

## **Chapter 9. Conclusion: 10 Steps to Advance and Resolve the Great Sustainability Debates**

This chapter revisits the main arguments and contribution of this thesis. It proposes ten additional steps to help advance and resolve the great sustainability debates. Finally, the chapter also reflects on the contribution needed by boundary organizations to progress these debates.

Whilst this thesis has sought to help advance and resolve significant sustainability debates, it is important to acknowledge that debating is a healthy activity: through it we recognize and acknowledge other points of view, expand our understanding of the world, its challenges and their potential solutions. One of the first things that dictators do is try to limit debate.

### **Why Advancing and Resolving the Great Sustainability Debates Matters?**

Whilst it is wise to be able to agree to disagree there are some issues where it is important that consensus is reached sooner than later. This thesis argues that that it is important that a new consensus is reached on sustainability issues as soon as possible. This is because the latest science tells us that there is a small window of three decades or so to avoid dangerous climate change, irreversible loss of biodiversity and habitat, land degradation and ecosystem collapse. This thesis has argued that similarly it is vital that greater efforts are made to help nations out of the poverty trap to save millions of lives, reduce the rate of population growth, and give millions the chance of sustainable livelihoods instead of allowing more nations to slip into vicious cycles of violence, conflict and human and environmental degradation. The poorest countries are the most politically, socially and environmentally vulnerable, unstable and prone to conflict. Often these conflicts spill over national borders and entrap regions in conflict for years further reducing their capacity to escape poverty. In an age of globalization, weapons of mass destruction and terrorist threats, this thesis has argued that it is vital that nations act on their commitments to work together to reduce global extreme poverty.

None of these issues can be addressed overnight: no matter how determined a company or a nation is to achieve sustainable development, these changes will take time to implement, hence there is no time to waste. The World Banks 2003 Development Report summed up the situation well:

Some problems of sustainability are already urgent and require immediate action; Another category of issues unfolds over a longer time horizon. These problems may not be urgent, but the direction of change is unmistakable. For these it is essential to get ahead of the curve and prevent a worsening crisis before it becomes too costly. Biodiversity loss and climate change are in this category...What is

clear is that almost all of the challenges of sustainable development require that action be initiated in the near term.<sup>1</sup>

Very simply, the sooner companies or nations start, the longer they have to phase in changes, the less disruptive and more beneficial this will be to business and society and the best chance we have of long term success. For instance, it has taken Australia almost two decades since the government mandated that all new cars purchased from 1st January 1986 run on unleaded petrol to achieve a shift in the dominant fuel source for vehicles (Figure 9.1)

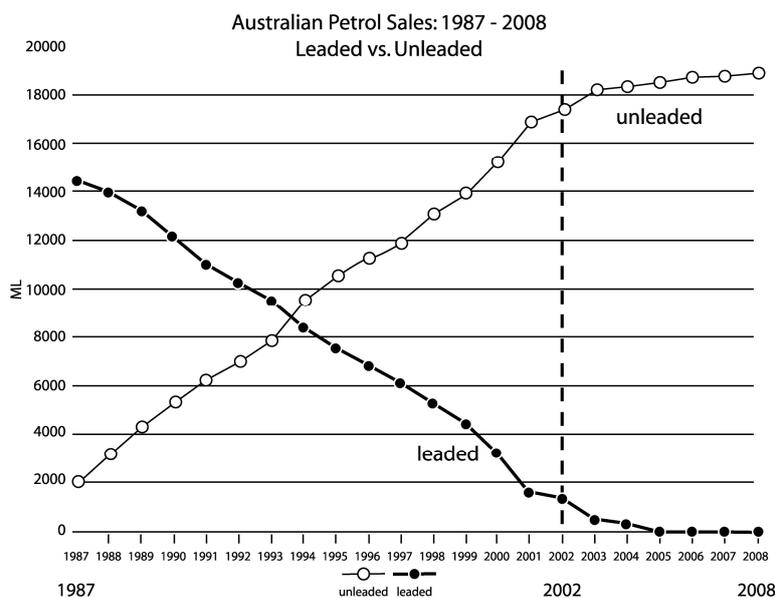


Figure 9.1: Graph of Australian Petrol Sales: 1987-2008, Leaded vs. Unleaded (Source: Robinson, B (2002))<sup>2</sup>

This thesis has sought to inform consensus by showing there are ways to reconcile and resolve jobs (Chapters 2 and 3), business competitiveness (Chapter 4) and economic growth (Chapters 5-8) with sustainability.

