

Submission to the National Enabling Technologies Strategy, August 2009

Thank you for the opportunity to make a submission to the Federal Government's National Enabling Technologies Strategy. We recognise that Australia requires a new approach to funding, governance, oversight and management of nanotechnology, biotechnology and other emerging technologies. This is required to ensure technology development is strategic, maximises social and environmental utility, and enjoys widespread community support. This submission addresses the questions posed in the NETS discussion paper with specific reference to genetically engineered (GE) crops and foods.

1. Key issues and challenges that need to be addressed by the National Enabling Technologies Strategy and how they should be addressed

1.1. Process issues

We appreciate the Government's long-standing commitment to public interest science and to promoting critical dialogue within the scientific and technology communities. We are concerned that the consultation process associated with the National Enabling Technologies Strategy is inadequate to present the Government with the full spectrum of public interest group views at this critical time.

We are concerned that the consultation process for the National Enabling Technologies Strategy has so far fallen short of the Rudd Government's "commitment to open and transparent environmental decision making"¹, and the inclusiveness and accountability espoused in its new Social Inclusion Agenda.² Failure to abide by these principles leaves Australia not just out of step with international best practice in public engagement, but leaves Australia lagging behind other countries (e.g. UK, USA, Canada) in the democratic introduction of new technologies.

Concerns relating to the NETS consultations include:

- Industry representatives were invited to attend 6 of 8 consultations, which took place in most capital cities. In contrast, public interest group representatives were invited to attend only 2 of the 8 consultations, which took place in Sydney and Melbourne only.
- The locations and timeline of the series of consultations have not been provided to public interest groups, despite repeated requests.
- The list of participants in these consultations have not been provided to public interest groups, despite repeated requests.
- The Department has indicated that minutes from different meetings will not be circulated and submissions received as part of the consultation will not be made available publicly (despite the fact that this is normal practice for other inquiries).
- The quality and the partiality of the meetings' facilitation was very unsatisfactory.
- There was no funding made available to support participation. This is a real barrier to public interest group participation, especially when only 2 meetings were available to them, necessitating travel.

Both biotechnology and nanotechnology are highly controversial technologies. The public are justifiably concerned about the potential impacts of these technologies on human health, the environment and society as a whole. Serious consideration needs to be given to the potential medium to long-term consequences of this technology, and the level of public consultation regarding these technologies needs to be proportionate to this.

The National Enabling Technologies Strategy is intended to guide the identification of research and development priorities, the allocation of public funds, support for industry uptake and commercialisation, the review of regulatory regimes, the nature of public communication materials and the ongoing inclusion of the

public and key stakeholders in meaningful dialogue. It will therefore have significant implications for Australia as a whole.

Given the far-reaching nature of the Strategy, it is of paramount importance that the public be involved at all stages of its design and implementation. Public engagement should be part of the policy making process in all of its stages. However, there has so far been no opportunity for the wider public to be involved in the Strategy's development.

Limited efforts to involve public interest groups in the Strategy's development³ have also been disappointing, despite the considerable contribution various public interest organisations have made to previous processes run by the Department in relation to nanotechnology and biotechnology.

It is not clear exactly what the purpose is of the public consultation around the Strategy. A lot of development already appears to have gone into the strategy and funding has already been allocated for areas of the strategy that have been deemed important. There is no evidence so far that the attempts at public consultation on the Strategy are actually informing policy.

1.2. Underlying Ideology

In its 2009 Innovation Policy Agenda the Federal Government claims that nanotechnology and biotechnology "will help us conquer hunger and disease, carbon-dependence and climate change. They will spawn new products, new processes, new industries, and thousands upon thousands of jobs in the coming decades."⁴ Comments from Government such as these are common and reflect ideological imperatives rather than any assessment of economic or technological realities.

The Strategy is embedded in a political context which assumes that laws should facilitate not restrict the licensing and release of new technologies such as biotechnology and nanotechnology. The very term 'Enabling Technologies' demonstrates the value judgement that underpins the Strategy, namely that biotechnology and nanotechnology are inherently desirable technologies that ought to be encouraged. However, biotechnology and nanotechnology are broad fields of study, encompassing many different applications – some much more contentious than others. For example, whilst the majority of the public may accept the laboratory use of biotechnology in the development of medicines – the uncontrolled release of genetically engineered (GE) and untested nanoparticles are much more controversial.

