Department of **Employment, Economic Development and Innovation**

Queensland Cleantech Industry Development Strategy 2011–2015





Investing in green jobs for Queenslanders

Toward Tomorrow's Queensland

Queensland Government

Contents

Minister's Foreword

A message from the Minister for Tourism, Manufacturing and Small Business

The Queensland Government has developed a comprehensive, forward-looking industry strategy for cleantech.

Our cleantech industry is already delivering real economic returns to the State. These include thousands of new green jobs. They also include a reduced environmental footprint, both locally and in overseas destinations where Queensland companies are operating.

Queensland's diverse cleantech industry, with its world-class knowledge and skills, generates more than $3.1B annually in revenue, employs over 12,500 people and exports over $125M worth of cleantech products and services annually.

The industry has internationally competitive strengths in sustainable water and wastewater management, green building and environmental services. We also have major opportunities emerging in renewable energy, waste recycling and bio-based industrial products.

Our cleantech firms are dynamic and entrepreneurial with a strong culture of innovation.

The *Queensland Cleantech Industry Development Strategy 2011-2015* has been developed with industry partners. It will help grow the industry further, take advantage of the unprecedented global investment and export opportunities in cleantech and help reinforce Queensland's position as a prosperous and sustainable State in a low-carbon future.

With the measures outlined in the Strategy and with continued high demand for cleantech products and services, we want to help Queensland's cleantech industry to grow by 20 per cent over the next five years, creating 2,500 additional jobs.

Cleantech companies wishing to discuss business opportunities in Queensland, or government support programs, should contact the Department of Employment, Economic Development and Innovation (DEEDI) on telephone 13 25 23 or email cleantech.industry@deedi.qld.gov.au.

The Honourable Jan Jarratt MP
Minister for Tourism, Manufacturing and Small Business

Queensland Cleantech Industry Development Strategy 2011-2015

Investing in green jobs for Queenslanders

The Queensland Government is partnering with business and the community to grow and sustain a leading cleantech industry in Queensland that is:

- highly innovative
- competitive and profitable
- attractive to local and international investors
- transforming the economy through high-value jobs
- enabling the transition to a low-carbon economy
- providing solutions to minimise the impacts of population growth on our environment.

Under this Strategy the Government will:

- work to attract further investment in clean energy, water, resource recovery and recycling, environmental services, green building and sustainable transport
- provide demonstration sites for locally manufactured green building solutions
- help streamline the adoption of new technologies in the emerging resource recovery and recycling sector
- provide an expanded commercialisation program for cleantech start-ups
- aggressively promote Queensland cleantech in overseas markets
- help address regulatory barriers to cleantech uptake
- support regional initiatives to promote cleantech businesses.

A Queensland company is developing systems that enable power stations to monitor and minimise greenhouse gas emissions.

Image courtesy of Synengco.

About this Strategy

The *Queensland Cleantech Industry Development Strategy 2011-2015* is designed to:

- promote the development of Queensland cleantech companies
- increase Queensland cleantech companies' capacity to supply innovative products and services
- provide new employment opportunities for Queenslanders – green jobs
- help Queensland and the global community address the challenges of climate change, water security and other environmental pressures.

This Strategy is the result of extensive industry consultation. It comprises seven theme areas that include actions to develop this important sector and extend its reach as an enabler of better business and environmental outcomes across the economy.

The Strategy has a strong focus on supply-side initiatives to help nurture cleantech company formation and development. It is designed to complement a range of Government policies and targets already in place to help drive demand for cleantech products and solutions in Queensland.

These policies include the Government's *Climate Q* strategy and targets outlined in *Toward Q2: Tomorrow's Queensland*. The *Queensland Cleantech Industry Development Strategy* will contribute to the Toward Q2 targets of:

- increasing by 50 per cent by 2020 the proportion of Queensland businesses undertaking R&D or innovation
- cutting by one-third Queensland's carbon footprint through reduced car and electricity use (measured by emissions from electricity use, fuel consumption and waste to landfill per household).