## Thesis Contribution to Advancing the Sustainability Debates and Ecological Modernisation Discourse

This thesis highlighted the need for urgency in trying to raise awareness about these new frameworks and strategies to resolve sustainability debates and conflicts by showing that these debates have progressed surprisingly little over time. Chapter 1 demonstrated that the current trajectory of development and economic growth is not environmentally sustainable. Chapter 2 showed that debates

<sup>1</sup> World Bank (2003) *World Bank Development Report 2003: Sustainable Development in a Dynamic World*, Oxford University Press, Oxford

<sup>2</sup> Robinson, B. (2002) *Global Oil Vulnerability and the Australian Situation, Issues and Background*. Paper for the Western Australia State Sustainability Strategy, Government of Western Australia.

about the environmental sustainability of development have come and gone since the ancient civilization of Sumaria encountered problems of salinity. Chapter 2 also summarised key results from the works of Diamond<sup>3</sup> and Tainter<sup>4</sup> to demonstrate this. Chapter 2 also showed that sustainability debates have been going on in a modern context far longer than most people realize. Chapter 2 for the first time integrated in a novel way a wide range of evidence to show that a significant opportunity was missed in 1908-9 when Theodore Roosevelt called on world leaders to meet at the Hague for a summit on the global environment and resources. In Chapter 3, it was shown that many factors contribute to the fact that so many past civilisations did not survive and why in modern times little progress has been made to achieve sustainable development. Chapter 3 provided much evidence to suggest that the problem of overshoot and delayed feedbacks, ignorance of ecological limits, unforeseen consequences of technology, war and conflict, and vested interests have been significant factors in why both ancient civilizations have not survived and why inadequate progress has been made.

Chapter 3 also argued that in modern times the rise of the corporation and the requirement under corporate law to maximise profits to shareholders has created a new driver which has motivated the funding of think tanks to run campaigns against aspects of sustainable development. Chapter 3 showed that a review of “independent” environmental scepticism literature from the past 30 years has found that the vast majority of sceptics are directly linked to politically oriented, conservative think tanks. The study<sup>5</sup> analysed books written between 1972 and 2005 which deny the urgency of the need for environmental protection and concluded that more than 92 percent of authors were affiliated to right wing think tanks which promote anti-sustainable development ideas. Chapter 3 highlighted that the main strategy of the think tanks has been to

- Dispute the science and argue that environmental problems are not as bad as some scientists suggest, focusing on inevitable uncertainty.
- Argue that action by government on sustainable development issues will increase costs to business and harm business competitiveness, employment and the economy.
- Argue that the costs of action are so great compared to the costs of inaction that government should not take action.

Chapters 4 showed that action to achieve sustainable development need not harm business competitiveness. Chapter 4 showed that, with effective government policy, competitiveness risks can be virtually eliminated. Chapter 4 showed that the majority of sector based studies to date show that

---

<sup>3</sup> Diamond, J (2006) *Collapse: How Societies Choose to Fail or Succeed*. Random House

<sup>4</sup> Tainter, J. (1993) *The Collapse of Complex Societies*. Cambridge: Cambridge University Press

<sup>5</sup> Jacques. P; Dunlap. R, Freeman, M. (2008) *The Organisation of Denial: Conservative Think Tanks and Environmental Scepticism*. Environmental Politics, Volume 17, Issue 3 June 2008 , pages 349 – 385 Available at <http://www.informaworld.com/smpp/content~content=a793291693~db=all~order=page>

companies leading on environmental and social issues in their sector outperform their competitors. Chapter 4 showed clear links between improved sustainability performance on the environmental and social dimensions, and a company's financial results. Chapter 4 also integrated modern microeconomic theory to demonstrate why significant eco-efficiency opportunities still exist for many businesses. Finally, in the Appendices to Chapter 4 some of the genuine barriers to corporate sustainability were acknowledged and addressed.

Chapter 3 and 6 showed that a transition to sustainable development, with green tax shifting, can lead to higher employment not less. Chapter 3 showed that almost all economists who have studied the jobs-environment debate over the last thirty years agree that the three propositions identified above are false. In reality, at the economy wide level, there has simply been no trade off between jobs and the environment. Chapter 3 and 6 acknowledged the need for structural adjustment packages to compensate and retrain workers affected by the closing down of unsustainable industries as part of any serious attempt to achieve sustainable development.