A broad public debate on the desirability of key biotechnology and nanotechnology applications has yet to occur in Australia, and is sorely needed. Australians should have the right to veto the use of public funding to research and promote technologies that they view as undesirable.

Support for the biotechnology and nanotechnology industry has been based on political support for industry's utopian and techno-idyllic claims that these technologies are a panacea, and on efforts to secure a share of the massive financial investment in these technologies. For example, the US biotechnology industry alone has received \$100 billion in funding. Decision-makers have conveniently ignored the attendant US\$40 billion in losses to date.⁵

Politically, the support for genetic engineering is also based on the conviction that this is a low or even no-risk activity, "despite increasing contestation from within science about our understanding of the role and nature of genes, and about the consequences of releasing GMOs".⁶ This is evident in the rhetoric of Australian political figures such as the federal Minister for Agriculture, Tony Burke MP, who claim GE crops to be a major solution to climate change and global food shortages.⁷

In contrast, the UN's International Assessment of Agricultural Science and Technology for Development (IAASTD), shows that GE crops have little role to play in the solution to these problems.⁸ GE crops pose unacceptable risks to human health, the environment and the economy, and have no proven benefits. Given these potential risks, the underlying ideology behind the NETS – that these technologies are inherently beneficial – needs to be reassessed.

1.3. Public Communication Strategy

A common idea propagated by industry and Government Agencies, such as Biotechnology Australia, is that the public is sceptical of technologies such as biotechnology and nanotechnology due to ignorance. It is assumed that once the public becomes better informed about these technologies their concerns will disappear. However, research conducted by the UK Government, as part of its debate on GE crops, suggests exactly the opposite: the more that members of the public learnt about both the potential risks and benefits of GE crops, the more concerned they became about their potential introduction.⁹

The NETS discussion paper states that activities in relation to the 3-way circular strategy “will be driven by two-way communications”. However, instead of a two-way communication on how these technologies will be implemented, communication from the public appears to exist to inform the NETS body on how to ‘align its information with community values’.¹⁰ If the community is to readily accept these technologies, then there needs to be a greater level of community input into the NETS process. Merely using public input to make GE and nanotech products appear more palatable does not constitute a sound democratic process.

The Strategy expresses a desire to develop materials in partnership with industry. There is a danger that these materials will be biased and one-sided, without corresponding input from NGOs and other critical commentators. Funding should be made available to facilitate this input.

1.4. Regulation is Out of Step with Science

The GE industry is built on the premise that genes and their functions can be isolated, patented, spliced into an organism, and controlled.¹¹ However, a number of recent studies have called into question this simplistic view of the science of genetic engineering.

For example, a 2007 study published in the leading scientific journal *Nature* reveals that genes appear to operate in a complex network where they react, interact and overlap with each other in ways we still do not understand.¹² This research raises serious questions about the established ways in which we assess the safety of GE crops. The mode of action of a protein (how it functions in a living organism) is usually described in the context of the organism from which the DNA was derived. However as Spöck et al. (2008) observe “the mode of action of proteins transferred to other biological contexts might however still differ from its original context in an unpredictable way”.¹³ These concerns are also reflected in a peer-reviewed UN-FAO commissioned study, approved by an intergovernmental panel in 2007, which found that “proteins with functions in metabolism may have other functions as well, or may acquire new functions in a new context.”¹⁴

The lack of certainty regarding how GE proteins actually function is illustrated by ongoing discussion about possible biological effects of *Bt* toxins in humans, 12 years after the first GE plant containing a *Bt* gene was authorised for market commercialisation.¹⁵

As long-term studies into the impact of GE foods have rarely been performed, it is simply not known if GE crops are safe for human consumption. This is reflected by the ongoing controversy surrounding their safety assessment. A 2007 review of the toxicity studies on GE crops concluded by asking the question, “where is the scientific evidence showing that GM plants/food are toxicologically safe, as assumed by the biotechnology companies involved in commercial GM foods?”¹⁶

