Integrating sustainability into business practices: a case study approach

NIWA (National Institute of Water & Atmospheric Research)

Facts and figures

<table>
<thead>
<tr>
<th>Type of organisation</th>
<th>Crown Research Institute (New Zealand Government)</th>
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<tbody>
<tr>
<td>Industry</td>
<td>Scientific research and consultancy services</td>
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<tr>
<td>Turnover (2010)</td>
<td>Auckland</td>
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<tr>
<td>Head office</td>
<td>NZ$127.9 million</td>
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<tr>
<td>Operations</td>
<td>NZ, Australia, US</td>
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<tr>
<td>Employees</td>
<td>750 over 12 national centres</td>
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<tr>
<td>No. of travellers p.a</td>
<td>1,400 at any one time</td>
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The National Institute of Water & Atmospheric Research (NIWA) is a New Zealand Crown Research Institute (CRI). It was established in 1992 in accordance with the Crown Research Institutes Act 1992 (the Act) as a stand-alone company with its own Board and executive team. Its two shareholders are the Minister of Finance (50%) and the Minister of Science & Innovation (50%), who require amongst other things a 9% return on equity from each CRI.

The key requirements for a CRI in accordance with Section 5 of the Act include:

- Carrying out research for the benefit of New Zealand
- Pursuing excellence
- Abiding by ethical standards
- Recognising social responsibility
- Operating as a good employer
- Maintaining financial viability, and promoting application of its research and technical outputs
- Producing an Annual Report to be tabled in Parliament.

Strategy and governance

NIWA is currently working through its Vision, Strategic Plans and underlying longer term Science plans to confirm the core ‘responsibility’ commitments and so identify meaningful measures of success. This will enable it to set, track and report on targets and required outcomes. This process is currently in progress for inclusion in the 2011/12 Annual Business Plan for approval by the Ministers.
For 2010/11, NIWA is expecting to report on the core ‘responsibility’ commitments and activities which demonstrate that the NIWA principles are being delivered. For 2010/11, the Ministers have asked NIWA to develop a new PSCI table which more closely ties in with NIWA’s core objectives and strategies. Some existing quantitative targets may be retained, but others may no longer be relevant and new ones may have to be developed. During this transition period, there may be few quantitative KPIs to report against target.

**Awards**

- NIWA has won and/or been a finalist for a number of awards, including:
- 2008 Annual Report Award – Best Governance Reporting by a Crown Research Institute

**Leadership and employee engagement**

There is a demonstrable top down focus on commercial sustainable business practices.

As an example the CEO personally drives Health & Safety (H&S) in the workplace. NIWA staff work in some potentially dangerous places (i.e. Antarctic, deep ocean research) and H&S must be front of mind at all times. The CEO is clear that ‘not hurting people’ is a number 1 priority; but he also knows that excellent H&S performance delivers good economic as well as social returns.

From day one, the CEO instigated a better process for open and honest ‘no blame’ reporting of incidents and accidents. This data allowed for better analysis of the root causes of incidents and the development of sustainable solutions. The CEO undertakes at least two road-shows per year to each location where he reminds staff of the importance of effective H&S practices. This leadership and focus has resulted in a significant improvement in reporting, and a significant reduction in incidents and accidents (Figure 1).
No new project can now be entered into the project management system unless the H&S risks are documented and mitigation strategies developed. All H&S statistics are reported monthly to the Board. Further examples of Board and executive leadership in applying sustainable business decision-making are outlined in the ‘trade-off’ section below.

One NIWA – a framework to drive co-operation and collaboration

NIWA’s mission is to ‘conduct leading environmental science to enable the sustainable management of natural resources for New Zealand and the planet’. It aspires to be, and is, a leading scientific organisation with a highly skilled workforce conducting leading-edge science. The organisation therefore needs an operational model that provides the scientists and research staff with the width to work freely, but structure to be accountable for delivering leading outcomes.

‘One NIWA’ is a strategy to ensure that all managers and staff work for the organisation as a whole, rather than an office, national centre (i.e. a virtual centre for experts in a specific science) or for themselves. NIWA runs a complex matrix program management system, inter-linked with its performance management and finance systems. These systems ensure that the best relevant skills are scheduled and involved in multiple projects at any one time. Some projects will be centred on the scientists’ own areas of expertise; others will require them to contribute to research and consultancies in other areas i.e. an Oceans specialist working on a Fisheries project. This framework removes silos and individualistic behaviours, and focuses skills on the scientific question being investigated. It drives co-operation and collaboration towards the required outcome.
Embedding sustainability principles into each office and program

‘NIWA commits to being an excellent corporate citizen and leading business in the wider community on the long term sustainable use of the environment.’

