

Forestry in a hundred years time

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Just as foresters a century ago could not have predicted the world now, so we cannot predict the world at the beginning of the 22nd Century. What will actually happen will be the result of the millions of interactions between thousands of happenings.

Much of the future is simply unpredictable. However, I am convinced that by our actions (individually and collectively) we can influence the future. What might we do now that increases the likelihood of civilisation not only surviving to 2106 but also maintaining our standard of living?

Let's start by assuming the world will not experience either a major economic collapse or a global catastrophe (such as a large meteor strike, a pandemic, a massive volcanic eruption, etc). Any solution that proposes to reduce consumption (as has been advocated by many of those who are passionately concerned about the future) ignores its overwhelming importance as the major driver of the world economy. Consumption creates most of our employment and most of our wealth. If the world reduces the level of average consumption the social implications are enormous - increased unemployment, reduced Government income (because of a lower tax take) but an increased demand for Government assistance. Unless all political parties agree, any political party advocating reducing consumption would never attract enough electoral support to govern.

In democracies it is simply naïve to expect that societies will voluntarily reduce consumption. But the world cannot go on using up the earth's resources. As some resources are nearing their exploitation limits we have a major dilemma. How can we maintain our consumption yet increasingly limit the exploitation of many of the world's natural resources? Resolution comes from the realization that consumption *per se* is not the problem - the problem is the consumption of non-renewable resources. If resources are renewable, their production sustainable and their use non-polluting there need be few restrictions on their consumption.

What are the more likely pressures the world will face in the next one hundred years and what might we do now to reduce or eliminate future problems?

Energy is by far the world's most essential requirement. If there is an unlimited supply of cheap energy then we can do almost anything - saltwater can be desalinated, tomatoes can be grown at the poles, we can extract minerals present at low levels of concentration, etc. Fossil fuels supply most of the world's industrial energy. Ignoring fuelwood, fossil fuels (oil, natural gas and coal) currently account for about 85% of the world's industrial energy. Even without concerns about the release of fossil carbon into the atmosphere (and the threat of global warming) the world is facing energy shortages and cost increases, especially for the world's most convenient fossil fuel - oil. We are now using oil much faster than we are discovering it - for each barrel of recoverable oil we now discover we consume about four barrels (Heinberg 2003). In contrast, in the 1960s when oil discovery was at its height we were probably discovering over four recoverable barrels of oil for every barrel consumed!

Because of the looming supply crisis, oil costs will increase. There are also major concerns about the increasing release of fossil carbon into the atmosphere and resultant global warming. There is no alternative - the world must significantly reduce its dependence on fossil fuels. In a hundred years time the world will definitely be using far less fossil fuel, especially oil, than we do now.

We have no option but to increase the use of renewable and sustainable energy. The world could increase the supply of nuclear energy. A century from now nuclear energy is more likely to come from fusion (the controlled fusion of two deuterium atoms - heavy hydrogen - into helium) than from the current use of fission (the controlled breakdown of the unstable atomic nucleus of U²³⁵). There will also be a much greater use of that major external nuclear energy source - the sun. The world will use solar energy directly (photo-voltaic cells, hydro-electric and wind power generation) and indirectly, especially to grow wood. I am doubtful that agricultural bioenergy cropping will be viable as the growing of agricultural crops may consume more energy than is finally produced.

Wood is especially attractive as it is not only stored solar energy but, unlike many agricultural crops, the growing of wood requires little external energy. We could grow wood as an energy crop but returns must cover the cost of



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growing. Wood energy crops do release their stored solar energy but to only use wood this way ignores the potential contribution of wood to supply the world with a renewable and sustainable raw material. Wood is much much more than stored solar energy. So that trees can withstand the very strong winds of storms, wood has evolved to be lightweight but strong. Solidwood is ideal for construction, furniture, packaging etc.

A major advantage of solidwood products is that they are very energy efficient – much more so than steel, concrete or aluminium. The less wood is processed, the more energy efficient the product. Solidwood products require less energy for their production than products made of reconstituted wood. The energy for the conversion of logs could even come from wood residues. Not only is wood very energy efficient but its production is sustainable (provided the forest the wood comes from is sustainably managed). Wood is generally non-polluting. If wood comes from a sustainably managed forest then any carbon emitted on the wood's use is effectively resequenced almost immediately by the growing forest. Wood use therefore can be atmospheric carbon neutral. In contrast, the use of fossil fuels release fossil carbon permanently into the atmosphere.

Trees convert simple sugars into many complex chemicals. Because of the traditional low cost and ready availability of fossil fuels a large petrochemical industry has evolved. With reduced availability and the increased cost of fossil fuels the world will see a change from petrochemical to a lignochemical industry. That industry will be based almost exclusively on wood (mostly supplied as residues from the conversion of logs to solidwood products).

Although it is not an alternative to every material we use, wood could replace energy demanding (and atmospheric carbon emitting) metals and concrete. Wood could also be the raw material for a huge lignochemical industry. As wood is both energy efficient and an energy source, a greater use of wood would reduce the demand for energy from other sources. Wood quality will be important as the better the quality the greater the energy efficiency. As wood production could be sustainable and renewable a greater use of wood implies it is possible for the world to maintain at least some of our current standard of living.

To be an increased supplier of sustainable wood most of the world's forests will have to be better managed. Also the price of wood must cover the cost of that management. A major reason for the present low world price for wood is that most wood still comes from natural forests, often at minimal stumpages. Only rarely does the wood price cover the cost of managing the forest sustainably. I have no way of proving it but I suspect that some of the world's forests are simply being "mined" with little or no consideration to future management. The world's forests may continue to be mined but eventually (and that will be sooner rather than later) all of the world's forests will be sustainably managed. As the level of management increases in these production forests, forest management will parallel that of our plantations.

In addition to its wood supply, forests will continue to make many other contributions (land stability, sewerage disposal, minor forest products, etc).

What do we need to do now to ensure the world has a viable future? As a sector and as an industry we must do much more to promote the increased use of wood. Not only should there be more advocacy but there should be more research on greater efficiency and new uses for wood. We must be better advocates for sustainable and renewable forestry. We must do much more to convince a sceptical public that a sustainably managed forest is carbon neutral (we do not want a repeat of the poorly advised Minister of Climate Change – Pete Hodgson – making the claim that if plantation owners "...were to get [carbon] credits they would need to send the cheque back to us every time they chopped the trees down... [approximately] every 28 years..." (Hodgson, 2005)).

A century hence the world will have changed. While we cannot predict what those changes will be we may to some extent influence what might happen. Forestry, especially wood, offers those living in a hundred years time some of the means for maintaining consumption (and therefore living standards) using less non-renewable resources and less fossil fuels. The world will be more sustainable and life will be more pleasant if in the next few decades there is greater advocacy for wood use, as well as advocacy for, and the practice of, sustainable forestry.

References

- Heinberg, R. 2003: The party's over – Oil, War and the Fate of Industrial Societies. New Society Publishers - 275 pp.
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