

9. NEW ZEALAND

9.1 Energy Policies and Actions

In December 2006, the Ministry of Economic Development issued a document named "Powering our Future: Draft New Zealand Energy Strategy (NZES) to 2050", which sets out the national policy direction for a sustainable emissions energy system. This is the first national energy strategy to be developed for New Zealand. The three guiding principles for developing the energy policy include: (i) protecting the security of supply; (ii) promoting the energy efficiency measures; and (iii) promoting low emissions energy sources.

Below shows some government initiatives that support and advance sustainable energy policies and goals:

- Setting clear policy direction and priorities for the energy sector (including generation, transmission, transport, energy efficiency and new technologies)
- Consideration of a requirement for major electricity generators to adopt triple bottom line reporting, including greenhouse gas emissions
- Consideration of a voluntary mechanism for consolidated consideration of the Resource Management Act (RMA) consent applications for wind and geothermal energy generation projects
- Introduction of a minimum biofuels sales obligation to encourage the uptake of alternative transport fuels over the next five years
- Establishment of a contestable fund to support the development of marine-based electricity generation
- A commitment to significantly increase the use of solar water heating in New Zealand¹³⁴

In order to achieve the above goals, the NZES sets out an action plan under the following board areas:

- (i) Resilient and low carbon transport
 - Developing and adopting future fuels
 - Improving the fuel efficiency of vehicles on New Zealand's roads
 - Shifting to more efficient means of transport
 - Ensuring a secure and diverse supply of transport fuels
- (ii) Security of electricity supply
 - Boosting confidence in the security of electricity supply
 - Developing policies to manage the security implications of increasing the contribution of wind and other intermittent renewable energy sources
 - Reducing barriers to generation and related retailing
 - Facilitating cost-effective demand-side response to reduce peak demand
 - Continuing bedding-in the gas market regime

¹³⁴ Extracted from the document "Powering our Future: Draft New Zealand Energy Strategy to 2050", <http://www.med.govt.nz/upload/43136/draft-energy-strategy.pdf>, page 12

- (iii) Low emissions power and heat
 - Proposing short-term policies to limit greenhouse gas emissions from electricity generation and industrial heat and power
 - Inviting major electricity generators to establish a working group to prepare triple bottom line reports which include an inventory of greenhouse gas emissions
 - Implementing initiatives to remove undue barriers to the use of distributed generation
 - Encouraging more people to use solar water heating
 - Providing greater regulatory certainty and boosting research on low emissions technologies
 - Exploring the potential for the use of climate-friendly energy technologies
 - Considering a voluntary mechanism for consolidated consideration of RMA consent applications for wind and geothermal electricity generation projects
- (iv) Using energy more efficiently
 - Based around better products that use less energy and saving more money; healthy homes (more comfortable with less energy); smarter commercial buildings (more productive work environments); increased energy productivity in industry; sustainable agriculture; efficient freight movement; smart electricity networks
- (v) Sustainable technologies and innovation
 - Establishing working groups to provide strategic leadership in priority energy innovation areas
 - Strengthening capabilities, collaboration and networks around key sustainable energy themes
 - Considering options to create a dynamic environment for energy innovation
 - Establishing a contestable fund to support the deployment of marine-based electricity generation
- (vi) Affordability and wellbeing
 - Assisting low-income households through its energy efficiency initiatives by targeting underlying causes of high spending on electricity
 - Examining options to provide further help for low-income households, including improvements to the current low fixed charge¹³⁵

¹³⁵ Referenced to the document "Powering our Future: Draft New Zealand Energy Strategy to 2050", <http://www.med.govt.nz/upload/43136/draft-energy-strategy.pdf>, Part 2

The NZES was developed in conjunction with the National Energy Efficiency and Conservation Strategy (NEECS)¹³⁶, which was released by the Ministry of Environment in September 2001 and led by the Energy Efficiency and Conservation Authority. The NEECS sets the agenda for government programmes to promote greater energy efficiency, energy conservation and the use of renewable energy across the economy. The strategy focused on two national targets for limiting the levels of greenhouse gas emissions to 1990 levels during the period 2008 to 2012 under the commitment of the Kyoto Protocol ratified by New Zealand in December 2002.¹³⁷ The targets are:

- A 20% improvement in energy efficiency by 2012; and
- Increasing New Zealand's renewable energy supply to provide a further 30 petajoules of consumer energy by 2012.¹³⁸



Kawerau Geothermal power station¹³⁹



Turbine hall for hydropower station¹⁴⁰

¹³⁶ Full document of the NEECS can be found in this link: <http://www.eeca.govt.nz/eeca-library/eeca-reports/neecs/report/national-energy-efficiency-and-conservation-strategy-01.pdf>

¹³⁷ Kyoto Protocol related contexts refer to <http://www.treasury.govt.nz/kyotoliability/> & <http://www.mfe.govt.nz/issues/climate/about/emissions.html>

¹³⁸ Referenced to the web site of the Energy Efficiency and Conservation Authority, <http://www.eeca.govt.nz/about/national-strategy/index.html>

¹³⁹ Source: http://www.mightyriverpower.co.nz/content/588/Kawerau_AEE_9.9.05.pdf Page 1

¹⁴⁰ Source: http://www.mightyriverpower.co.nz/content/588/Kawerau_AEE_9.9.05.pdf Page 30

9.2 Environmental Evaluation/SEA in New Zealand

In New Zealand, SEA is not formally instituted as a separate, dedicated procedure. Rather, its characteristics are reflected in a number of laws and policies. The Resource Management Act (RMA), 1991, is the major environmental statute and emphasises an integrated approach to policy planning and assessment of issues concerning the use of land and resources.¹⁴¹

In 2004, the Government announced a review of the RMA, focusing on ways to improve the quality of decisions and processes whilst not compromising good environmental outcomes or public participation. In August 2005, the Resource Management Amendment Act 2005 was passed, concluding the Government's review of the RMA.

The amendments have improved the operation of the RMA by addressing problems with delays, costs, inconsistencies, uncertainty and national leadership regarding the RMA's processes and in decision making. The amendments focus on five key areas:

- Improving national leadership
- Improving decision making
- Improving local policy and plan making
- Improving certainty for consultation and resource planning
- Improving natural resource allocation¹⁴²

The RMA has been interpreted as a SEA-equivalent statutory instrument for two reasons: (i) the Act requires the preparation of national environmental standards and national and regional policy statements, which give strategic direction to regional and district-level planning; (ii) also, section 32 of the Act requires the consideration of alternatives and analysis of benefits and costs as part of policy or plan-making. While the term "SEA" is not mentioned in the RMA, there is a provision made for the Assessment of Environmental Effects (AEE) in section 88 and the Fourth Schedule of the Act.¹⁴³

The RMA provides for an environmentally-focused, effects-based approach while

- sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations;
- safeguarding the life supporting capacity of air, water, soil and ecosystems; and
- avoiding, remedying or mitigating any adverse effects of activities on the environment.¹⁴⁴

¹⁴¹ More information of the Act can be found at this link,

<http://rangi.knowledge-basket.co.nz/gpacts/public/text/1991/an/069.html>

¹⁴² Referenced to the summary of the Resources Management Amendment Act 2005, <http://www.mfe.govt.nz/publications/rma/rmaa2005-factsheets-aug05/summary/summary.html>

¹⁴³ Strategic Environmental Assessment: A sourcebook and reference guide to international experience, Barry Dalal-Clayton and Barry Sadler, 2004, http://www.ied.org/Gov/spa/documents/SEAbok/Chapter3_Oct04.pdf, section 3.3.9

¹⁴⁴ Refer section 5 of the Act,

<http://rangi.knowledge-basket.co.nz/gpacts/public/text/1991/se/069se5.html>

An assessment of effects on the environment should include

- a description of the proposal;
- where it is likely that an activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity;
- an assessment of the actual or potential effect on the environment of the proposed activity;
- a description of the mitigation measures to be undertaken to help prevent or reduce the actual or potential effect;
- identification of the persons affected by the proposal, the consultation undertaken, if any response to the views of any person consulted;
- where the scale or significance of the activity's effect are such that monitoring is required, a description of how, once the proposal is approved, effects will be monitored and by whom.¹⁴⁵

To conclude, RMA is considered having the same intent and scope of SEA processes which anticipate and address adverse and positive effects on the environment and integrate into the formulation of policy, plan and programme.

