



WESTERN INSTITUTE FOR STUDY OF THE ENVIRONMENT

W.I.S.E

33862 Totem Pole Road
Lebanon, OR 97355
<http://westinstenv.org>
541-259-3787

August 29, 2010

W.I.S.E. White Paper No. 2010-4

The Market Illiteracy Embodied in the Politically Correct Version of Sustainability

By Travis C. Cork, III

The forest products industry has been practicing sustainable forestry for much of the Twentieth Century. During this time we have seen substantial gains in the management and utilization of forests, particularly on forest industry lands. "Although the forest industry occupies only about one-seventh of total U. S. timberland, its land produces a full fifth of national timber growth, a quarter of the growth of softwoods, and about a third of the annual timber harvest." ^{1/} The forest industry has signed on to the sustainable forestry initiative, no doubt for public relations, but it does not need market illiterate bureaucrats and GAGs (green advocacy groups--The Nature Conservancy, Sierra Club, et al.) telling it how to practice sustainable forestry.

Forest Resource One-liners with Georgia Highlights contains a wealth of forest statistics. In the first section, *Forests and Timberland*, *One-liners* states "[m]ost of its [U.S.] forests are managed on a sustainable basis..." ^{2/} Roger A. Sedjo ^{3/} and David South ^{4/} have analyses indicating the world's industrial wood needs could be met with intensive plantation forestry on about 5 percent of the world's forest land area. "Almost 55% of the world wood harvest is currently being used for fuel." ^{5/}

If the “two-thirds of the global population who rely on wood for their primary source of energy” ^{6/} had modern sources of energy, a major drain on the forest could be reduced.

Depletion is not caused by lack of resources, but by a lack of institutions, specifically private property rights and free-markets, that allow for a rational and sustained use of resources. In America, it is a manufactured crisis. If depletion of forest resources were a real problem, the responsible solution would be to find ways to increase productivity. Locking up more of the American land base (50 percent or more with Reed Noss’ Wildlands Project) and restricting utilization on remaining lands is neither a serious nor an ethical approach to depletion. But then the crisis-mongers are not concerned about the depletion of resources but the control of resources.

A statist perspective of sustainability

Sustainability is defined as

meeting the needs of the present without compromising the ability of future generations to meet their own needs.

The American Forest & Paper Association expands this to include forestry.

Sustainable forestry means managing our forests to meet the needs of the present without compromising the ability of future generations to meet their own needs by practicing a land stewardship ethic which integrates the growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, and wildlife and fish habitat.

What bureaucrat or academic can make an accurate measurement of my “sustainable” allotment of forest resources (or any other resource) in quantifiable terms; e.g., cords, tons, board feet, cubic meters, kilograms, etc.?

Who is the soothsayer, seer, or mystic that can divine what future generations will want from the forest or any resource?

Who can determine the annual removal of wood products or any resource compared to the volume estimated to be sustainable?

The answer is no one.

History tells us “no exhaustible resource is essential or irreplaceable... The relevant resource base is defined by knowledge, rather than by physical deposits of existing resources.” ^{7/} Unless suppressed by government force, human intelligence and ingenuity break the bonds that carrying capacity imposes on other species.

“True intergenerational equity requires us to pass along and add as much as possible to the ever growing store of human knowledge, technology, and material wealth that we have inherited to future generations. We are vastly richer due to the efforts of our ancestors and we owe them a great debt of gratitude.” ^{8/}

Sustainability, as defined, is vague and inoperable highfalutin rhetoric. It is evidence that the natural resource community, at least in the public sector, academia, and some corporate boardrooms, is ignorant of market economics and responsible social behavior. This ignorance puts the productive future of the forest resources sector very much at risk.

Who in government or academia is qualified to make this allocation? Not the U. S. Forest Service (USFS). In *A Gradual Unfolding of a National Purpose: A Natural Resource Agenda for the 21st Century*,” USFS admits it has “approximately 40 million acres of national forests that are exposed to abnormally high risk of fire, disease, and insect outbreaks.... the vulnerability of these forests is unacceptably high.” ^{9/} If a private sector forester had 40 million acres of mismanaged forest, he would not be rewarded with more resources to mismanage or misallocate.

Allocations by government are not based on market signals but on political signals. Unable to use rational price signals as a guide, the USFS is so flummoxed by competing demands for resources from public forests that it is moving more and more to a policy of no-allocation (preservation not conservation).