NIWA has a central Manager Environmental Responsibility who reports to the General Manager Operations and is responsible for establishing NIWA’s top-down sustainability objectives and required outcomes. Environmental Responsibility Committees (ERCs) chaired by each Regional Manager (local operations manager), and including local finance and scientific staff, provide ideas and inputs to the Manager Environmental Responsibility (bottom-up). The ERCs drive sustainable business practices at both the operational and scientific level, and develop and pilot new ideas prior to national roll-out. Examples of such programs include solid waste reduction (more than 80% diverted), GHG and energy reduction initiatives (i.e. use of hybrid vehicles), and self-sustaining energy pilots (i.e. photovoltaic panels and wind generator pilots being tested at specific offices).

NIWA also has a number of overarching practices and policies including an Animal Ethics Committee to set policies approve and monitor projects involving animals. NIWA has a policy not to use genetically modified organisms/ products in any experiments. NIWA also has a policy not to provide an endorsement of any product, even if tested by NIWA, which assist in maintaining NIWA’s scientific objectivity.

Adopting over-arching policies to set the boundaries and engaging local managers and staff to contribute to and implement the sustainable business strategy are seen as critical in ensuring that sustainable business decisions are made at all levels of the organization.

Managing ‘trade-offs’ in order to achieve overarching strategy and objectives

Capital expenditure

NIWA embarked on a three year NZ$60 million capital expenditure program to refurbish their vessels, upgrade their high performance computing capability and purchase latest equipment to ensure their leading scientists had the best tools to work with. This program was completed in December 2010 despite the GFC and a number of difficult sustainability trade-off considerations. The program was considered essential to ensuring the delivery of leading science for the long term benefit of New Zealand.

NIWA has recently purchased and implemented the largest IBM super-computer in the southern hemisphere at a cost of NZ$12.7m. This acquisition included a number of critical commercial sustainability ‘trade-off’ decisions.

In its tender NIWA specifically requested each vendor to outline the energy consumption of their solution, whether the equipment could be water-cooled, and what would happen in scrapping or recycling their existing computer.

The winning solution actually increases NIWA’s IT energy consumption from some [60 to 400+ KwH per annum], a significant increase in the organisation’s total energy usage. However, the new computer is 100 times more powerful and will be part of NIWA’s super-computing solution for the next 6-8 years, especially in the area of hazard modelling (e.g. forecasting floods, droughts, storm surge and other weather-related hazards in specific areas). It will also provide new revenue opportunities, and in fact it is already being used by other research organisations from Australia and New Zealand.

In the end, NIWA concluded that the scientific benefits for NZ, and potentially the social ones if they could better predict and so prepare communities for extreme weather events, far outweighed the relatively small environmental cost through increased energy use.

Another trade-off related to the water cooling solution. Only the winning vendor had installed water-cooling before. NIWA was looking for very-low impact water-cooling, but as the vendor started to design the water solution, the actual complexity and cost increased significantly. In the end, the vendor could build the water-cooling but at an estimated double the cost, and could not provide a guarantee that the end solution would
meet NIWA’s specifications. Although NIWA was keen to use water-cooling, there had to be a commercial trade-off as the costs and potential risks of failure were too great.

**Social trade-off**

NIWA entered into a Government contract to lead an independent scoping study of options to improving the health and wellbeing of one of New Zealand’s major rivers (the Waikato).

This collaborative project required the integration of matauranga Maori (Maori environmental knowledge) with Western science. The project team undertook qualitative research to elicit and analyse cultural values, beliefs and practices and so develop tools to transform ‘narratives’ into descriptors that could be measured and compared with other scientific methods of assessment.

However, early in the project the Board and executive were made aware of a likely significant cost over-run. A conscious ‘trade-off’ decision was made that this project needed to be completed as it was both in the national interest and especially in supporting the Maori culture, heritage and understanding of water management. The study was unique in that it incorporates indigenous knowledge in a catchment-scale assessment of a river system and has been developed for a decision making body on which indigenous and non-indigenous people have an equal say. It was also nationally significant because it forms part of the first co-management agreement established between Iwi (Maori tribes) and the Crown. Cost was tightly managed, and the project was successfully completed delivering a cost/benefit analysis to the Government of actions required to restore the river system to meet Maori and wider community aspirations.