¹⁴⁵ Refer Schedule 4 of the Act,
<http://rangi.knowledge-basket.co.nz/gpacts/public/text/1991/sc/069sc32.html>

9.3 Environmental Evaluation/SEA on Energy Policies and Actions in New Zealand

Energy-related policy, plan or programme in New Zealand follows the requirements of the RMA as such adverse and positive effects on the environment should be integrated into the formulation of policy, plan and programme. According to section 5 of the Act, the purpose of the RMA is to promote the sustainable management of natural and physical resources including energy sector.¹⁴⁶ Details of the RMA requirement can be referred to the Section 9.2.

All energy generation projects having environmental impacts are subject to RMA approval. As mentioned, the RMA was amended in 2005 to improve consenting processes and to provide a wider and more flexible range of mechanisms for decision making. The government is developing a National Policy Statement and National Environmental Standards relating to energy generation/transmission under the RMA to improve environmental outcomes.

In view that the RMA promotes the sustainable management of natural and physical resources, the management of electricity and heat generation under the RMA seeks to avoid, remedy and mitigate the associated environmental effects. In 2004, the RMA was amended to include section 7 (j), which states that, in exercising the functions and powers under the Act, all persons shall have regard to the benefits to be derived from the use and development of renewable energy. The merits of national guidance under the RMA for renewable energy will be further considered. In this regard, RMA decision-makers will be provided with more information on the energy sector implications, environmental effects and trade-offs associated with renewable energy projects.

Besides, the RMA can strike a balance between local environmental effects and energy objectives. Consideration is being given to a consolidated consenting process for wind and geothermal projects that would enable a pool of projects to be considered on a consistent basis.¹⁴⁷

¹⁴⁶ Refer section 2 and 5 of the Act,

<http://rangi.knowledge-basket.co.nz/gpacts/public/text/1991/se/069se2.html>

and

<http://rangi.knowledge-basket.co.nz/gpacts/public/text/1991/se/069se5.html>

¹⁴⁷ Referenced to the document "Powering our Future: Draft New Zealand Energy Strategy to 2050", <http://www.med.govt.nz/upload/43136/draft-energy-strategy.pdf>, pages 9, 42, 43, 50, 55

A summary table for the energy policies and actions and SEA status in New Zealand is presented in **Exhibit NZ-1**.

Exhibit NZ-1 Summary of Energy Policies and Actions and SEA Status in New Zealand	
(a) Energy Policies and Actions	
Energy Policies and Actions	<ul style="list-style-type: none"> • Powering our Future: Draft New Zealand Energy Strategy (NZES) to 2050 • National Energy Efficiency and Conservation Strategy (NEECS)
Guidance/Legislations for Energy	N/A
(b) Environmental Evaluations / SEA Status in Energy Policies and Actions	
Type of Assessment	Strategic Environmental Assessment
Requirement Mechanisms	Statutory
Legislation for Environmental Evaluation / SEA	Resource Management Act
Applications	Policies, Plans and Programmes

9.4 Analysis and Conclusions

In New Zealand, there is currently the energy strategy called “Powering our Future: Draft New Zealand Energy Strategy (NZES) to 2050”, which was the first national energy strategy issued by the government. It sets out the national policy direction for a sustainable emissions energy system. The NZES sets out an action plan to achieve the advance sustainable energy policies and goals. The areas cover carbon transport, security of electricity supply, low emissions power and heat, effective usage of energy, sustainable technologies and innovation, and affordability and wellbeing. Regarding the commitment of the Kyoto Protocol, there is another strategy called “The National Energy Efficiency and Conservation Strategy”, which sets the agenda for government programmes to promote greater energy efficiency, energy conservation and the use of renewable energy across the economy.