Inability to make a rational allocation does not deter market illiterate bureaucrats from trying. USFS wants to be “the world’s foremost conservation leader for the 21st Century.” To support its delusions it authored *A Rationale for Forest Service Involvement in Sustainable Development*. It lists the principles of sustainable activity as follows:

- adaptable to change
- integration of ecological, cultural, and ecosystems systems

- does not foreclose options to future generations
- current resource or social conditions may not be maintainable
- based on public support and local solutions
- the costs and benefits of forest management are shared by all
- using sustainable development to find common ground ^{10/}

Change is anathema to government. It seeks refuge in the fairyland of static analysis and equilibrium. It has little or no ability to innovate. Forcing a result is not innovative. No central-planning bureaucrats can keep up with millions of individuals expressing their preferences through millions of daily choices. To have control, bureaucrats must ignore market information and use the power of government to limit market choices. It must prevent change.

An ecosystem is not an objective reality in nature. It is an artifice to justify regulating across property boundaries. It has nothing to do with sustainability. It has everything to do with control.

Limiting choices, especially the entrepreneurial spirit of discovery, forecloses options to future generations. In 1899, Charles Duell, U.S. Commissioner of Patents, said "Everything that can be invented has been invented." ^{11/} In 1904, Aldo Leopold wrote "Furthermore we know that the lumber supply of our country, once believed to be inexhaustible, is now almost used up; two decades, it is estimated, will see its end." ^{12/} About the same time, Gifford Pinchot predicted a timber famine.

Had we believed Duell, et al. and let government freeze resource use at what was believed to be sustainable levels, the great advances of the Twentieth Century would not have happened. For example, had crop production been frozen at 1910 levels, "in 1988 we would have needed to harvest about 1,222 million acres [about 63 percent of the land area of the lower 48 states], rather than the 297 million acres actually used to meet our domestic needs and produce the same amount for export." ^{13/} Because modern transportation would not have evolved, this figure includes 319 million acres for horses and mules. Much, if not all, of the nation's arable land would be in crop production. Many options would have been foreclosed.

When government is the arena where citizens fight for privileges they cannot get through the free-market mechanisms of cooperation and voluntary exchange, hostility and chaos are the norm. There are no common grounds, only battlegrounds -- exactly where we are with public land disputes.

Costs and benefits cannot be shared by all under the social organization of free-markets and private property rights. For forced sharing, allocations must be controlled by government. Under government control, resources are not allocated to their highest and best use by well-informed political or bureaucratic decision-makers. The allocation occurs in response to political pressures brought by organized special interests, each with a narrow focus on a specific outcome, regardless of long-term or unintended consequences.

Self-interested bureaucrats are often happy to cooperate as they are empowered. Bureaucracies are corrupted. Data are distorted. Logic and reason are discarded. Reports like *Rationale* are a result.

In *Rationale*, "Criteria and Indicators for Sustainable Forest Management," lists criterion and indicators purportedly quantifying sustainability. Do these quantify sustainability? Of 65 indicators, 16 say yes, but further reading shows some of the 16 qualified by "disagreement over how to assess, uncertainty in classifying, and data only somewhat reliable." For 15 we are told "it is difficult to validate the existence or nonexistence of some of the indicators." The remaining 34 are "partially, maybe, yes with limitations, yes but not completely, can be quantified but not with a single indicator, possibly, information being developed, not with available data, not at present time, and no."

The Criteria and Indicators have what F. A. Hayek called "the appearance of being scientific." In the real world, it is impossible to collect all of the dispersed, fragmented information needed for these indicators, much of which is specific to "the particular circumstances of time and place."^{14/} Perhaps a few, such as acres and volume of wood products, will have some degree of reliability, but most will be incomplete, synthetic values.

Hayek writes "it is often difficult enough for the expert, and certainly in many instances impossible for the layman, to distinguish between legitimate and illegitimate claims advanced in the name of science... If we are to safeguard the reputation of science, and to prevent the arrogation of knowledge based on a superficial similarity of procedure with that of the physical sciences, much effort will have to be directed toward debunking such arrogation, some of which have by now become the vested interests of university departments [and bureaucracies]."^{15/}

USFS admits, "we are not ever likely to know if we have arrived at a sustainable condition, but we can know whether we are moving in the right direction."^{16/}

How? Criteria and Indicators pretend to find knowledge where none exists.