Chapter 5 to 8 showed that the argument that pursuing sustainable development will harm economic growth significantly was also untrue. Chapter 5 to 8 also demonstrated that economic growth and environmental sustainability need not be incompatible. Chapter 5 addressed many of the main criticisms of ecological modernisation. Critics of ecological modernisation argue that economic growth cannot be decoupled from physical growth and environmental pressures. Chapter 5 to 8 brought together empirical evidence which demonstrated that the technological means and the policy tools needed to achieve decoupling have been deployed in one country or another in the world today.

Critics of ecological modernisation, even if they acknowledge that decoupling is possible, dispute that it will be sufficient to achieve environmental sustainability on the scale or speed required. Chapter 5 and Chapters 7 and 8 have shown that there is significant evidence to suggest that decoupling of Factor 4-10 could be achieved. Chapters 5, 7 and 8 showed that where nations have tried to achieve significant decoupling, large and rapid reductions in environmental pressures were achieved. The thesis also introduced the fact that there are now advanced strategies such as Whole System Approaches to Sustainable Design<sup>6</sup> which has been able to achieve large Factor improvements through design.

Sophisticated critics of ecological modernisation also argue that negative rebound effects will undermine efforts to decouple economic growth from environmental pressures through eco-efficiency and resource productivity improvements. Chapter 5 outlined in detail how policy measures and incentives are needed as part of broad community awareness raising and education to turn negative

---

<sup>6</sup> Stasinopoulos, P., Smith, M., Hargroves, K. and Desha, C. (2008) *Whole System Design - An Integrated Approach to Sustainable Engineering*, Earthscan, London, and The Natural Edge Project, Australia. Available at [http://www.naturaledgeproject.net/Whole\\_System\\_Design.aspx](http://www.naturaledgeproject.net/Whole_System_Design.aspx)

rebound effects into positive amplification effects. Chapter 5 outlined modelling by Foran *et al*<sup>7</sup> which shows that, through appropriate policy measures, the negative rebound effect can be significantly reduced.

By addressing these criticisms of ecological modernisation Chapter 5 sought to advance the “growth” debates. Chapter 5 outlined four main strategies to help advance the “growth debates”. In Chapter 5, four key insights were presented to assist in moving these “growth” debates forward to allow the creation of a new form of economic growth that is socially and environmentally sustainable:

- The first insight was that the main issues of concern —environmental degradation, pollution and global inequality—are in fact examples of market, informational and institutional failures. Chapter 5 showed that both the survivalist and the ecological modernisation discourse agree on the fact that market, informational and institutional failures are factors which cause unsustainable development. Chapter 5 showed that, when government does address the market, information and institutional failures through more effective policies and regulations, industry and R&D bodies have responded with innovations to achieve decoupling.
- The second insight is that economic growth and physical growth of the economy are not the same. By clearly differentiating between economic and physical throughput growth, and focusing on how to achieve significant decoupling, this chapter moves on from the traditional economist versus environmentalist debates about growth. Rather than arguing whether growth is good or bad and whether it should be increased or slowed, this chapter seeks to shift the debate to be about:
  - a) How to achieve the decoupling of economic growth from negative environmental pressures and negative societal impacts?
  - b) What progress has been made thus far to achieve such decoupling?
  - c) What can we learn from those who have achieved significant decoupling?
  - d) What do empirical studies suggest to be the policies to help achieve such decoupling?
- The third key insight chapter 5 used to move the “growth” debates forward was to explain why GDP defined economic growth does not correlate well with welfare and well-being once people earn more than \$10,000 per annum. What matters is well-being, not whether the rate of GDP economic growth is 2.2 or 2.1 per cent per annum. This is an important result. Consequently, proponents of sustainable development only need to show that their initiatives will not harm economic growth significantly. All the studies to date show that achieving ecologically sustainable goals will at worst only reduce economic growth over the long term by an insignificant amount. In the past most politicians and some economists have still seen this as

---

<sup>7</sup> Foran, B (2007) *Powerful Choices: Options for Australia's Transition to a Low-Carbon Economy* (In Press)

a significant cost to the nation. But slightly less economic growth by 2050 does not mean a cost to citizens because what it really means is that they will be slightly less richer by that date. Does it matter if the Australian economy is 130% richer by X date in the future or 120% richer by X date in the future?

