Energy Library update
February 2006

We're very pleased to announce the launch of our new website www.energylibrary.org.nz. It does all the same tricks as the old site, but better! From this site you can search our catalogue, request specific books and papers, as well as ask for help finding information on a topic. You can also check your record and see what you have out. If you or your colleagues need help with accessing the online catalogue through the website, please contact us and we'll be very happy to help. It's a great tool and one we hope is useful to our members.

The following is a list of books, journals and journal articles recently received by the Energy Library, as well as free web resources of interest to those working in the energy sector.

If you would like to receive any of these resources please email library@energylibrary.org.nz quoting the title of the item. Charging depends on the agreement your organisation has with the library.

To take your name of the distribution list for this alert please reply to this email with "Unsubscribe" in the message header.

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Featured Energy Library Journal

Environmental Finance

Environmental Finance is a monthly magazine covering the ever-increasing impact of environmental issues on the lending, insurance, investment and trading decisions affecting industry. It is the only global publication dedicated to this fast-changing area.

Every month in **Environmental Finance** industry specialists and journalists provide news and analysis on a broad range of environmental issues including weather risk management, renewable energy certificates, emissions markets and "green" investments. The magazine also features a data file of key prices, deals, and indexes, as well as profiles of companies and individuals, the latest people moves, and news and analysis of the biggest environmental stories affecting finance professionals.

An online archive allows you to browse the contents page of past issues.

Environmental Finance is available on circulation and abstracts can be emailed to you as they are published.

Books, standards and reports

Benmore, Lloyd Jones, Cycoda, 2005
The construction of Benmore marked a high point in New Zealand's "golden age" of hydro power development". This mainly pictorial text produced by Meridian Energy also records many historical accounts of the people who were connected to the biggest earth dam in the Southern Hemisphere.

Lessons from liberalised electricity markets, International Energy Agency (IEA), Paris, 2005
After a decade or more of experiences in reforming electricity markets in several pioneer regions, some important lessons can now be drawn. This book gives an assessment of these developments, focusing on the issues that are critical for successful electricity market liberalisation. One lesson is that it is a long process which requires strong on-going government involvement and commitment.

Energy in Australia 2005, Australian Government Department of Industry, Tourism and Resources, Canberra, 2005
Follows on from the 2004 White Paper 'Securing Australia's Energy Future' and gives facts and information on Australia's energy sector, from production to consumption.

Wind Farms and Landscape Values: Stage One Final Report - Identifying Issues, AusWEA and National Trust, Canberra, 2005.
In March 2004, AusWEA and the Australian Council of National Trusts embarked on a landmark joint project to develop mutually agreed methodologies for landscape assessment. The first stage of the project has been published as a report which identifies key landscape issues and commits the partners to find national strategies to address them. The aims of this three-stage project are to ensure that valued Australian landscapes are protected while enabling wind farming development to occur within an agreed national framework, and to find creative solutions to landscape assessment issues and sustainable energy development, in the context of society's evolving understanding of landscape values and concern about long-term climate protection.

Wharehika – Hicks Bay Renewable Energy Survey – and study of the options, Phil Murray and Ralph Sims, Massey University Centre for Energy Research, November 2005
This report documents a study of the renewable energy options for the Wharehika – Hicks Bay region based on an estimated electricity load and monitored renewable energy resource data from 2004. This data was obtained form Eastland Networks and NIWA. A comparison between outputs of combinations of renewable energy technologies was made.

IEC 61400-1: 2005. Wind turbines Part 1: Safety requirements, Geneva, IEC, 2005
Specifies essential design requirements to ensure the engineering integrity of wind turbines. Provides an appropriate level of protection against damage from all hazards during the planned lifetime. Is concerned with all subsystems of wind turbines such as control and protection mechanisms, internal electrical systems, mechanical systems and support structures. Applies to wind turbines of all sizes.

AS 4343:2005. Pressure equipment: Hazard levels, Australia, 2005
This standard is intended to be used in the design, manufacture, inspection, conformity assessment, use and ultimate disposal of pressure equipment.