After wading through the flummery, one finds the operative statement in Criterion 7.

Without adequate enforcement efforts, the effectiveness of laws and regulations intended to promote forest conservation and sustainable management will be greatly reduced... The appropriate scale is at the national level. ^{17/}

The USFS solution to the contrived crisis of sustainability is command-and- control government.

The misguided *Report of the Governor's Task Force on Forest Sustainability* (North Carolina), discussing timber growth/drain statistics, reports "changes are taking place at a more extensive scale... than was, or ever could have been, anticipated by those who were responsible for earlier studies and projections of our forest resources." ^{18/} If past changes could not be anticipated, who can believe central-planning bureaucrats can do better in the future?

The *Report* contains 79 recommendations for sustainability. The heavy hand of government is omnipresent. There is no mention of the market process and price signals. The Report is not advocating sustainable forestry. It is advocating **sustainable government**.

Bureaucrats are not the only *crisis entrepreneurs* exploiting sustainability.

In *Ten Elements of Sustainability*, the Institute for Sustainable Forestry seems more intent on being politically correct than ecologically correct.

- 1) Forest practices will protect, maintain and/or restore the aesthetics, vitality, structure, and functioning of the natural processes, including fire, of the forest ecosystem and its components at all landscapes and time scales.
- 2) Forest practices will protect, maintain and/or restore surface and groundwater quality and quantity, including aquatic and riparian habitat.
- 3) Forest practices will protect, maintain and/or restore natural processes of soil fertility, productivity, and stability.

- 4) Forest practices will protect, maintain and/or restore a natural balance and diversity of native species of the area, including flora, fauna, fungi and microbes, for purposes of the long-term health of ecosystems.
- 5) Forest practices will encourage a natural regeneration of native species to protect valuable gene pools.
- 6) Forest practices will not include the use of artificial chemical fertilizers or synthetic chemical pesticides.
- 7) Forest practitioners will address the need for local employment and community well-being and will respect workers' rights, including occupational safety, fair compensation, and the right of workers to collectively bargain, and will promote worker owned and operated organizations.
- 8) Sites of archaeological, cultural and historical significance will be protected and will receive special consideration.
- 9) Forest practices executed under a certified Forest Management Plan will be of the appropriate size, scale, time frame, and technology for the parcel, and adopt the appropriate monitoring plan, not only in order to avoid negative cumulative impacts, but also to promote beneficial cumulative effects on the forest.
- 10) Ancient forests will be subject to a moratorium on commercial logging during which time the Institute will participate in research on the ramifications of management in these areas.

This is a regulator's dream. Any use of the forest for commodity production could be a violation of one or more of the elements. Interpreted and enforced by Carol Browner's EPA, these could load forestry with so many restrictions that it could be unprofitable for many, especially the NIPF. Preservation by turning the forest into a wasting asset.

The Forest Stewardship Council, in its Principles and Criteria, has incorporated these in its forest management certification program. Certification is advertised as a voluntary process. But, one of the certification organizations is the Rainforest Alliance (SmartWood), no friend of the free-market or private property rights. For those with

large acreage, the forest products industry, certification is not too demanding as the industry already meets those requirements furthering good forest management. Long rotations give it wiggle room to meet diversity/fragmentation requirements. For the smaller company or NIPF, certification requirements would mean sacrificing productivity and economic returns. If, as sometimes happens, the forest products industry supports government mandated certification to restrict competition, it would greatly impact the productivity and management of NIPF lands. The Forest Stewardship Council bears careful watching by the private sector.

William E. Rees, academic, repeating the statist dogma that there are too many people and that we have exceeded earth's carrying capacity, purports, in a fanciful analysis, to measure our "ecological footprint." ^{19/}

The U.S. has the largest ecological footprint, 10.3 hectares per citizen (1993 data). However, our "fair earthshare... the amount of ecologically productive land available per capita on earth" is only 1.5 hectares. The 1.5 is calculated by dividing the hectares of productive surface land (arable land, pasture, forest, and built-up) by earth's population.

Flaws in this flat-earth analysis should be readily apparent. We do not get all of our resources (minerals, oil, gas, and water) from the earth's surface. Walter L. Youngquist, in *Myths and Realities of Mineral Resources*, says 16,000 feet is the limit of oil occurrence. The analysis cannot ignore this thickness.

