

Footnotes to Think Piece 6

1. Robin McKie and Caroline Davies, "Is our taste for Sunday roast killing the planet?" *The Observer* (London), 7 September 2008. Retrieved 8 September 2008, from: <http://www.guardian.co.uk/environment/2008/sep/07/food.meat>
Also Juliette Jowit, "Meat must be rationed to four portions a week, says report on climate change." *The Guardian* (London), 30 September 2008. Retrieved 1 October 2008 from: <http://www.guardian.co.uk/environment/2008/sep/30/food.ethicalliving>
2. Henning Steinfeld, Pierre Gerber, Tom Wassenaar, Vincent Castel, Mauricio Rosales and Cees de Haan, *Livestock's Long Shadow: Environmental Issues and Options*. (Food and Agriculture Organisation of the United Nations, Rome, 2006), pxxi. Retrieved 12 September 2008 from: <http://www.fao.org/newsroom/en/news/2006/1000448/index.html> and <ftp://ftp.fao.org/docrep/fao/010/A0701E/A0701E00.pdf>.
Note: The Food and Agriculture Organisation of the United Nations (FAO's) mandate is to raise levels of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy.
3. See Excel Spreadsheet 'Think Piece 6 - Workings for Figure 1' on our website.
4. "Global meat production is projected to more than double from 229 million tonnes in 1999/2001 to 465 million tonnes in 2050, while milk output is set to climb from 580 to 1043 million tonnes." – Stenfield *et al.* *Livestock's Long Shadow: Environmental Issues and Options*, pxx. See also FN 1, McKie and Davies, "Is our taste for Sunday roast killing the planet?" *The Observer* (London), 7 September 2008.
5. The In Vitro Meat Consortium, "Why In Vitro Meat?", retrieved 30 September 2008 from: <http://invitromeat.org/content/view/12/55/>
6. Passage quoted from McKie and Davies, "Is our taste for Sunday roast killing the planet?", *The Observer*, 7 September 2008. Refers to the report by Gidon Eshel and Pamela Martin, *Diet, Energy and Global Warming* (University of Chicago, Chicago, May 2005), retrieved 30 September 2008 from: <http://geosci.uchicago.edu/~gidon/papers/nutri/nutri3.pdf>
7. Caroline Saunders, Andrew Barber and Greg Taylor, "Food Miles – Comparative Energy/Emissions Performance of New Zealand's Agriculture Industry – Executive Summary", (Lincoln University, Christchurch, 2006). Retrieved 30 September 2008 from: <http://www.beehive.govt.nz/Documents/Files/Food%20Miles%20Executive%20Summary.doc>
8. McKie and Davies, "Is our taste for Sunday roast killing the planet?", *The Observer*, (London), 7 September 2008.
9. Jerome C. Glenn, Theodore J. Gordon and Elizabeth Florescu, *2008 State of the Future*, (World Federation of UN Associations, Washington D.C., 2008) p4. Further information about the Millennium Project see: <http://www.millennium-project.org/millennium/sof2008.html>
10. People for the Ethical Treatment of Animals, "PETA Offers \$1 Million Reward to First to Make In Vitro Meat", retrieved 7 September 2008 from: http://www.peta.org/feat_in_vitro_contest.asp
11. Jerome C. Glenn, "The Future of Food", in an interview by Wendy McGuinness on 29 July 2008, available from: http://www.sustainablefuture.info/Site/Publications/Interviews/Jerome_C_Glenn.aspx
12. Discussion with Michael C. MacCracken, co-editor of *Sudden and Disruptive Climate Change* (Earthscan Publishing, 2008), at the World Future Conference, Washington D.C. 25-29 July 2008. For more information on the Conference see http://www.sustainablefuture.info/Site/News/Archive/World_Future_Conference.aspx
13. Tim Hunter, "Big stakes but the science can't be rushed", *Sunday Star Times*, 7 September 2008. Retrieved 8 September 2008 from <http://www.stuff.co.nz/4684235a13.html>
14. AgResearch, "GMF07001", (application made to ERMA, 2008), p23. Retrieved from: <http://www.ermanz.govt.nz/consultations/make-submission.html?aid=GMF07001>
15. AgResearch, "Transgenic Livestock Programme: Fiction and Facts", retrieved 6 October 2008 from <http://www.agresearch.co.nz/transgenic/fiction-fact.asp> See similar statement, NZPA, "NZ needs to keep up with GE technology", *Business Day*, retrieved 4 September 2008 from: <http://www.businessday.co.nz/industries/agribusiness/4681122>.
16. "The Next Green Revolution", *The Economist* (New York), 21 February 2008, retrieved 7 September 2008 from: http://www.economist.com/business/displaystory.cfm?story_id=10727808 Note: 57.7 + 19.1 + 15 = 91.8 [being total top three producers] / 114 [being total top ten producers] = 81%
17. Heather Timmons, "Company That Cloned Sheep To Sell Assets and Shut Down", *The New York Times*, 16 September 2003. Retrieved 8 September 2008 from: <http://query.nytimes.com/gst/fullpage.html?res=9501E7DE173AF935A2575AC0A9659C8B63>