To test this argument, Chapters 6 and 8 looked at the estimates of costs of action to achieve sustainable development across a wide range of social and environmental issues and compared these, where possible, with estimates of costs of inaction. Chapter 6-8 showed that the upfront costs of action to achieve social and environmental goals are affordable and will have negligible negative effect on the economy. Chapters 6-8 investigated how seeking to achieve social sustainability and environmental sustainability goals correlates with economic growth.

Chapter 6 demonstrated that addressing many social goals such as reducing corruption, improving health and education outcomes correlate with higher economy growth. Chapter 6 also provided evidence to show that social sustainability goals such as ending extreme poverty were affordable and would have negligible negative effect on OECD economic growth rates.

In Chapter 7 it was shown that decoupling economic growth from greenhouse gas emissions, if implemented wisely as a transition, would not harm economic growth significantly. Chapter 7 outlined how most studies show that there would be a negligible effect positively or negatively on economic growth from a shift to ecological sustainable development. An example of this was the economic modelling by CSIRO<sup>8</sup> and Allen Consulting which showed that for the Australian economy achieving 60 per cent cuts to greenhouse emissions by would still achieve a 2.1 per cent per annum increase in GDP.<sup>9</sup>

The well-being and happiness literature suggests that most people in OECD countries who have achieved a reasonable standard of living will support such modest reductions in GDP if, as a result, a significant public good such as avoiding dangerous climate change is achieved. Other studies suggest that an effective shift to environmental sustainability could help rather than harm economic growth.

Chapter 7 showed that the latest economics of climate change from Stern<sup>10</sup> and Garnaut<sup>11</sup> correspond with many of the central arguments of this thesis namely that

- a) Significant decoupling of economic growth from greenhouse gas emissions is achievable.
- b) early action on climate change is cheaper than later action

---

<sup>8</sup> See Corporate Leaders Call for Deep Cuts to Greenhouse Gas Emissions at [www.acfonline.org.au/news.asp?news\\_id=755](http://www.acfonline.org.au/news.asp?news_id=755) Accessed 1 August 2006

<sup>9</sup> Hatfield-Dodds,S (2006) Private Communication, CSIRO.

<sup>10</sup> Stern, N et al. (2006) *The Stern Review: The Economics of Climate Change*, Cambridge University Press, Cambridge.p104 Available at [www.hmtreasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/Sternreview.index.cfm](http://www.hmtreasury.gov.uk/independent_reviews/stern_review_economics_climate_change/Sternreview.index.cfm) Accessed 14 April 2007

<sup>11</sup> See Garnaut Review Interim Report at <http://www.garnautreview.org.au/CA25734E0016A131/pages/reports-and-papers>

c) the costs of inaction significantly outweigh the costs of action.

These results are significant to the overall argument of the thesis by indicating that many actions required to decouple economic growth from greenhouse gas emissions will also decouple economic growth from other environmental pressures and help achieve overall sustainable development.

Chapter 8 further explored the costs of action versus inaction on decoupling economic growth from other environmental pressures such as loss of biodiversity and natural resources, air and water pollution and waste production. It showed that the costs and risks of inaction outweighed the relatively modest costs of action. Chapter 8 quoted recent OECD studies which show that the costs of policy inaction on environmental pressures are significant. The OECD Environmental Outlook to 2030 showed that the costs of policy inaction were particularly high for water pollution, especially in developing countries; for air pollution, as much as a few percentage points of GDP in the US, the EU and China; important in the case of unsustainable natural resource management; and for climate change, in the range of 1 to 10 per cent of global output. Chapter 8 showed that where governments had overcome vested interests and taken strong action, significant decoupling had been achieved.

These topics in chapter 8 were not chosen randomly: they are the main areas for which the OECD has developed decoupling indicators.<sup>12</sup> Thus chapter 7 and 8 provide nations with a useful resource to mount the case for adopting decoupling targets and indicators.

Chapters 5-8 showed that economic reasons are amongst the strongest to motivate early and urgent action to protect the environment, because early action to protect the environment costs far less than solving an environmental or social problem once it has passed irreversible tipping points. They showed that, at worst, action on sustainable development would have a negligible negative effect on OECD economic growth rates whilst helping to improve the quality of economic growth and development in developing countries.