Any area of forest or cropland is producing biomass while cycling water and nutrients and providing habitat for various organisms. Multiple processes/cycles should be accounted for.

Rees ignores 6.4 billion hectares of marginally productive or unproductive land. That this land is unproductive with today's technology does not mean it will be with tomorrow's.

Interestingly, Rees reports only 1.2 percent of earth's land area as "built-up." In America, it is about 5 percent. If the population doubles in the next 40 years, will a whopping 2.4 percent of earth's land area be built-up?

We do not have a complete inventory of resources. We cannot foresee how physical or technological changes will alter the resource base. No one can collect and process the data needed to quantify the Rees ecological footprint. The analysis is contrived.

Robert Costanza, academic, chimes in opining that

[a] minimum necessary condition for sustainability is taken to be maintenance of the total natural capital (TNC) stock at or above the current level... While a lower stock of natural capital may be sustainable, given our uncertainty and the dire consequences of guessing wrong, it is best to at least provisionally assume that we are at or below the range of sustainable stock levels and allow no further decline in natural capital. This 'constancy of total natural capital' rule can thus be seen as a prudent minimum condition for assuring sustainability, to be abandoned only when solid evidence to the contrary can be offered. ^{20/}

We should freeze resource use based on a WAG (there is nothing scientific about it), but we will need irrefutable evidence to abandon the freeze.

Admitting that a lower stock of natural capital may be sustainable, it must follow Costanza does not know the sustainable level. He confirms writing "[w]e can only be certain we have achieved sustainability in retrospect." ^{21/}

Costanza, et al. are not deterred by their ignorance. Their vision of sustainability can only be implemented by force. It is a vision certain to be both unsustainable and destructive.

A rational measure of sustainable resource use

Government has never found a way to live with limits. If there is a rational way to allocate resources, it must be found outside of bureaucratic planners.

The solution can be found in a free-market economy with its price signals and its attendant regulatory force – private property rights.

In a free-market, competition weeds out the inefficient, wasteful use of labor and resources. Depending on the division of labor to supply a wide diversity of goods and services, a free market fosters a spirit of cooperation. It is regulated by respect for property boundaries and the individual responsibility demanded by private property rights. "Only the self-regulation of the market – where individuals directly bear the

costs of their bad judgment—can discipline greed.”^{22/} Bureaucracy does not have this self-regulation.

Ludwig von Mises and other Austrian economists have exposed the irrational nature of attempts by bureaucratic planners to allocate resources.

The socialist calculation debate is generally acknowledged to have begun with Mises's 1920 article 'Economic Calculation in the Socialist Commonwealth.' The main theme of that article was that social [government] ownership of the means of production prevented any planning agency from being able to allocate resources rationally, i.e., satisfy consumer wants using the least valuable resources possible. Mises argued that economic calculation requires that the means of production (capital goods) have money prices that can be used to compare supply and demand or profit and loss. For capital goods to have money prices, they must be exchanged in a market and for market exchange to exist, there must be private property in those capital goods. Economic calculation and private property in the means of production are inseparable.^{23/}

Money prices give us guideposts to 'orient [ourselves] properly among the bewildering mass of intermediate products and potentialities of production....' Without private property in those means of production there can be no money prices... Without these money prices, rational economic calculation is indeed impossible.^{24/}

Money presupposes an economic order in which production is based on the division of labor and in which private property consists not only in goods of the first order (consumption goods) but also in goods of higher orders (production goods)... [I]n order for individuals to allocate their resources in ways that achieve maximum utility, they must be familiar with all of the exchange ratios on the market. Money, which exchanges against all commodities, dramatically simplifies this comparison process.^{25/}

The price system serves as a communication process... [M]arket prices are socially accessible proxies for the imperfect subjective evaluations of both consumers and producers. A market price makes available the otherwise inaccessible subjective cost and utility evaluations of market actors... [A] socialist [bureaucratic] planner would have no alternative method of directly or indirectly accessing those subjective evaluations [unless he could

read minds]. In addition, [bureaucratic] planners would find it much more difficult to learn from their mistakes than would market entrepreneurs... and would therefore be unable to use resources as rationally. ... Movements in market prices (the 'visible manifestations') are simply reflecting changes in the underlying subjective valuations [of market actors], which, without monetary exchange in a market, would otherwise go uncommunicated. ^{26/}