Experimental and Simulated Performance of Commercially available Solar and Heat-pump Water Heaters in New Zealand, S.E. Thomas and C.R. (Bob) Lloyd, Solar2005 – ANZSES 2005.

New Zealand is currently trying to increase the penetration of solar hot water heaters in domestic applications. As part of a NZ government study to investigate energy efficiency in domestic housing we have been testing a selection of energy efficient hot water systems. The systems include a heat-pump system, a flat plate thermosyphon system, a flat plate pumped circulation system and an evacuated tube system. The systems have been monitored for performance in Dunedin for a 12 month period.

Journal articles

Methane emissions from terrestrial plants under aerobic conditions, Keppler F, Hamilton JT, Brass M, Rockmann T., Nature. 2006 Jan 12; 439(7073):187-91.
(To receive a copy of this article email library@energylibrary.org.nz)

Nuclear Fission: Continuing evolution of a future generation, Stuart Dagnall, New Civil Engineer, December 2005
This paper reviews the current state of the UK nuclear power industry and reports on the new generation nuclear power station design.
(To receive a copy of this article email library@energylibrary.org.nz)

Nuclear fusion power: A bright long term future, Chris Llewellyn Smith and David Ward**,** New Civil Engineer, December 2005
This paper summarises the basics of nuclear fusion, describes the present state of technology development and outlines the steps needed to develop fusion power as a commercial reality.
(To receive a copy of this article email library@energylibrary.org.nz)

The role of regulation in strategy, Beardsley, Scott C., Bugrov, Denis, Enriquez, Luis, McKinsey Quarterly, Issue 4, 2005
(To receive a copy of this article email library@energylibrary.org.nz)

Societal lifecycle costs of cars with alternative fuels/engines, Ogden, J.M., Williams, R.H., Larson, E.D., (2004) *Energy Policy,* 32 (1), Pages 7-27.
(To receive a copy of this article email library@energylibrary.org.nz)

Special Report – Outlook for Natural Gas, various authors**,** Energy Risk, December 2005. p
This special report looks at predicting natural gas demand, hedging by industrial gas users and natural gas prepayment deals.
(To receive a copy of this article email library@energylibrary.org.nz)

When birds and power lines collide, Raji Sundararajan and Ravi Gorur, Transmission and Distribution World, December 2005 p 18-26
(This article is available online or from the Energy Library – the online version doesn't have diagrams or images.)

Every home should have one, Mick Hamer, New Scientist, 21 January 2006, p 36-39

This recent New Scientist article discusses the potential of microgeneration – small scale energy generation. It looks at how much power microgeneration can contribute and what technical issues still need to be solved.
(To receive a copy of this article email library@energylibrary.org.nz)

What global executives think about growth and risk, Carden, Steven D., McKinsey Quarterly; 2005 Issue 2, p 16-25
(To receive a copy of this article email library@energylibrary.org.nz)

What executives should remember, Drucker, Peter F., Harvard Business Review; February 2006, Vol. 84 Issue 2, p 144-152

Web resources

New Zealand

The Commerce Commission released on 31 January their reasons for intending to declare control of the electricity transmission services supplied by Transpower New Zealand Limited, the owner and operator of the national grid. The press release is on the ComCom site.

Transpower has confirmed the alignment for the overhead section of its proposed new 400 kV transmission line between Otahuhu and Whakamaru. Proceeding with the new transmission line is subject to Electricity Commission approval. Ahead of that decision, Transpower has been advised by the Government it can continue with the necessary processes to secure a route. More information about the grid upgrade, including a detailed map can be found on the National Grid Upgrade site.

Statistics New Zealand has released statistics on energy natural resource accounts. Households are the biggest energy "consumer", using over a quarter of the nation's electricity and other energy. Statistics New Zealand Energy, Economy and Emissions figures for 1997 to 2003 show consumer demand increased 15 per cent, with carbon dioxide emissions - usually a by-product of burning fossil fuels - jumping 21 per cent.

The Electricity Commission's environmental performance in the year to June 2005 is under the spotlight with the first full assessment by the Parliamentary Commission for the Environment now underway. The PCE has powers to investigate a wide range of environmental matters. This report will not only follow up on recommendations from the previous review, but will also examine other environmental issues in the electricity sector. The first report is available on the PCE site.