The Strategy aims to help Queensland's cleantech industry grow its revenue by 20 per cent over the next five years and create an additional 2,500 jobs.

Innovative solar and energy efficient lighting systems are being designed and manufactured on Queensland's Sunshine Coast.

Image courtesy of Exlites.

What is cleantech?

Cleantech is a term used internationally to refer to environmental or green industries.

The Queensland Government uses the following definition of cleantech which has been developed in consultation with the industry:

Cleantech represents a diverse range of innovative technologies, products, services and processes that measure, avoid, reduce or remediate negative environmental impacts.

The cleantech industry covers six sectors:

- **Clean energy**: renewable energy generation, energy efficiency and energy storage technologies
- **Environmental services**: environment and sustainability services, efficient agricultural products, land management services
- **Green building and materials**: planners, designers, builders and suppliers to the green building market, manufacturing/industrial efficiency technologies, products and services, bio-based materials
- **Resource recovery and recycling**: recyclers, solid and liquid collectors, waste management consultants and equipment suppliers
- **Sustainable transport**: environmentally friendly transportation and logistic systems and products: e.g. vehicle emission reduction and fuel efficiency technologies
- **Water and wastewater management**: sustainable water and wastewater handling and treatment, efficiency and recycling equipment, system designers, constructors and operators.

The international cleantech environment

A 2009-10 Ernst & Young survey found that globally almost 80 per cent of large companies (over $1 billion in turnover) had acquired, or might consider acquiring, cleantech enterprises.

The global cleantech industry is large and rapidly growing in developed and developing countries alike. It has become a global force in investment attraction and job creation.

The industry is driven by strong community, government and industry demand for solutions to tackle climate change, water and energy security and other environmental challenges.

It is attracting significant investment as cleantech potentially provides for substantial increases in productivity and efficiency gains within existing businesses.

The global market for environmental products and services was estimated at a massive US$1,370B in 2008 and is predicted to double to US$2,740B by 2020.

International corporations are also investing heavily in cleantech. General Electric, the world's largest diversified manufacturer, has invested more than US$4B in clean technologies since 2005. Toyota, the world's largest investor in R&D, plans to double its output of petrol-electric hybrid cars to one million units in 2011.

Cleantech - an emerging force in Australia

In 2006, Australia's domestic market for cleantech products and services was estimated at $22B, with a growth rate of 7 per cent a year.

The 2008 CSIRO report *Growing the Green Collar Economy* indicated that between 2.6 and 3.3 million green jobs could be created in Australia over the next 20 years if the country moved to a cleaner, low-carbon economy. Up to one million of these jobs could involve using traditional skills in new industries including renewable energy and recycling.

Nationally, Australia's developing cleantech industry has been bolstered by Australian Government support for action on water efficiency and quality, biodiversity loss, land degradation and natural resource management.

A 2010 study suggests that strong action to reduce greenhouse gas emissions would create significant numbers of new jobs in Queensland by 2030.

(National Institute for Economic and Industry Research)

Recent Australian Government policy stimulants for the cleantech industry have centred on developing the nation's renewable energy resources, with a commitment that by 2020, 20 per cent of Australia's energy will be generated through renewable energy.

This will be achieved through the *Enhanced Renewable Energy Target* scheme, which creates a guaranteed market for renewable energy using a mechanism of tradeable renewable energy certificates, and a foreshadowed price on carbon.

Other national initiatives that are helping to drive a national cleantech industry include:

- the *Solar Flagships* program that will see construction of up to four large-scale solar power plants in Australia
- the *Australian Solar Institute* for innovation in solar energy technologies
- the $1B *National Urban Water and Desalination Plan*
- the *Green Skills Agreement* that will deliver green skills in the Australian vocational education and training sector
- $196M for *Commercialisation Australia* to help researchers, entrepreneurs and innovative companies convert ideas into successful commercial ventures.

Queensland's Cleantech Industry at a glance

Over 1200 companies*

- employing over **12,500 people (green jobs)**
- generating over **$3.1B in gross revenue**
- **exporting over $125M** of products and services.

