, however, help to outline the nature of the challenge.

**Transition level change.**

Small, incremental change, improvements in efficiency in energy and material use and reduced environmental footprint are all important. There is, however, a wealth of information on these areas so there is little point in duplicating or adding to this. Furthermore, these small changes will only buy time; they will not create the level of change necessary to deliver sustainability.

A couple of examples illustrate this point.

- Cars have become a lot more efficient in the last few decades, which is good, but any increase in efficiency has been totally over-whelmed by the overall increase in car use (eg 10% increase in engine efficiency might be good, but if there is a 100% increase in car use then the trend is still in the wrong direction).
- The Stern report pointed out that our energy efficiency per unit GDP has improved a lot, which is good, but that the absolute growth in GDP has overwhelmed this; hence CO2 emissions still go up.

What is needed is a type change (rather than degree change) moving the economy into an inherently sustainable state (rather than a slightly less unsustainable state).

This is the challenge and any principles for a solution that I can offer are few and feeble. What we need is the inherent innovative skill of the business sector to address this challenge, we need strong leadership from government, systems to drive it from local authorities and active involvement of all organisations.

Here are a few thoughts for principles at least:

- The proximity principle: as much as possible should be done as locally as possible. (Currently the “luxuries” may be produced locally, but the “staples” are produced globally, the opposite was the case in the past and the opposite will be the case in the future).
- Mutual support of local business: local ownership of business keeps money circulating within the local economy to the benefit of the local community. It also means that local people have a stake in local business, are more likely to support it on one hand, and more likely to ensure that it is not environmentally damaging on the other.
- Global standards and information: Whilst materials, energy and people might be sourced locally, systems for standards and information can be global. This could be a fundamental difference between the historic past (when businesses were small scale and local) and the future (businesses may be

small scale and local but linked up and progressive because of interactions through IT).

- Closed loops: one person's waste product should be another's raw material.
- Ensuring environmental quality confers business advantage and visa-versa: We know it's true, that's one reason why business is successful in the SE, but currently environmental damage is an externality that the economy has so far just got away with, whereas environmental quality is provided anyway and business does not have to pay for it.

**Summary**

Great strides have been made – by WS Sustainability Forum and probably by everyone in this room. We are a lot less unsustainable (less temporary) than we would otherwise have been.

But alone this is not good enough – it has bought us time, perhaps, but eventually we **will** make the long term change to a sustainable society (like it or not!!).

Some may think that this is the worst of all times to be alive!! Huge threats, sums that simply don't add up, being part of the 6$^{th}$ great mass extinction etc etc.

I disagree – this is the best time to be alive. All societies go through this transition. If they learn sustainability then they survive, if they don't then they collapse. We have the privilege of being at a time of this sort of change – the difference between now and the past is just that this change will now be global and we have the science and understanding to go through it with our eyes open.