For the energy situation of Hong Kong, its energy policy objectives are based on the secure supply of energy, and the minimisation of environmental impact in the production and use of energy. There were also actions to promote energy conservation and efficiency, renewable energies and to tackle the global problem of climate change in Hong Kong.

With regard to the Environmental Evaluation/SEA in New Zealand, it is a statutory requirement under the Resource Management Act (RMA) to undertake SEA-equivalent processes that is to conduct environmental assessment for all regional and district policies, plans, and programmes.

In view that sustainable development is one of the focuses in the SEA requirement under the RMA in New Zealand, such concept is similar to the Hong Kong administrative SEA condition with regard to the following: (i) all policy bureaux should carry out Sustainability Impact Assessment for major policy proposals as mentioned in the 1999 Policy Address; and (ii) “Sustainability Assessment” and “Sustainability Implications” should be adopted for major proposals since April 2002.

While New Zealand has an individual SEA legislation for the environmental assessment of plans, programmes and policies (PPPs), Hong Kong has also a statutory system to carry out SEA for certain landuse plans under the EIA Ordinance (EIAO). In order to allow responsible agents or departments to explicitly know under what circumstances they need to conduct SEA and how to conduct SEA, Hong Kong's SEA framework may have a more detailed categorisation for different sectors and specific guidelines for each sector would be essential for reference.

9.5 Examples of Energy Policies/Actions or their Environmental Evaluation/SEA

Example NZ-1 Marsden B Power Station Re-powering Project Assessment of Environmental Effects ¹⁴⁸	
Type of Study	Strategic Environmental Assessment (Carried out in accordance with the Fourth Schedule of the Resource Management Act 1991 (RMA))
Description of Study	<p>The proposal is to re-power the Marsden B power station with a new coal fired boiler up to the maximum capacity of the existing steam turbine generator set, with some potential efficiency improvements up to 300MW.</p> <p>A number of technical reports have been commissioned to describe the processes and technical inputs of the project and to investigate the environmental issues associated with the project. The investigations undertaken have provided a comprehensive understanding of the environmental issues associated with the re-powering of the power station.</p> <p>The assessment includes noise, visual, water and hazardous substances management, ash management, cooling water discharges, ecology, traffic, air discharges and construction issues. For each issue, the potential environmental effects are assessed and related mitigation measures are suggested.</p>
Summary of Alternatives	<p>Alternative methods for discharge of contaminants have been considered as follows:</p> <ul style="list-style-type: none"> ● Three cooling options have been considered including seawater cooling, evaporative cooling towers and air-cooled condensers. ● Two options for particulate removal including electrostatic precipitators and fabric filters ● Three options for removal of sulphur dioxide including seawater flue gas desulphurisation, wet limestone flue gas desulphurisation and atmospheric fluidised bed combustion
Scope of Assessment/ Study	<p>The effects that have been assessed in this study include:</p> <ul style="list-style-type: none"> ● Air discharge effects ● Effects of seawater take and discharges ● Hazardous substances and drainage systems management ● Effects associated with the ash disposal area ● Landscape and visual effects ● Terrestrial and freshwater ecology effects ● Traffic effects ● Noise effects ● Effects related to sites of archaeological significance ● Economic effects ● Construction related effects
Environmental Measures	<p>Below shows some of the mitigations for some environmental aspects.</p> <p>For terrestrial and freshwater ecology effects:</p> <ul style="list-style-type: none"> ● Investigate the merits of formally protecting and covenanting the wetland ● Locally-sourced indigenous species should be used as much as possible in amenity planting <p>For Noise effects:</p> <ul style="list-style-type: none"> ● Controlling the turbine noise by upgrading some of the existing cladding and the existing ventilation to the building <p>For Air Discharge effects:</p>

¹⁴⁸ http://www.mightyriverpower.co.nz/content/447/MRP_AEE_PartB.pdf, pages 10, 11, 34, 50, 73