Money prices serve as imperfect substitutes for the knowledge possessed by individual actors. The existing constellation of money prices is the unintended consequence of previous entrepreneurial appraisements colliding with the wants of consumers and changes in the physical and technological environment. These prices, though causally unconnected to future prices, do serve as the starting point for the next round of entrepreneurial appraisal because they do provide (imperfect) knowledge about scarcity, wants, and opportunity costs. This process of utilizing past money prices to appraise possible future money prices by using the faculty of understanding is what Mises calls monetary calculation. It is also the knowledge-discovering process pointed to by Hayek. The link is what [Joseph T.] Salerno refers to as the 'social' nature of the appraisal process, that is that it incorporates the judgment of a multitude of human actors. By implication, [central] planners could not duplicate the social aspect of market appraisal processes because [central] planning would necessarily substitute the judgment of a smaller number of persons for the multitude participating in the market... [I]t is in this sense that monetary calculation is central to the market's ability to discover and utilize knowledge. The money prices that facilitate such calculations are shorthands for an immense amount of historical knowledge. It is not the case that humans are so irrational as to have to 'blindly' follow price signals, nor do such signals provide all of the knowledge they need, rather those price signals assist them in forming rationally constructed production plans by condensing detailed (if imperfect) knowledge to a single cardinal number. ^{27/}

The vital role that prices play in the market place are not understood by the markets critics... They do not understand that market prices are why we cannot fully exhaust any natural resource because its price would simply rise to the point where it becomes uneconomic to use. But the process is more subtle than this suggests. The criticism that the market cannot strike the necessary balance between present and future consumption because of

its 'excessive' depletion of both nonrenewable and renewable resources is rendered absurd by the process of capitalization. ^{28/}

In a free market where property has alternative uses, "[i]t is always in the interest of entrepreneurs to maximize the present value of their land and capital assets. Excessive depletion of resources would lower their capital value..." ^{29/} On the other hand, if, in a command economy where property use is dictated by government, the cost of retaining its current productivity exceeds the value of its services, the quasi-owner has an incentive to deplete the property if the costs of doing so are low enough.

Not only do [free] market prices act directly to conserve natural resources through the process of capitalization, they also expand the supply of resources by discovering and exploiting new reserves and by substituting new materials for old resources. The higher demand for the final products (consumer goods) increases the value of the resources that go into their production. These higher prices stimulate conservation and investment in exploration, new technologies, and substitutes. In short, increasing scarcity reflected in higher prices increases supply. ^{30/}

Increased scarcity causes the development of its own remedy. ^{31/}

Price rations

Costanza confirms that price rations. However, rather than let free-market prices reflect scarcity, he wants government to raise prices

... by taxing TNC [total natural capital] consumption, especially energy, very heavily. Technological optimists... should welcome this policy, which raises natural resource prices considerably and would powerfully encourage just those technological advances in which they have so much faith. Skeptics who lack that technological faith should nevertheless be happy to see the throughput limited since that is their main imperative to conserve resources for the future." ^{32/}

The tax would be passed on to consumers in the price of products and would send the proper signals about the relative sustainability cost of each product, moving consumption toward a more sustainable mix. ^{33/}

The tax (price) would not be based on actual scarcity but the fantasies of market illiterate bureaucrats. It would not send any proper signal as to the real availability of any resource. Further, the tax would be a massive transfer of wealth and power from the productive private sector to a parasitic public sector. The money would not be used to create wealth or improve resource utilization, results that would benefit the masses, but to create a bigger, more intrusive government, results that would benefit only the ruling class and its sycophants.

Resources will be allocated by the market or by government. Government allocation would require an expansion of government. The only way government can expand is by taking resources from creative, productive individuals.

Government central planners do not know what the resource base is. They cannot see the future. They do not and cannot know the correct allocation of any resource.

What are the dire consequences of the inevitable wrong guesses by bureaucratic planners?

- Waste of resources
- Misallocation of resources
- Economic stagnation
- Discouragement of innovation
- Violence
- Bigger and more intrusive government.

That a free market and its price signals do not guarantee a perfect allocation of resources does not mean government is better. Clearly, it is not. In a free market, failure is a signal that resources are being wasted or misallocated. It is a signal that individuals cannot ignore. Only government can ignore failure. We have a cornucopia of information documenting this government failure. Rewarding government failure with more power is not just folly, it is downright destructive.