June 30, 2003 Exchange Rate	Currency Conversion
£UK 1 = \$NZ 2.835219	£12,700,000
	\$36,007,274

Currency conversion source http://www.imf.org/external/np/fin/data/rms_mth.aspx?SelectDate=2008-06-30&reportType=CVSDR

18. Heather Timmons, "Company That Cloned Sheep To Sell Assets and Shut Down", *The New York Times*, 16 September 2003. See also <http://www.gene.ch/genet/2003/Sep/msg00058.html> Note: This impacted on PPL (New Zealand) Limited's 4000-strong flock of AAT-producing transgenic sheep, which were then destroyed in accordance with controls. See <http://www.ermanz.govt.nz/news-events/archives/media-releases/2003/mr-20030717.html>
19. Keith Steele – CEO of AgResearch, "Press Release, 3 May 2001", retrieved 30 September 2008 from: http://www.sustainablefuture.info/Site/Hot_Topics/Genetic_Modification/Genetic_Modification.aspx#68083-9
20. Dr Paul Atkinson – General Manager Science of AgResearch, Wallaceville, 21 February 2002. "Quantification of the commercial prejudice to AgResearch if a constraint period of two years is legislated", retrieved 30 September 2008 from: http://www.sustainablefuture.info/Site/Hot_Topics/Genetic_Modification/Genetic_Modification.aspx
21. "GM proposal "big ask" Feds say", *The New Zealand Farmers Weekly*, 29 September 2008, Page 9.
22. Crown Research Institutes Act 1992 (NZ) s 5. Retrieved 30 September 2008 from: http://www.legislation.govt.nz/act/public/1992/0047/latest/DLM265144.html?search=ts_act_Crown+Research+Institutes
Note: Section 5 - Principles of operation
(1) Every Crown Research Institute shall, in fulfilling its purpose, operate in accordance with the following principles:
(a) That research undertaken by a Crown Research Institute should be undertaken for the benefit of New Zealand:
(b) That a Crown Research Institute should pursue excellence in all its activities:
(c) That in carrying out its activities a Crown Research Institute should comply with any applicable ethical standards:
(d) That a Crown Research Institute should promote and facilitate the application of—
(i) The results of research; and
(ii) Technological developments:
(e) That a Crown Research Institute should be a good employer as required by section 118 of the [Crown Entities Act 2004](#):
(f) That a Crown Research Institute should be an organisation that exhibits a sense of social responsibility by having regard to the interests of the community in which it operates and by endeavoring to accommodate or encourage those interests when able to do so.
23. Joanna Goven, Lesley Hunt, David Shamy and Jack A. Heinemann, *Animal Biopharming in New Zealand: Drivers, Scenarios and Practical Implications* (Constructive Conversations, University of Canterbury, 2008), p7. Available from: <http://www.conversations.canterbury.ac.nz/documents/animalbioreport.pdf>
Note: Also see Biopharming definition: Biopharming – the production of pharmaceutical compounds in plant and animal tissue in agricultural systems (AERU, 2007: ix) Available from: http://researcharchive.lincoln.ac.nz/dspace/bitstream/10182/135/1/aeru_rr_296.pdf
24. Goven et al., *Animal Biopharming in New Zealand: Drivers, Scenarios and Practical Implications*, p9.
25. Goven et al., *Animal Biopharming in New Zealand: Drivers, Scenarios and Practical Implications*, p19.
26. Goven et al., *Animal Biopharming in New Zealand: Drivers, Scenarios and practical Implications*, Executive Summary. See also:
(i) Dr William Kaye-Blake, Caroline Saunders and Mariana de Aragão Pereira, *Potential Impacts of Biopharming on New Zealand: Results from the Lincoln Trade and Environmental Model* (An AERU report commissioned by Constructive Conversations, Christchurch, 2008). Available from: http://www.lincoln.ac.nz/story_images/4696_RR307w_s15774.pdf
(ii) Dr William Kaye-Blake, Caroline Saunders and Louise Ferguson, *Preliminary Economic Evaluation of Biopharming in New Zealand* (An AERU report commissioned by Constructive Conversations, Christchurch, 2007). Available from: http://researcharchive.lincoln.ac.nz/dspace/bitstream/10182/135/1/aeru_rr_296.pdf
(iii) Dr William Kaye-Blake – AERU Research Officer, "Future of Biopharming in NZ still too early to tell" *Lincoln University News*, 22 June 2007. Retrieved from: <http://www.lincoln.ac.nz/story20608.html>
Dr William Kaye-Blake (2007) stated that 'several essential dimensions are still unknown, such as the total costs, the impacts of competing technologies, the actual market demand, and the impact on our existing primary sector industries and export markets.'