In their 2003 review of studies looking at the health impacts of GE foods, Pryme and Lembcke identified only ten peer reviewed animal feeding studies, only five of which were independent. Tellingly, in the five studies carried out in collaboration with industry, no adverse effects due to the consumption of GE plant material were reported. This is in stark contrast to the five independent studies, which all reported adverse effects after feeding laboratory animals GE plant material for only 10-14 days.¹⁷ The authors concluded that “it would seem apparent that GM food regulation is currently based on a series of extremely insufficient guidelines” and that “much more scientific effort and investigation is necessary before we can be satisfied that eating foods containing GM material in the long term is not likely to provoke any form of health problems. It will be essential to adequately test in a transparent manner each individual GM product before its introduction into the market.”¹⁸

Since there are no long-term studies on the health effects of GE food, the French food safety authority, AFSSA, has concluded that current safety testing is not sufficient to ensure their safety.¹⁹

1.5. Insufficient Information Provided to Consumers

Current labelling laws in Australia mean that very few GE foods have to be labelled. Products such as oils, starches and sugars from GE crops do not have to be labelled. Neither do meat, milk, cheese and eggs from animals fed GE feed, or food from restaurants and take-aways. This is misleading to consumers. As we anticipate the entry of the first Australian GE canola products into our food stream, the need for comprehensive labelling of our foods would seem urgent.

1.6. Government funding priorities are being dictated by industry rather than the public good

In recent years, the emphasis of Government funded research has been increasingly dictated by industry rather than the public good. This has resulted in research being disproportionately focussed on patentable technologies designed to maximise corporate profit, such as GE crops and nanotechnology. For example, in 2007-8 the Federal Government's Research and Development Corporations (RDCs) spent \$10.7 million on GE crop research, despite GE crops being rejected by consumers in both Australia and our key export markets such as Japan and Europe. In the same year RDC expenditure on organic agriculture amounted to just \$1.5 million, despite organic agriculture being the fastest growing agricultural sector in Australia.²⁰

The United Nations' first ever scientific assessment of global agriculture, completed in April 2008, calls for fundamental change in farming practices, in order to address soaring food prices, hunger, social inequities and environmental disasters. The report, commonly known as the World Agriculture Report, is formally called the International Assessment of Agricultural Science and Technology for Development (IAASTD).²¹

The IAASTD report is a call for governments and international agencies to redirect and increase their funding towards a revolution in agriculture that is firmly agro-ecological. The core message of the final IAASTD report is the urgent need to move away from destructive and chemical-dependent industrial agriculture and to adopt environmental modern farming methods that champion biodiversity and benefit local communities. More and better food can be produced without destroying rural livelihoods or our natural resources. Local, socially and environmentally responsible methods are the solution. The IAASTD also concluded that such techniques as genetic engineering are no solution for soaring food prices, hunger and poverty.

Australia is one of only three countries in the UN to have failed to endorse the IAASTD's findings and to adjust its research priorities accordingly.

1.7. Liability concerns

Currently the burden of risk associated with the introduction of biotechnology and nanotechnology applications is borne by the Australian public rather than the technology developers. In the case of GE crops, substantial risk rests with non-GE farmers - who stand to lose markets if their crops are contaminated with GE material. This is inequitable. Legislation should be enacted to ensure that technology providers are held strictly liable for any damage caused by their products. This would encourage responsible innovation on the part of the technology developers. Austria, Norway and Germany have introduced legislation of this nature to protect farmers from economic losses resulting from the introduction of GE crops.

2. Desired outcomes for the National Enabling Technologies Strategy

2.1. Implementation of ALP policy and the Federal Government honouring its election commitments

Greenpeace believes that NETS provides an opportunity for the Federal Government to implement ALP policy and honour its election commitments as outlined below:

ALP Party Policy 2007

"Labor is committed to effective product labelling to ensure consumers can make informed choices. Food should be labelled to ensure consumers know both the ingredients and processes used...Labor also supports the comprehensive labelling of genetically modified food."

ALP National Platform and Constitution 2007²²

“Genetically Modified (GM) crops will not be released unless they are safe to health, safe to the environment and beneficial to the economy. Safe and beneficial standards must be established beyond reasonable doubt. Standards must be met to the satisfaction of the government and also of the scientific community, the consumer community and, in the case of GM crops, to the satisfaction of the farming community. Accurate information on GM products must be provided to consumers and the community. The onus of proof that a product is ‘safe and beneficial’ lies with its developers. GM crops should not be introduced unless there is whole of community consensus. Labor will preserve the right of the States to implement and manage moratoria on the commercial production of GM crops.”

