

Research, Science and Technology - Policy Summary



Jeanette Fitzsimons, MP

24 Aug 2005

Subject: **Research, Science and Technology**

Spokesperson:

Jeanette Fitzsimons MP

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Funding

The Green Party will change the funding model for research so that:

- 'Public good' research is split into base and contestable pools. Base funding to only be available to the public sector.
- Multi-disciplinary environmental and social issue projects are emphasised.
- Fundamental and applied science research is publicly funded, whilst private funds develop the resultant technologies.
- Clear ethical investment guidelines exist for venture capital funds.
- Businesses are encouraged to invest in R&D.
- Pooling of the R&D funds of SME's are facilitated.

Structures

The Green Party will advocate for a new science community structure to:

- Increase the career security of scientists.
- De-bureaucratise the administration system
- Establish greater links between researchers and society
- Widen the range of stakeholder groups influencing the direction of research in CRI's.
- Allow independent researchers to access contestable science funding.
- Maintain core support services.
- Encourage innovation and the development of small-scale appropriate technologies.
- To hold publicly funded research results in the public domain, with proceeds reinvested in research.

What Research?

Some of the Green's research priorities include climate change, environmental issues, biotechnology (non-GE), organics, renewable and efficient energy, sustainable transport, waste minimisation, conservation, alternative economics, work and technological change.

Technology

The Green Party will encourage the development of ethically acceptable technology by:

- Requiring grant schemes to include sustainability as a key criterion for funding.
- Creating an agency to dispense information about sustainable technologies.
- Providing financial encouragement for the adoption of new technologies.
- Encouraging the use of open source software.
- Supporting agricultural and horticultural advancements without patenting of life forms.
- Supporting the development of genetic technologies based on ethical screening and the precautionary principle on a case by case basis, so long as they are contained within the laboratory and are not applied to food production.

The Treaty and Science

The Green party will respect and support:

- Maori concepts of mauri and whakapapa as relevant ethical guidelines.
- Opposition to patents over life and genetic mixing across species barriers.
- The retention, with Maori, of intellectual property rights in the development of study of Maori knowledge, in partnership with local Maori in the public science system.

Science Education

The Green Party will focus on holistic science by:

- Requiring the inclusion of environmental science and ethics in all study programs.
- Encouraging integrated study.
- Expanding opportunities for primary & secondary teachers to undertake research.
- Encouraging interaction between researchers and school children.

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Our Vision

For the Greens, the role of science is to improve the quality of our lives and to sustain and replenish the web of life, of which we are a part and on which our quality of life depends. It should aim to protect both the common good and the environment, be ethically based and emphasise the precautionary principle. Research and science are tools that should be used for developing our nation in sustainable ways. The nature of our economic and social development is closely linked to investment in research. We support endeavours to uncover

new knowledge about the world. However, our knowledge needs to be of the whole system and reflect an understanding of the integrated nature of all things, not motivated by a desire to control individual parts. With such knowledge, much better decisions can be made about which path to follow and the consequences for people and the environment. Knowledge in this sense is a route to humility rather than power. Technology needs to fit people rather than forcing people to fit the technology. In other words, technology is our servant not our master. Our commitment to appropriate decision-making means we want to see more links between researchers and both the private and community sectors in proposing, assessing and utilising research. 'Experts on tap, not on top' is a phrase that reflects our view of the role of science in the community. Our aim is dialogue that empowers researchers to play a personally satisfying role in helping create a more sustainable and just society. We need to do much more to ensure that information becomes knowledge and that knowledge becomes wisdom. The results of all publicly funded research will become public property. We believe curiosity about the world is a valid reason for research, provided it is tempered by ethics. The community has a key role to play in deciding on ethical issues relating to research. In principle, we support ethically based legislation that will end practices such as vivisection, and place controls on the use of technologies that could lead to human cloning and 'designer babies'. We believe that education and empathy as well as legislation are ultimately needed to guarantee ethical research.