**Business development trade-offs**

NIWA have been researching aquaculture and specifically the farming of hapuku (groper) and other fin fish using selective breeding methods. This program was specifically aimed at enabling NZ to continue to export quality fin fish, whilst protecting the natural ocean stocks. This is a truly commercial environmental and social program. The farmed hapuku have passed quality tests and considerable work is being done with leading NZ, Australian and European chefs on ensuring the product meets market needs.

At this stage of a program, NIWA usually works with the Government (for any policy requirements) and business to commercialise the venture, but NIWA considers it could take another 18 months or so for the science to mature sufficiently for commercialisation. Therefore NIWA considers this program meets its core commitments, and will benefit NZ from a SEE perspective in future years, they will continue to in part internally fund this program in the meantime.

**Resources and alliances**

NIWA’s scientists aim to ‘take users to the end of their horizons, and then beyond’. In order to do this successfully and sustainably, they need to work well internally, on key projects and share their skills and experience as discussed above, as well as with other CRIs and globally re-known universities and research institutes.

For example, NIWA has a 50% joint venture with Geological Risk Limited in Riskscape NZ to further develop and use the Regional RiskScape Model, a support tool for decision makers which simulates regional natural hazard events and predicts and estimates the likely damage in dollars and casualties. In addition, NIWA has also collaborated with meteorology offices in the UK, Australia, Canada and the USA in developing models to better predict hazard events.

NIWA sees collaboration as beneficial in not only developing better solutions to core scientific questions, but also in the development of its people. Despite the GHG implications of air travel, NIWA sends its scientists to work with research centres overseas. This program allows NIWA scientists to build and be part of...
Developing a more sustainable and ethical supply chain

NIWA had a policy of buying goods and services locally at each office – with a view of supporting local communities. In 2008, they engaged a central Strategic Procurement & Asset Manager to develop and implement a sustainable purchasing and ethical supply policy.

Procurement policies were established around value for money, a preference for NZ products and suppliers and environmental responsibility. NIWA also reduced the number of suppliers and cost by negotiating national agreements for travel, vehicles etc. This has saved money, but at a loss of support for local businesses. The procurement process is continuously re-reviewed to maintain the financial benefits realised, but to also find ways to re-engage and support local communities. NIWA has reintroduced some local purchasing on a case-by-case basis.

Accounting and integrated reporting

The science community is well informed in general, and so environmentally concerned and socially conscious. It is not difficult to convince scientific staff of the importance of sustainable business practices. However, the regional and HO finance staff still have an important role in measuring and reporting energy, water and other performance KPIs, as well as in ensuring procurement decisions are in accordance with policy and sustainable.

Finance has been closely involved in the preparation of Annual Reports in accordance with the CRI Act requirements, and recent discussions about how best to improve it going forward.

NIWA has achieved many of the targets they set themselves for energy, water, waste and GHG. For example, they cut the fuel usage of the research vessels by 30% by reducing cruising speeds by 2 knots; however, to reduce speed further would have significant impacts on the amount of research work the vessels could undertake. Therefore although these areas will continue to be managed, and monitored, they are not likely to be given as much future emphasis as key indicators of NIWA’s performance against its commitments in the Annual Report.

NIWA has got its house in order, and now wants to manage, monitor and report on its responsibility commitments across its core scientific programs. Internal discussions are underway but it is likely that NIWA will report in future on its compliance with key legislation and internal policy – aiming for zero breaches. It will also focus on the GHG implications of specific scientific programs and areas where there might still be commercially sensible reduction opportunities (i.e. the super-computer).

Finally, NIWA are developing reports on the environmental benefits of the science undertaken and the outcomes achieved. Measurement of performance and achievement of goals in this area will be complex. It is challenging to demonstrate how a scientific research programme has contributed to, for example, “increasing economic growth through the sustainable management and use of aquatic resources” (part of the new Government-prescribed ‘core purpose’ of NIWA). Initially, the report may have to rely mainly on qualitative assessments of each program’s success. This is still work in progress. Until such measures are developed, NIWA will report on actions taken against each commitment. Overall, NIWA does not want to waste effort reporting on trivial matters, and is aiming to demonstrate meaningful ‘returns on effort’ in future responsibility reports.

In order to comply with the Act, NIWA prepares a detailed Annual Business Plan for approval by the Ministers each year, and then reports in their Annual Report against pre-set targets in the Performance against Statement of Corporate Intent (PSCI table).