Industry-wide strengths

- strong community, government and industry **demand for cleantech solutions**
- strong **culture of innovation** and entrepreneurship (40 per cent of Queensland cleantech companies undertake R&D)
- significant university **research base with strong industry links**
- major investments in **green skills training**
- substantial Australian and State Government programs supporting **commercialisation**
- growing **export culture**.

Sector strengths

- global leader in sustainable **water and wastewater** solutions
- world-class solutions for **environmental and land management**
- large and increasingly sophisticated **green building** industry
- emerging strengths in **clean energy, resource recovery and recycling, and bio-based industrial products**
- **world-class manufacturing capabilities** in niche sectors.

*Based on industry survey 2009 by Office of Economical and Statistical Research, Queensland Government

Advanced technologies are being used in insulating render and paint products to reduce energy used for heating and cooling buildings.

Image courtesy of Rockcote.

Queensland's Smart Water Research Centre conducts cutting-edge water research in microbiology, environmental toxicology and chemical diagnostics.

Queensland's cleantech industry – highly focused with unique strengths

Queensland is developing a distinctive cleantech industry base which is focused on responding to environmental pressures arising from adverse human impacts on the State's environment.

The State's per capita carbon footprint is more than three times the Organisation for Economic Co-operation and Development average, bound up with past levels of land clearing and high dependence on fossil fuels in one of the world's most biologically diverse yet fragile environments.

The impacts of high population growth, particularly along the coastal zone and in South East Queensland, have added to the State's environmental pressures.

Queensland Government actions have helped stimulate Queensland's cleantech sector.

Through its response to these challenges, Queensland is emerging as a regional leader in the sustainable management of natural resources, traditional industries and urban communities, creating significant investment opportunities in cleantech solutions.

The cleantech industry is also responding vigorously to the challenges of climate change, in recognition that many parts of the Queensland economy will be subject to a carbon price under any future national carbon pollution scheme.

Queensland cleantech has grown significantly over the past five years with growth continuing despite the effects of the global financial crisis (GFC).

The Queensland Government has strongly supported the industry through a broad range of policies and programs.

It is driving the cleantech industry by developing greener building codes, funding major cleantech R&D, focusing its investment attraction and trade activities and stimulating demand for products and services in a range of sectors including clean energy, sustainable water, green building and resource recovery and recycling.

Queensland cleantech industry sectors

Queensland's cleantech industry consists primarily of small-to-medium-sized enterprises (SMEs) with a strong focus on services, although 20 per cent of businesses also manufacture products.

Despite the relatively small size of many of the companies (on a global scale), the industry has world-class capabilities based on many locally developed technologies. The industry has particular strengths in water and wastewater management, environmental services and green building, and emerging strengths in clean energy, resource recovery and recycling, sustainable transport and bio-based industrial products.

Current sector strengths

A globally recognised water industry

The **water and wastewater sector** with 200 companies is a global leader. It has developed, adopted and applied leading-edge solutions to water quality and security in response to Australia's prolonged period of drought in the early-to-mid 2000s and is exporting its technology and services overseas. The sector has also been stimulated by a state-of-the-art regulatory environment for water - including a world-class water entitlement and trading system.

World class environmental services

The **environmental services sector** is a strong and diverse sector with over 200 companies providing market-leading solutions for assessing and managing environmental impacts, managing carbon footprint, biodiversity loss and soil and air quality.

Many of the sector's skilled workforce have been trained and developed by Queensland universities and vocational education organisations which run internationally recognised courses in environmental management and are cleantech enterprises in their own right.