Specific Policy Points

1. Funding

Recent history has seen the funding of science research become highly competitive. Although this has had some benefits, it has also had a detrimental effect upon science, and the future ability of science and technology to contribute to sustainable development in Aotearoa New Zealand. Steps need to be taken to increase collaboration and decrease competition among researchers and to create a greater degree of certainty and security for scientists. The Greens advocate a change in the funding mechanism for research, science and technology (RS&T) as well as supporting a progressive increase in the level of funding for RS&T. We would work to implement the following changes to the current model of funding:

1. split funding for 'public good' research and development between base and contestable pools, with the appropriate balance between these pools being the subject of regular review. Base funding would be available only to public sector researchers. Funding for 'blue skies' research, fellowships and industry research would still be on a competitive basis
2. Fund salaries for researchers out of base funding to provide greater security.
3. Determine how much funding R,S&T will get from the public purse on a rolling five year basis, in consultation with with science providers and those who make direct use of RS&T, and the community.
4. Expand the range of time frames over which research can be funded to include both the very short term and the long-term.
5. Include peer review, client assessment, and/or independent audit in the funding allocation system.
6. Emphasise multi-disciplinary and collaborative projects on complex environmental and social issues (such as soil degradation, violent behaviour, and urban sustainability).
7. Direct public funding to support fundamental and applied science research while leveraging private funds to develop technologies based on this research.
8. Introduce clear ethical investment guidelines for the venture capital funds recently initiated by Government.

We also believe that local industry and business must raise their commitment to research in parallel with changes in the public sector. To this end, we would examine the best means to encourage an increase in private sector funding, especially from small and medium sized enterprises (SMEs). We will:

9. identify the factors that affect R&D spending among similar businesses and assess how to raise investment by those businesses that invest less than the median amount on a sector by sector basis.
10. Facilitate pooling the R&D funds of SMEs through clustered partnerships with research institutions.

2. Structures

We do not believe that the current management model for Crown Research Institutes (CRIs), which are now required to turn a profit, is the best. We need to develop models to get the best from the science community. We believe the certainty and security created by the changes in funding outlined above will go a long way towards enabling scientists to carry out and communicate about increasing amounts of needed research. We support universities and other competent science research providers being funded to conduct needed research, especially when it is linked to science education. We also support the idea of partnerships to develop applied technology. We are concerned at the extent to which public science is becoming private knowledge and would seek to redress this. To improve the structure of science research, the Greens advocate a new model for the structure of the science community, developed in partnership with those affected. This new model will:

1. Provide a career for scientists no less secure than that for other similarly qualified professionals in the public sector.
2. Ensure there are options beside administration for a career path in science.
3. Have a less bureaucratic administration system coupled with oversight by an independent audit agency

4. Have a broadly-based performance appraisal methodology that recognises contributions of scientists to different sectors rather than just the number of papers published in peer-reviewed journals.
5. Encourage collaboration and collegiality among all researchers
6. Establish more links between researchers and the rest of society, so that research can be better focussed on the needs voiced by the community and that the results of research are made more readily available.
7. Facilitate community groups, including the 'alternative' sectors in agriculture, building etc. to identify what research would be helpful to them, and to do the necessary preparatory work to try to get such research ideas undertaken.
8. Facilitate the linking of local knowledge and wisdom with more traditional forms of research.
9. Encourage researchers in CRIs to divide their effort among different stakeholder groups — private, community, and government, while also allowing them to pursue ideas of their own.
10. Maintain university academic staff as active researchers, and provide opportunities for teaching staff in other tertiary institutions and the secondary and primary sectors to be involved in active research, through exchanges and similar programmes.
11. Allow independent researchers to access contestable science funding.
12. Ensure that all research is conducted within strict ethical guidelines and make the assessment of the ethics of research more open to public scrutiny.
13. Maintain core support facilities such as libraries, specimen collections, and other information resources.
14. Encourage innovation and the development of small scale appropriate technologies.
15. Allow viable research projects to run to completion after peer review or independent audit.
16. Have all the results of publicly funded research published and held in the public domain, with proceeds from patents, licensing, etc. being reinvested in the funding pool.

3. What Research?

The Green Party believes that as a society we need to commit resources to both fundamental and applied research and that all such research should aim to contribute to sustainable development. Research priorities must lead to greater understanding of the interconnections within the ecosystems on which we depend and the causes of social problems. They must also support the shift to sustainable systems of production and patterns of consumption, rather than just generating profit in the present. Research must be conducted to support innovation and new industries. This is part of our commitment to localisation and community economic development. Research priorities need to be developed in partnership with the community, industry and government. Major science and technology research priorities emerging from Green policies include:

1. Multi-disciplinary applied social research, which can then be applied in areas such as mental health and crime.
2. Environmental, technological, and social impacts on health and wellness, such as antibiotic resistance and other health issues.
3. Housing issues such as needs, materials, and safety.
4. Education issues especially regarding special needs learning.
5. Environmental rehabilitation, mitigation and damage prevention.
6. Real market advantage research and non-GE biotechnology for adding value to primary products.
7. Organic primary production, including a strategic portfolio outline and reference group that is focused on organic production.
8. Energy efficiency and renewable energy.
9. Sustainable transportation, including public transport, reducing car dependence, and the impacts of transport technologies on health, social well-being, the environment and the economy.
10. Clean production, waste minimisation, waste utilisation, and overcoming barriers to implementing zero waste initiatives.
11. Soil sciences including erosion minimisation and other geological research.
12. Native terrestrial ecosystem functioning.
13. Pest control and eradication.
14. Endangered species and other conservation-related ecological research including the role native species can play in highly managed areas, both urban and rural.
15. Indigenous production forestry.
16. Marine ecosystem functioning and fishing impact research.
17. Small scale technologies for small scale businesses.
18. Better ways to work.
19. Weather, climate, and hydrological sciences.
20. Technological change impacts.
21. Real cost accounting, new methods of national accounting, and statistical methodology

4. Technology

At the heart of sustainable technology is the idea of 'appropriate technology' — technology that helps us work together more effectively and tread lightly on the earth. We strongly support a commitment to technology that enables us to do more with less for longer. The

planned obsolescence of most current technology, such as consumer electronics, has to be challenged and changed. The Greens believe that all technological items must be designed and constructed with repairable, reusable and or recyclable parts and casings. The challenge for designers is to think about the entire life of their products and ideas from the start. There are too many examples of technologies creating problems that no one predicted. We believe that being able to do something doesn't mean we should do it. Jacob Monod reflects the Greens' perception when he says: "We as scientists are in danger of allowing our knowledge to outstrip our wisdom". Science and technology must be driven by society and not carried out for their own sakes. To encourage development of appropriate, ethically acceptable technology, the Greens will work to:

1. Require Research for Industry, Technology New Zealand and other grant schemes to use contribution to sustainability as a key criterion in making funds available to support technology development.
2. Create an agency to make information about sustainable technologies available. EECA will be expanded, or other agencies developed, to promote adoption of technologies which contribute to sustainability.
3. Provide financial encouragement to adopt new technologies.
4. Support initiatives to improve broadband internet access in urban and rural areas.
5. Develop decentralised community computing centres to ensure that people from all socio-economic groups have affordable access to computing facilities and the internet.
6. Encourage the use of open source software to help reduce costs in this area for all sectors.
7. Create additional demands for sustainable technologies by making them available to developing nations as part of Aotearoa New Zealand's overseas development assistance.
8. Advance agriculture and horticulture through careful selective breeding with no patenting of life forms.
9. Enable the public to exercise its right to determine the ethical boundaries of technology development.

The Greens see many potential benefits from the technologies derived from the science of genetics. We support the development of genetic technologies when they are:

10. Properly contained in a laboratory.
11. Subject to case by case approval, including ethical screening and a proper application of the precautionary principle.
12. Not applied to food production.

5. The Treaty and Science

The Green Party opposes the creation of patents over life and the forced mixing of genetic material across species barriers. We respect Maori concepts of the sacred nature of mauri (the life force) and of whakapapa (ancestry or biological heritage) and believe that they provide relevant ethical guidelines for the conduct of science and biotechnology in New Zealand. The Green Party supports the development and study of traditional Maori knowledge within the public science system. Such work can only occur in partnership with local Maori, may involve new science structures and must ensure that intellectual property rights remain with Maori.

6. Science Education

The Green Party is committed to integrated and holistic education. We support science education within the school system as an essential part of understanding the world. However, the way we do and teach science needs to change from a focus on the parts (reductionism) to a focus on the parts in the context of the whole (holistic science). Both are amenable to scientific method but only the latter is likely to enable us to develop our society in a sustainable way. It is important that scientific research is seen in a greater context. Science teachers need to be adequately prepared and keep in touch with new developments in science. To achieve these goals we would:

1. Require environmental education and ethics to be parts of all programs of study, including science education.
2. Encourage integration of various fields of study.
3. Expand links between research scientists, technology developers and educational institutions to give more opportunities to primary and secondary school teachers to undertake research with researchers in universities, CRIs or private research establishments.
4. Expand efforts by research scientists and technology developers to engage with young minds through regular visits to schools.