The Carbon Tax decision came out before Christmas. The Price Waterhouse Coopers report Carbon Tax Impact on New Zealand Enterprise is available online, as is the Review of New Zealand's Climate Change Policies conducted by a cross-departmental team involving representatives from the Treasury, Ministry for Economic Development, Ministry of Agriculture and Forestry, Ministry of Transport and the Ministry for the Environment. The Review was commissioned by Cabinet and the review team assembled by the Ministry for the Environment.

The Ministry of Economic Development Reference Group Draft Report: The Merits and Potential Scope of National Guidance on the Management of Electricity Transmission under the RMA (November 2005) has now been released for public consultation
The report:

- Develops an outline of what an NPS on electricity transmission could and could not cover;
- Considers whether an NPS on electricity transmission is likely to be beneficial; and
- Scopes related national environmental standards.

Comments are welcomed on the reference group's draft report. Following consideration of comments, the reference group will finalise its report and make recommendations to Ministers.

Electricity Networks Association (ENA) has a useful map of lines companies as well as information about shareholders, previous owners and names that the company has operated under.

The NZ Council on Infrastructure report The road less traveled: Investing in New Zealand's infrastructure criticised the levels of infrastructure investment and lack of government direction on the national transmission upgrade.

The National Power New Zealand Conference 2006 will address rising challenges in power demand and supply. Attendees will hear about projects involving the leading generators, distributors, transmitters, wholesalers, retailers, as well as coal and gas suppliers and renewable energy companies.

International

Technological development and economic growth Asia Pacific Partnership on Clean Development and Climate**,** (ABARE Research Report 06.1)
The results of this study indicate that widespread adoption of advanced, energy efficient technologies among partnership economies could potentially reduce the overall importance, in the medium to long term, of oil, coal and gas in energy consumption and the electricity fuel mix, while increasing the importance of nuclear power and non-hydro renewables. For example, by 2050, oil consumption in partnership economies could be 23–24 per cent lower than would otherwise have been the case, through the adoption of more energy efficient technologies. Such a change could make a big contribution toward further energy security.

Other ABARE reports can be downloaded at http://abareonlineshop.com/

Large-scale integration of wind energy in electricity systems. A report published by the European Wind Energy Association (EWEA) provides analysis of the technical, economic and regulatory issues concerning the large scale integration of wind energy into European energy markets. The European Commission has concluded that current electricity markets are not competitive for four main reasons: lack of cross-border transmission links; existence of dominant, integrated power companies; biased grid operators; low liquidity in wholesale electricity markets. These four barriers are also the main institutional and structural deficiencies preventing new technologies such as wind power to enter the market.

On 23 January the consultation document "Our Energy Challenge: securing clean, affordable energy for the long term" was launched by the UK government. The consultation has a broad scope and considers all aspects of the energy system including both energy supply and demand. It sets out current energy challenges, and invites responses to the evidence presented and to what should be done to secure clean, affordable energy for the long term.

Amory Lovins of the Rocky Mountain Institute documents in Nuclear Power: Economics and Climate-Protection Potential a dramatic and little-known development: worldwide, efficient use of electricity plus decentralized low- or no-carbon electric generation are already at least twice as big as nuclear power and growing an order of magnitude faster, simply because they cost far less. New nuclear plants not only can't compete with central coal and gas plants, but also can't compete by hopelessly wide margins with these cheaper decentralized alternatives. Nuclear investments would only reduce and retard the reduction of carbon dioxide emissions, because they'd save far less carbon per dollar and provide less new electricity per year. These differences, once hypothetical, are now richly confirmed by actual market behaviour. The findings are covered in a December 2005 Nuclear Engineering article - Mighty Mice .