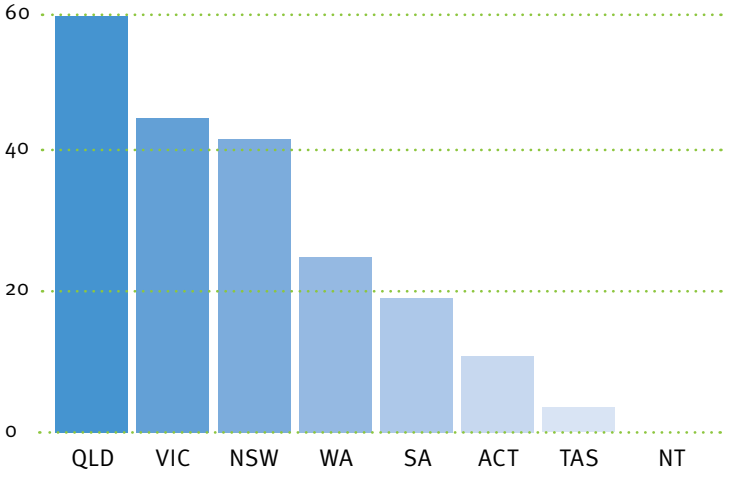
Growcom (Queensland's peak horticultural organisation), in cooperation with the Queensland banana industry, constructed a pilot in-ground digester near Tully for producing biogas from banana waste.

A dynamic green building sector

The **green building sector** is a Queensland success story - rapidly growing (over 130 companies) and increasingly sophisticated, backed by strong consumer demand, State and local government incentives and regulatory standards and an increasingly skilled workforce.

Five of Australia's 10 most environmentally sustainable cities are in Queensland which also has the second largest share of the $21B national green building market (2009 figures).

Green Building Projects by state - Gross Number



Green Building Evolution 2010, Green Building Council of Australia (GBCA)

Queensland Government initiatives which have helped drive Queensland's cleantech industry, directly or indirectly, include:

Clean energy sector

- Household rebate for solar hot water systems or heat pumps
- Net feed in tariff for households which generate surplus electricity from solar
- $60M for solar panels in schools
- $50M for the development and generation of renewable energy generation technologies
- $15M for the Geothermal Energy Centre of Excellence
- $5M to identify regions with new sources of geothermal energy
- $15M towards assisting industry identify impacts of carbon pricing
- $5M for the Townsville Solar City project
- $7M for research into biofuels and biocommodities
- Mandating energy efficiencies in the Government vehicle fleet
- Mandatory energy audits and reporting of possible energy saving actions by large businesses
- Skills strategy for the renewable energy sector.

Water sector

- The *South East Queensland Water Strategy* delivering a Water Supply Guarantee to consumers through demand management and investment in infrastructure
- The $7B SEQ Water Grid and the *Western Corridor Recycled Water Project*, the world's third largest recycling scheme
- World class water entitlement and trading system
- Guidance to businesses on water efficiency.

Green building sector

- Six-star (out of 10) energy efficient ratings for new homes by the end of 2010
- Requiring government agencies to set targets for sustainable purchasing and construction
- Energy-reduction targets of 20 per cent by 2015 for all Government buildings and carbon neutrality by 2020 for Government-owned office buildings
- $8M for retrofitting Government buildings
- Mandating sustainability declarations when selling homes
- $1.4M for boosting vocational skills in the green building industry
- Government-led trade mission to China.

Environmental sciences sector

- $275M for the Brisbane Ecosciences Precinct - a world-class centre of excellence in environmental science research and training
- $35M to address run off into the Great Barrier Reef
- $20M to address the health of South East Queensland waterways
- Mandating impact assessment requirements for environmental protection and pollution.

Sector wide

- $8.5M for supporting innovative technologies promoting energy and water efficiency *(Queensland Sustainable Energy Innovation Fund)*
- $2.5M in rebates for businesses investing in eco-efficiency initiatives through *ecoBiz*
- Promoting uptake and awareness of cleantech through Queensland Water and Energy Sustainable Technologies Network (QWESTNet) forums
- Sponsorship of the Queensland cleantech (environmental) business directory
- Encouraging uptake of eco-friendly ICT solutions by Queensland Government, local government and businesses through *Queensland's ICT Industry Development Strategy*.