Thus this thesis has shown that it is possible to create a new form of economic growth that is environmentally and socially sustainable. In Chapter one, I quoted Dryzek who stated that “Much of its (ecological modernisation’s) appeal lies in its promise that “we can have it all: economic growth, environmental conservation, social justice”<sup>13</sup>. This thesis has shown that there is significant evidence to support this core hypothesis of ecological modernisation.

Thus it is hoped that this thesis will help to significantly move forward many of the great sustainability debates. To further assist, I wish to conclude with reflections on key lessons from this thesis to assist those wishing to progress the sustainability debates.

---

<sup>12</sup> OECD Secretariat. (2002) *Indicators to Measure Decoupling of Environmental Pressure and Economic Growth*. OECD. Paris.

<sup>13</sup> Dryzek, J. (1997) *The Politics of the Earth: Environmental Discourses*. Oxford University Press. Oxford:

### **Step 1: Take a Solutions Based Approach.**

Firstly, the main lesson for those who wish to sound the alarm and warn the world about the problems listed at the start of this chapter is do not do so. It is wise, where possible, to wait until you have worked out an array of options and alternative paths forward. So often the reason that little progress has occurred in addressing the warnings of scientists has been the fact that no cost effective solutions or alternatives were presented. Until alternative solutions and approaches are available decision makers in business and government will have a tendency to deny the problem. Scientists mistakenly believe that the reason that so little progress has been made is because decision makers do not appreciate the scale of the problem. Such scientists spend their whole time trying to explain to decision makers and the general public that the problem (biodiversity loss, pollution, climate change, soil fertility loss, extreme poverty) is great. The reason that so little progress is being made is because decision makers, professionals and the general public are ignorant of the solutions, not the problems.

### **Step 2: Seeing is Believing: The Importance of Benchmarking.**

As well as proposing solutions, demonstrable cases of success are needed. Lack of progress has been made on sustainable development because many politicians, business leaders and decision makers do not believe that it is possible. Even if a politician or a decision maker believes that some aspects of sustainable development can be achieved few believe that all social and environmental sustainability goals can be achieved simultaneously especially in developing countries. The case study of Curitiba, (see Chapter X) shows that social and environmental sustainability goals can be achieved simultaneously.

Despite case studies like Curitiba, the belief that major trade offs between social, environmental and economic goals are inevitable still dominates. This thesis has sought to integrate and bring together a selection of case studies of success for many of the social and environmental sustainability goals to challenge this assumption. Empirical case studies and properly calculated benchmarking help to move the debates forward by avoiding the need for lengthy debate about whether particular sustainability goals are achievable, proving that steps have already been taken by someone, somewhere, to achieve it. If benchmarked case studies in sustainable development or empirical studies are not presented then the debate can stall with a sceptic asking, "If this is such a good idea why has no one done it?" It is important therefore to identify where and how sustainability ideas have been implemented in practise to demonstrate that it can be done.

### **Step 3: Communicate Clearly the Costs of Action Earlier Rather Than Later**

Thirdly, those who have been effective at moving the debates forward have communicated the costs of action versus inaction of aspects of sustainable development to business and political decision makers. The fact that the costs of inaction significantly outweighed the costs of action on removing ozone

depleting substances was a significant factor in motivating countries to ratify the Montreal Protocol. The fact that the Stern Review<sup>14</sup> has outlined clearly that the costs of inaction on climate change significantly outweigh the costs of action has been a major factor in shifting climate debates.

The EU 2002 study “Late Lessons from Early Warnings: the Precautionary Principle 1896–2000”<sup>15</sup> shows through an historical review that there are clearly benefits from a precautionary approach that identifies and addresses problems early rather than leaving them to worsen.

#### **Step 4: Build Alliances and Create Processes to Resolve Uncertainties and Build Consensus.**

Fourth, the quickest way to move debates forward is to build alliances and consensus. Historically, it has often been a minority scientific opinion that has sounded the original alarm about asbestos, smoking, PCB’s or ozone destruction. In Chapter 2, it was shown that by the 1770s the Academies of Science had reached consensus that deforestation caused desiccation, leading to regulatory changes around the world.<sup>16</sup> More recently the IPCC played a similar role building consensus amongst over 3000 atmospheric scientists globally. No matter how solid the science when dealing with complex systems there is always uncertainty. It significantly helps the scientist who sounds the warning if many fellow scientists come out publicly in support. This may be difficult for scientists who work or are funded by for government or corporate funded laboratories that prevent them from making public comments on controversial matters. This suggests the importance of sustainability think tanks like the Forum for the Future (UK), the International Institute of Environment and Development (UK), The Wuppertal Institute (Germany), The International Institute of Sustainable Development (Canada), The Earth Institute (USA), The Worldwatch Institute (USA), The Rocky Mountain Institute (USA). Such think tanks can play the role of consensus building facilitators, through involving multiple organisations in the development and review of research and communication projects.