ALP National Platform and Constitution 2007²³

ALP election promise 2007

“We believe that genetically modified (GM) crops should not be approved for commercial release unless they are safe to health and the environment, and beneficial to the economy...A Rudd Labor Government will ensure that the assessment process for GM licence applications is based on rigorous science, and that any evidence presented to support claims is subject to peer review and thorough public consultation...Safe and beneficial standards must be established beyond reasonable doubt and standards must be met to the satisfaction of the government, the scientific community, the consumer community and the farming community.”

Labor's Plan for Primary Industries 2007²⁴

The Government's election promise that GE crops should not be approved for commercial release unless they are proven safe to health and the environment beyond reasonable doubt has yet to be implemented. The Office of the Gene Technology Regulator (OGTR) currently approves GE crops if it believes that risks 'can be managed'²⁵ - a much weaker standard.

Neither the OGTR or Food Standards Australia New Zealand (FSANZ) requires peer-reviewed data to substantiate claims of safety made by the developers of GE crops. Furthermore, FSANZ generally relies solely on industry data in assessing the safety of GE foods.

To date, deep unresolved concerns remain within the scientific, consumer and farming communities on the issue of GE crop safety.

Despite the fact that the ALP's 2007 policy supports the comprehensive labelling of GE food, current labelling laws in Australia mean that very few GE foods have to be labelled. Products such as oils, starches and sugars from GE crops do not have to be labelled. Neither does meat, milk, cheese and eggs from animals fed GE feed, or food from restaurants and take-aways. This is misleading to consumers. As we anticipate the entry of the first Australian GE canola products into our food stream, the need for comprehensive labelling of our foods would seem urgent.

In order to for the Strategy to implement ALP policy and honour the Government's election commitments the following regulatory shortcomings need to be addressed:

- 1) GE crops should not be released into the environment or food chain unless they can be proven safe beyond reasonable doubt and there is whole of community support. An urgent independent review of the regimes for assessing the safety of GE food and crops is needed. This will ensure that our regulatory regimes for GE food and crops keep pace with the latest science.
- 2) GE foods – including highly processed foods and products from animals fed GE feed – should be labelled as such.
- 3) The safety assessment of GE foods should be based on peer-reviewed science.
- 4) More funding needs to be allocated towards public interest research into the environmental, health and social impacts of GE crops, including the long term monitoring of any health effects.

2.2. Fair risk management

Currently the burden of risk associated with the introduction of biotechnology and nanotechnology applications is borne by the Australian public rather than the technology developers. In the case of GE crops, substantial risk rests with non-GE farmers - who stand to lose markets if their crops are contaminated with GE material. This is inequitable. Legislation should be enacted to ensure that technology providers are held strictly liable for any damage caused by their products. This would encourage responsible innovation on the part of the technology developers. Austria, Norway and Germany have introduced legislation of this nature to protect farmers from economic losses resulting from the introduction of GE crops.

2.3. The adoption of international best practice on public engagement

In light of the Federal Government's Social Inclusion Principles, the NETS should adopt international best practice on public engagement and afford citizens greater involvement and responsibility in the decisions made under the NETS.

An all-stakeholder (industry, government, research community, public interest groups) oversight committee should be formed to inform and direct the Strategy. Funding should be allocated to ensure public interest group participation in this committee and ongoing NETS activities.

3. How could Greenpeace work with the Enabling Technologies Policy and Public Awareness Sections and others to address those issues and challenges?

Greenpeace is able to participate in future public engagement processes around NETS. Greenpeace is able to provide guidance on how to address the key issues and challenges surrounding the Strategy.

¹ Australian Labor Party: 2009 Draft National Platform, p. 103, http://www.alp.org.au/download/draft_platform_2009.pdf

² Australian Government: Social Inclusion Principles, <http://www.socialinclusion.gov.au/Principles/Pages/default.aspx>

³ Key stakeholders, such as the Network of Concerned Farmers, as well as some public interest groups that had already indicated their interest in these issues to the Department of Innovation, Industry Science and Research (e.g. the Public Health Association of Australia) were not invited to participate at all in the process.