References

- 1/** Wernick, Iddo K., Paul E. Waggoner, and Jesse H. Ausubel. 1998. Searching for Leverage to Conserve Forests, The Industrial Ecology of Wood Products in the United States. *Journal of Industrial Ecology*. Vol. 1, No 3, p. 128.
- 2/** Beckwith, Julian R., III. 1996. Forest Resource One-liners with Georgia Highlights. Extension Forest Resources. University of Georgia. P. 2
- 3/** Sedjo, Roger A. 1995. Global Forests Revisited. In *The State of Humanity*, edited by Julian L. Simon. Blackwell Publishers Inc. Oxford, Uk. pp. 328-345. See also Sedjo, Roger A. 1995. Forests: Conflicting Signals. In *The True State of the Planet*. edited by R. Bailey. The Free Press. New York. pp 177-209.
- 4/** South, David B. 1995. How Can We Feign Sustainability With An Increasing Population? To be published in the proceedings of *Planted Forests: Contributions to Sustainable Societies*. College of Forestry. Oregon State University.
- 5/** Morrell, Jeffrey J. and Thomas E. McLain. 1997. Role of Technology in Sustainability: Opportunities and Limits. In *Proceedings of Forests and Society: Implementing Sustainability*. Oregon State University. Corvallis, OR. p. 45.
- 6/** Ibid., p. 41.
- 7/** Bailey, Ronald. 1993. *Ecoscam: the false prophets of ecological apocalypse*. St. Martin's Press. New York. p. 69.
- 8/** Ibid., p. 75.
- 9/** USFS. 1998. A Gradual Unfolding of a National Purpose: A Natural Resource Agenda for the 21st Century. <http://www.fs.fed.us/news/agenda/sp30298.html>. p. 3.
- 10/** USFS. 1995. A Rationale For Forest Service Involvement In Sustainable Development. Discussion Paper #4. www.fs.fed.us/land/sustain_dev/. p. 1.
- 11/** Charles, John A. 1998. The Dark Side of Growth Controls. Goldwater Institute. <http://www.goldwaterinst.com/azia/150.htm>. p. 7.

- 12/ Leopold, Aldo. 1904. The Maintenance of Forests. In *The River of the Mother of God*. Edited by Susan L. Flader and J. Baird Callicott. The University of Wisconsin Press. Madison. p. 37.
- 13/ Goklany, Indur M. and Merritt W. Sprague. 1992. *Sustaining Development and Biodiversity. Productivity, Efficiency, and Conservation*. Cato Institute. Washington. pp. 4-5.
- 14/ Hayek, F. A. *The Pretense of Knowledge*. In *New Studies in Philosophy, Politics, Economics, and the History of Ideas*. U. of Chicago Press. Chicago. pp. 23-34.
- 15/ *Ibid.*, pp. 31.
- 16/ USFS, p. 2.
- 17/ USFS. 1996. *Criterion and Indicator*.
http://www.fs.fed.us/land/sustain_dev/sd/criter7.htm pp. 18-19.
- 18/ State of North Carolina. 1996. *Report of the Governor's Task Force on Forest Sustainability*. pp. 71.
- 19/ Rees, William E. *Revisiting Carrying Capacity: Area-Based Indicators of Sustainability*.
<http://www.dieoff.com/page110.htm>
- 20/ Costanza, Robert. 1994. *Three General Policies to Achieve Sustainability*.
<http://dieoff.org/page87.htm>. p. 3.
- 21/ *Ibid.*, p. 1.
- 22/ Rothschild, Michael. L. 1990. *Bionomics: Economy as Ecosystem* (misinformed title but book makes some interesting points about government and markets). Henry Holt and Company, Inc. New York. p. 274.
- 23/ Horwitz, Steven. 1996. *Monetary Calculation and Mises's Critique of Planning*.
<http://www.music.stlawu.edu/shor:http/papers/hope.htm>. p. 2.
- 24/ *Ibid.*, p. 3.

25/ Ibid., p. 5.

26/ Ibid., p. 6-7.

27/ Ibid., p. 9.

28/ Jackson, Gerard. 1999. Natural Resources: Government does not know Best! The New Australian. <http://www.newaus.com.au/news5e.html>. p. 4.

29/ Ibid., p. 4.

30/ Ibid., p. 5.

31/ Simon, Julian L. 1996. The Ultimate Resource 2. Princeton Univ. Press, Princeton, NJ. p. 58.

32/ Costanza, Robert. p. 4.

33/ Ibid., p. 1.