#### **Step 5: Identify Opponents of Sustainable Development and Seek to Find Common Ground.**

This thesis demonstrates the using decoupling using decoupling value in seeking to re-examine assumptions and beliefs to identify common ground. Traditionally many business and industry bodies have opposed the ideas encapsulated in sustainable development, but as Chapter 4 showed there is a

---

<sup>14</sup> Stern, N et al. (2006) *The Stern Review: The Economics of Climate Change*, Cambridge University Press, Cambridge.p104 Available at [www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/Sternreview.index.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/Sternreview.index.cfm) Accessed 14 April 2007

<sup>15</sup> Harremo,P.,Gee,P., MacGarvin,M., Stirling,A., Keys,J., Wynne,B., Vaz S.G., (2002) Late Lessons from Early Warnings: the Precautionary Principle 1896-2000 Environmental issue report No 22 *European Environment Agency*. ([//reports.eea.eu.int/environmental\\_issue\\_report\\_2001\\_22/en](http://reports.eea.eu.int/environmental_issue_report_2001_22/en))

<sup>16</sup> Grove, R.H (1995) *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism 1600-1860*. Cambridge University Press

strong business case for sustainable development. Similarly most people since the Limits to Growth debates have assumed that economists and proponents of sustainable development do not agree, but as Chapters 5-8 showed this is no longer the case. However, as Chapter 3 outlined, there clearly are vested interests and think tanks currently who have opposed many aspects of sustainable development systematically. Clearly trying to build consensus across all key stakeholders in business and in the right of politics on sustainable development is going to be a challenge. But even here it seems there are potential areas of agreement which allow sustainable development proponents and the Bush administration to work together effectively. A good example of this can be seen through the efforts of the Rocky Mountain Institute's publication *Winning the Oil Endgame*<sup>17</sup> which shows how nations can profitably get off oil within fifty years. Within four months of being released in 2004 over 160,000 copies had been downloaded freely from the Rocky Mountain Institute's web site. Environmentalists have despaired in the last five years that it is possible to find any common ground with the US President Bush's administration. In 2006, Bush announced that the US will seek to reduce oil imports by 75% by 2025.<sup>18</sup> The Rocky Mountain Institute in the *Winning The Oil Endgame* sought to find common ground with conservative right wing thinkers by framing the issue of reducing oil usage and greenhouse gas emissions in terms of how to improve US national security. In other words RMI sought to find common ground with those who for national security reasons wish to reduce oil usage and greenhouse gas emissions. In addition in this study RMI put into practice Step 3 very effectively- namely communicating the costs of inaction versus action of an issue.

### **Step 6: Present the Facts and Make the Linkages.**

One of the reasons RMI has been so successful is that they have contextualized the facts in ways that side step the compartmentalization and sensationalised style of debating in the media which outlined in Chapter 3. Also assisting RMI has been the fact that now it is possible to download their reports freely from the web, making it more difficult for governments and decision makers to ignore it. Thanks to the internet the mainstream media sources are now no longer the only way that most people access information. One of the main reasons that the world did not follow Roosevelt's lead in 1908 is that most of the world was ignorant of the insights and innovations summarized in Appendix 2 of this thesis. No one in 1908 was working to bring this knowledge of sustainable development together. This is one of the reasons why sustainability think tanks such as Forum for the Future (UK), the International Institute of Environment and Development (UK), The Wuppertal Institute (Germany), The International Institute of Sustainable Development (Canada), The Earth Institute (USA), The

---

<sup>17</sup> Lovins, A., Datta, E. K. *et al* (2004) *Winning the Oil Endgame: Innovation for Profits, Jobs, and Security*, Rocky Mountain Institute, *Colorado/Earthscan*, London

<sup>18</sup> Bush, G.W.(2006) State of the Union Address Available at <http://www.whitehouse.gov/stateoftheunion/2006/index.html> Accessed 14 April 2007

Worldwatch Institute (USA), The Rocky Mountain Institute (USA). are seeking to publish books and reports that bring together such information and make such publications freely available on the web.