⁴ Commonwealth of Australia (2009) *Powering Ideas: an innovation agenda for the 21st century* http://www.innovation.gov.au/innovationreview/Documents/PoweringIdeas_fullreport.pdf

⁵ Hamilton, D. (2004) Biotech's Dismal Bottom Line: More Than \$40 Billion in Losses. *Wall Street Journal*, May 20 2004, available at: [http://www.mindfully.org/GE/2004/Biotech-\\$40B-Losses20may04.htm](http://www.mindfully.org/GE/2004/Biotech-$40B-Losses20may04.htm)

⁶ Hindmarsh and Hulsman (2004) *Beyond the Lab! Precautionary Weakness*, p. 54. Hindmarsh and Lawrence eds *Recoding Nature*, UNSW Press.

⁷ "GM crops can help world hunger: Burke". *Sydney Morning Herald*, November 20, 2008, available at: <http://news.smh.com.au/national/gm-crops-can-help-world-hunger-burke-20081120-6bx8.html>

⁸ IAASTD: Synthesis Report, available at: <http://www.agassessment.org/>

⁹ GM Nation?: The findings of the public debate, www.aebc.gov.uk/reports/gm_nation_report_final.pdf

¹⁰ NETS Discussion paper, p 4

¹¹ Crick Fhc (1957) On Protein Synthesis. *Symp. Soc. Exp. Biol.*, 12, 138-163.

¹² The Encode Project Consortium (2007) Identification and Analysis of Functional Elements in 1% of the Human Genome by the Encode Pilot Project, *Nature*, 447: 799-816.

¹³ Spöck, A. *et al.* (2008) *Assessment Of Toxic And Ecotoxic Properties Of Novel Proteins In GMOs*, www.bmgfi.gv.at/cms/site/attachments/1/5/4/ch0810/cms1206433032207/forschungsbericht_1-08_-1_teil.pdf, p. 46.

¹⁴ Heinemann, J.A. (2007) Background Study Paper No. 35 Rev.1: A Typology of the Effects of (Trans)Gene Flow on the Conservation and Sustainable Use of Genetic Resources. <ftp://ftp.fao.org/ag/cgrfa/bsp/bsp35r1e.pdf>, viewed 6/08/08.

¹⁵ Spöck, A. *et al.* (2008).

¹⁶ Domingo, J.L. (2007) Toxicity Studies of Genetically Modified Plants: A Review of the Published Literature, *Critical Reviews In Food Science And Nutrition*, 47(8): 721 – 733

¹⁷ Pryme, I.F. & Lembcke, R. (2003) *In Vivo* studies of possible human health consequences of genetically modified food and feed – with particular regard to ingredients consisting of genetically modified plant materials, *Nutrition and Health*, 17: 1-8.

¹⁸ *Ibid.*

¹⁹ AFSSA (Agence Française de Sécurité Sanitaire des Aliments) (2002) Evaluation des risques relatifs à la consommation de produits alimentaires composés ou issus d'organismes génétiquement modifiés.

²⁰ Senate Standing Committee on Rural and Regional Affairs and Transport: Answers to Questions on Notice, Budget Estimates May 2008, Agriculture, Fisheries and Forestry, Question: RPI 10 http://www.aph.gov.au/senate/committee/rrat_ctte/estimates/bud_0809/daff/rpi.pdf

²¹ van Acken, J. (2008) IAASTD Briefing, <http://www.greenpeace.org/international/press/reports/iaastd-briefing>

²² ALP (2007) ALP National Platform and Constitution, Chapter Twelve - Ensuring Community Security and Access to Justice, para. 99, http://www.alp.org.au/platform/chapter_12.php, viewed 24/7/09.

²³ ALP (2007) ALP National Platform and Constitution, Chapter Nine - Combating Climate Change and Building a Sustainable Environment, para. 84, http://www.alp.org.au/platform/chapter_09.php, viewed 24/7/09.

²⁴ Kerry O'Brien (2007) Labor's Plan for Primary Industries, http://www.alp.org.au/download/now/071119___labors_plan_for_primary_industries22.pdf, p.20, viewed 24/7/09.

²⁵ OGTR (2009) GMOs approved for commercial release in Australia, [http://www.ogtr.gov.au/internet/ogtr/publishing.nsf/Content/gmofactsheets-3/\\$FILE/factcanola.pdf](http://www.ogtr.gov.au/internet/ogtr/publishing.nsf/Content/gmofactsheets-3/$FILE/factcanola.pdf)