NIWA has also included additional information in recent Annual Reports to demonstrate the sustainability of its performance including a financial summary, sustainability report, as well as the PSCI table. In recent
years, it has wanted to shift from ‘tick box’ reporting of numerous indicators to a more strategically-focused approach.

For 2007/8, NIWA produced a ‘quadruple bottom line report using guidelines and indicators from the international standard (GRI-G3) for performance against the GRI environmental, labour, and social/cultural indicators.’ Although this report won awards, it took considerable effort and cost to develop and in the view of the Board and executive did not clearly demonstrate performance against NIWA’s central strategy as New Zealand’s leading environmental science research centre.

The 2008/9 report included a simplified sustainability report, providing a narrative under each of the GRI four ‘pillars’ with GRI G3 indicators published on-line.

In 2009/10, the ‘sustainability report has been replaced by an ‘organisational responsibility statement’ which sets out ‘a set of guiding principles that cover our social, economic, and environmental (SEE) responsibilities’. The report sets out commitments in each area, but with limited performance reporting.

This is stage 1 of a deliberate transition to what NIWA believes will be more meaningful reporting on how SEE considerations are embedded into all their core scientific and operational decisions and activities. They have deliberately focused on the organisation’s ‘responsibility’ in delivering leading science for the benefit of NZ and the world. NIWA’s work focuses on the broad context to include social, cultural and economic aspects of sustainability.

The role of IT

NIWA has an integrated Oracle system with three core platforms – project management, performance management and finance. The system is key to establishing and managing programs and underlying projects (1400 in progress at any one time), scheduling and managing resources and monitoring cost and revenues. It is fundamental to the One NIWA policy.

The system is also used to identify and then enable project teams to manage SEE project risks, as noted earlier for H&S. There is also a capability in the program management systems to capture IP for further commercialisation.

At this stage, GHG data and other environmental KPIs are captured from invoices and other records and entered on spreadsheets. There is a program to automate energy usage data capture, but further automation of key KPI information will be considered once the revised commitments-based reporting structure is developed.
Lessons learned

The main lessons learned from the NIWA experience in embedding sustainable business practices are summarised below.

Strategy & governance
- Establish a vision, mission and values to take sustainable business practices into account (whether embedded in legislation or not)
- Agree SEE priorities with the Board, and include them in CEO and executive annual plans, so that they are cascaded throughout the organisation
- Be aware of sustainable ‘trade-offs’ that may need to be made
- Understand the organisation’s business drivers, and the relationships between them in order to determine the appropriate KPIs or outcome requirements
- Tailor key KPIs and qualitative outcomes (in a template framework) to ensure they are relevant and material to measure/demonstrate performance against your overall strategy and vision (i.e. especially social performance measures)
- Establish a process to revisit the key KPIs and qualitative outcomes, as the strategic plan and vision changes over time, to ensure they are still material and relevant, and update them where appropriate.

Leadership & employee engagement
- Ensure clear leadership from the top, but include employees at all levels in ideas generation and implementation.
- Encourage and reward collaboration internally and with respected external parties.
- Ensure that SEE achievers at all levels are recognised.
- Allow for occasions when things must be undertaken because ‘they are the right thing to do’.
- Establish a no-blame culture for reporting incidents and ‘near misses’.
- Set aspirational goals with a short and longer term focus – including ‘zero’ if achievable; then measure and report on performance against targets/milestones
- Ensure that social and environmental achievers at all levels in the organisation are recognised, as well as the economic achievers
- Allow for occasions when things must be undertaken, because ‘they are the right thing to do’.
- Be transparent in what you report, but be prepared to say ‘No’
- ‘Get your house in order’ and realise the opportunities of driving cost-effective projects to reduce energy, water, waste and GHG levels; but there will be a tipping point when the focus must switch to driving more complex sustainable behaviours, activities and outcomes
- Establish a ‘no blame’ culture for reporting incidents and ‘near misses’ (OH&S, environmental, ethical, social), as well as clear ‘whistle-blower’ and staff support processes.

**Resources & alliances**
- Collaborate and seek open-source solutions for innovation that will expand the market.

**Accounting and integrated reporting**
- Allow for evolution of sustainability reporting over time, and ensure the focus is always on demonstrating sustainable performance against the organisation’s strategy
- Establish capex and investment policies and business cases, including a requirement to formally assess the social and environmental, as well as economic, implications of a proposed transaction
- Work with the CFO and their department to identify, define, document and collect key KPI and outcomes information
- Ensure the organisation has strong IP and knowledge management systems, processes and controls for own-use innovation.