Example NZ-1 Marsden B Power Station Re-powering Project Assessment of Environmental Effects ¹⁴⁸	
	<ul style="list-style-type: none"> ● Confining or enclosing the source area ● Suppression of dust movement with water ● Creation of barriers between sources and sensitive receptors ● Ensuring good dust management protocols are in place
Outcome of Study	<p>To achieve Government’s stated overall energy policy of ensuring that energy is delivered in an efficient, fair and environmentally sustainable manner, coal-fired generation of electricity such as that proposed with the re-powering of Marsden B, provides long-term security of supply and reduced volatility in electricity prices. The cost of coal-fired electricity generation from Marsden is competitive with the alternatives.</p> <p>In a legal context, the RMA specifically defines sustainable management as encompassing and enabling “people and communities to provide for their social, economic and cultural wellbeing”, and requires “the efficient use and development of natural and physical resources”. The proposed re-powering of the Marsden B power station is consistent with both of these concepts.</p>

Example NZ-2 Kawerau Geothermal Power Station Assessment of Environmental Effects ¹⁴⁹	
Type of Study	Strategic Environmental Assessment (Carried out in accordance with the Fourth Schedule of the Resource Management Act 1991 (RMA))
Description of Study	<p>Mighty River Power proposes to establish a nominal 70MW geothermal power station at Kawerau to provide more than 50% of the electricity demand in the Kawerau region.</p> <p>The location of the proposed power station is on the northern end of land owned by Norske Skog Tasman (NST). The power plant design will be optimised to extract energy from the geothermal fluid within technical and economic constraints.</p> <p>This assessment presents the environmental effects and the corresponding mitigation measures to be adopted for the development of the power station.</p>
Summary of Alternatives	<p>Three basic technology options are considered for the conversion of geothermal energy to electricity and looks to optimise the efficiency of energy conversion within economic limitations:</p> <ul style="list-style-type: none"> ● Condensing steam turbine ● Organic Rankine Cycle (ORC) ● Kalina Cycle <p>Two cooling options include:</p> <ul style="list-style-type: none"> ● Air cooled condenser ● Mechanical draft wet cooling tower
Scope of Assessment/ Study	<p>The effects that have been assessed in this study include:</p> <ul style="list-style-type: none"> ● Effects on Water Resources and Ecological Values ● Surfaces and Groundwater Effects ● Ecological Effects ● Effects on Amenity Values and Traffic

¹⁴⁹ http://www.mightyriverpower.co.nz/content/588/Kawerau_AEE_9.9.05.pdf, page 28, 71, 138

Example NZ-2 Kawerau Geothermal Power Station Assessment of Environmental Effects ¹⁴⁹	
	<ul style="list-style-type: none"> ● Air quality effects ● Noise effects ● Visual and landscape effects ● Traffic effects
Environmental Measures	<p>The mitigation measures for noise effects involve:</p> <ul style="list-style-type: none"> ● specifying in project design documents best practicable option mitigation measures such that all noise sources must achieve a night time design standard of L10 50 dB(A) at a distance of 500 m. ● additional noise attenuation will be offered to the receiver on a case-by-case basis ● thermal insulation is required for the system to limit the operational noise from the production and reinjection pads and the brine/steam pipelines. <p>The mitigation measures for erosion control include:</p> <ul style="list-style-type: none"> ● staging of earthworks to keep the area being exposed to a minimum at all times ● reducing the disturbance to those areas specially required for access or construction during intense rainfall events ● continual monitoring of all erosion and sediment control devices
Outcome of Study	<p>The proposed Kawerau geothermal power station generates a number of environmental and economic outcomes that are consistent with the principles of sustainable management. The proposed power station will not generate any adverse effects on water, ecological values, amenity values and traffic that are more than minor in nature.</p> <p>Economic benefits include reduction on carbon emissions, the avoidance of transmission line losses, and improvement on security of supply for the Kawerau and the eastern Bay of Plenty. This project would avoid around 240,000 tonnes of carbon dioxide annually when compared with the average national grid emission levels.</p> <p>Mighty River Power will continue to undertake on-going environmental monitoring and reporting to increase understanding of behaviour of geothermal systems, to ensure the on-going sustainable management of the project and the protection of the environment.</p>