27. Richard Wray, "PPL drops hi-tech drugs plant", *The Guardian* (London), 29 April 2003. Retrieved from: <http://www.guardian.co.uk/business/2003/apr/29/medicineandhealth.genetics>

April 15, 2003 Exchange Rate	Currency Conversion	
£UK 1 = \$NZ 2.875253	£42,000,000	£15,000,000
	\$120,760,626	\$43,128,795

Currency conversion source http://www.imf.org/external/np/fin/data/rms_mth.aspx?SelectDate=2003-04-30&reportType=CVSDR

28. Royal Commission on Genetic Modification, *Report of the Royal Commission on Genetic Modification*, (2001), p355. Retrieved 30 September 2008 from: <http://www.mfe.govt.nz/publications/organisms/royal-commission-gm/chapter-15.pdf>

29. Fonterra, "Fonterra's Losses a Warning for AgResearch Partner", Press Release 1 October 2008. Retrieved 7 October 2008 from: <http://www.scoop.co.nz/stories/BU0810/S00006.htm>
Excerpt: 'Fonterra's reported \$139 million loss arising from the contaminated milk incident in China is a warning to AgResearch that New Zealand cannot afford to damage our international reputation. But AgResearch's plans for producing pharmaceuticals in partnership with US biotechnology company GTC Biotherapeutics and Pharming NV puts New Zealand's reputation at risk, and presents significant financial risks to the economy. GTC Biotherapeutics made a total net loss of \$10.4 million for the first six months of 2008.'

June 30, 2008 Exchange Rate	Currency Conversion	
\$US 1 = \$NZ 1.312502	\$ 10,400,000	
	\$13,650,023	

Currency conversion source http://www.imf.org/external/np/fin/data/rms_mth.aspx?SelectDate=2008-06-30&reportType=CVSDR

30. NZPA, "Study reveals how NZers feel about GE in animals", Retrieved 12 October 2008 from: <http://clearnet.co.nz/news/national/2008Oct/b6a0413a-f512-4753-9b69-b695b5fc6b0d.html>

31. NZPA, "AgResearch Signals Redundancies", *www.stuff.co.nz*, 6 October 2008. Retrieved 7 October 2008 from: <http://www.stuff.co.nz/4717848a13.html>