Building Integrated Cooling, Heat & Power For Cost-Effective Carbon Mitigation. 2005 Status and Prospects for Canada, China, India and the USA
This WADE research report set out to explore the potential for the cost-effective development of carbon saving building-based cooling, heat and power (BCHP) systems in the US, Canada, China and India. These high efficiency systems, that deliver electricity, heat and/or cooling, are already applied widely in many parts of the world, but there is scope for greater use in most countries. WADE's research indicates that BCHP expansion can not only make a major contribution to carbon emission reduction in the power sector, but can also deliver cost savings in energy generation and supply. If the various institutional and regulatory barriers to BCHP that exist in most countries today could be eliminated, then the full cost-saving potential of BCHP could be achieved in a relatively short period of time.

The UK Renewables Innovation Review is available online and was undertaken to:

- identify the key renewable technologies for the delivery of UK targets and aspirations, for the delivery of the UK's wider carbon reduction aspirations, and for the creation of economic benefits for the UK
- identify the barriers to the development and deployment of key renewable technologies
- understand better the innovation process in key renewable energy sectors and
- identify the most cost-effective government measures to facilitate the delivery of UK targets.

The Carbon Trust & DTI Renewables Network Impacts Study
This study was commissioned by the Carbon Trust and the DTI in June 2003 on behalf of the DTI's Renewables Advisory Board to assess the ability of the electricity networks to accommodate the Government's target to have 10% of electricity generated from renewable energy sources by 2010 and its aspiration to double that percentage by 2020.
The study is based on actual planned renewable generation projects and developers' business plans. Some scenario development was undertaken to show plausible ways in which the gap could be bridged in order to achieve the Government's 2010 target and its 2020 aspiration. The issues this raises for the development of the transmission and distribution systems are described below.

Managing unilateral market power in electricity**.** World Bank policy research working paper, 2005.
This paper argues that the technology of electricity production and remnants of the former monopoly regime imply that conventional competition policy must be augmented with an industry-specific regulator endowed with a pre-specified set of responsibilities. This combination of regulatory oversight and competition law will provide consumers with the same level of market power protection they receive for other products from conventional competition law.

Lessons from international experience with electricity market monitoring**.** World Bank policy research working paper
This paper provides examples of both the successes and failures of market monitoring from several international markets. More than ten years of experience with the electricity industry re-structuring process has demonstrated that market failures are more likely and substantially more harmful to consumers than other market failures because of how electricity is produced and delivered and the crucial role it plays in the modern economy.

Food for thought

Power supplies feel the heat
An article published in the Dominion Post on 30 December 2005 discussed issues facing the electricity industry this year.

Faith Popcorn's 2006 trends … not to be taken too seriously! Perhaps more useful is the McKinsey Quarterly 'Ten trends to watch in 2006' highlights macroeconomic factors, environmental and social issues, and business and industry developments will all profoundly shape the corporate landscape in the coming years. (This is currently only available via a free web registration but looked interesting enough to include.)

Managing social pressure. As many as 70 per cent of managers believe there is room for improvement in the way large companies anticipate social pressure and criticism, according to a survey to be published soon in the McKinsey Quarterly. Only 3 per cent of the 4,238 executives questioned in 116 countries think companies in their sector are doing a good job of this. Big companies appear to be focusing on the wrong tactics, says Lenny Mendonca, a senior partner at McKinsey, who led the online survey of subscribers to the journal. Executives say the tactics most often used are public relations, lobbying of government and regulators, and speeches and other public activities on corporate responsibility by the chief executive.

The Eurobarometer survey was carried out via face-to-face interviews with 29,430 people in October and November 2005. The survey covers all 25 EU member countries, Bulgaria, Croatia, Romania, Turkey and Northern Cyprus. Close to 80% of EU citizens back renewable energies as their preferred alternative to high-priced oil and gas imports, according to a public opinion survey. Nuclear power scores poorly with 12%. The summary can be found here.

On any given day, the solar energy falling on a typical oilfield in the Middle East is far greater than the energy contained in the oil extracted from it - according to the summary of a report to be published by Cambridge UK analysts CarbonFree. They suggest that an agricultural rather than an industrial model should be used for the harvesting of renewable energy.

Finally, if you're in Wellington, check out the exhibition Qui tutto bene about the Italian community in New Zealand, with its special section on the Turangi tunnellers.