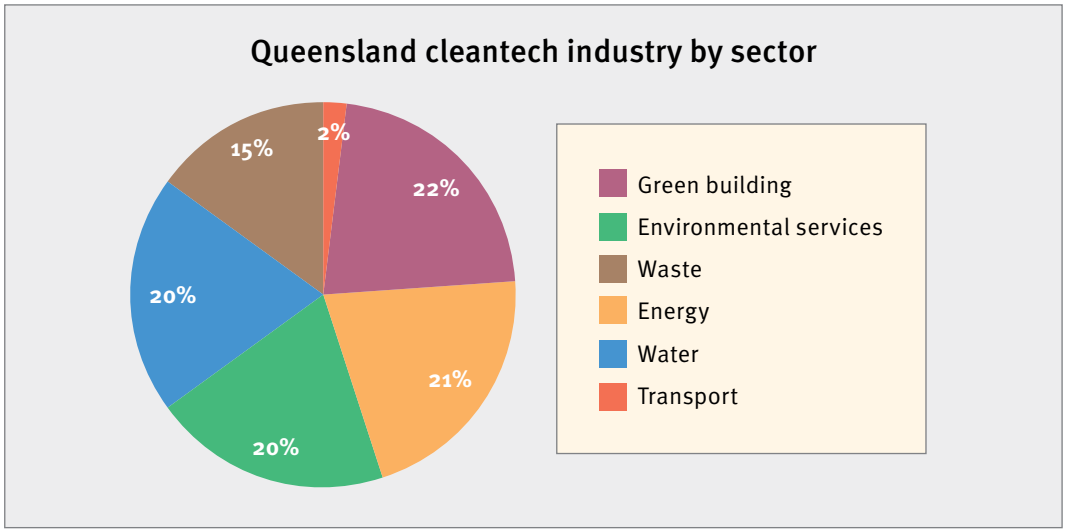
A Queensland company is developing a system that allows online monitoring of a building's energy needs in conjunction with the solar power generated.

Image courtesy of Auzion.

Emerging Queensland cleantech sectors

Queensland has several emerging cleantech sectors offering considerable potential for investment and rapid development, as part of the context for future growth:

- the **clean energy sector**, centred on Queensland's strong R&D and vast renewable energy resources, is aiming to attract $3.5B in investment and 3,500 new jobs in renewable energy by 2020 through the Queensland Renewable Energy Plan (including the Renewable Energy Industry Plan)
- the **resource recovery and recycling sector** is poised to develop under *Queensland's Waste Reduction and Recycling Strategy 2010-2020* which places a price on industrial waste sent to landfill
- strategic opportunities exist to develop cross-sectoral **bio-based industrial products** utilising Queensland's significant biotechnology capacity, feedstock from the State's large and diverse primary industries base and interest from local and overseas manufacturers
- the **sustainable transport sector**, while comprising a small number of firms, has potential to exploit opportunities arising from biofuels.



Future Queensland Government support for the industry

Many cleantech sectors depend on government assistance to help overcome initial establishment costs and market entry barriers, as well as address R&D challenges and the scale-up necessary for manufacturing and product efficiencies.

Overseas, national, state and municipal governments are competing vigorously to establish cleantech industry strategies that will help develop local cleantech businesses and attract large investments.

Queensland cleantech manufacturers, predominantly in niche areas, will receive strong support from the Queensland Government.

Queensland's cleantech industry is positioned differently from the cleantech industry in Asia, Europe and North America where an overwhelming focus is on achieving large-scale manufacturing capability, for example in wind and solar platforms.

Queensland cleantech manufacturers will receive strong support from Queensland Government industry development initiatives under this Strategy. The Government will focus on increasing the concentration of cleantech manufacturers and seek to attract internationally leading companies to establish in Queensland.

However, the majority of Queensland's 1200 cleantech businesses operate in the professional services area and the vast majority (85 per cent) have fewer than 20 employees. It is important that measures to support, encourage and grow these businesses reflect the service and knowledge-intensive orientation of the Queensland cleantech industry. They must also take into account that many cleantech businesses are small or emerging, requiring relatively early-stage development assistance.

Queensland also has relatively mature cleantech businesses looking to grow and expand, some of them in partnership with large corporations and commercial partners. The *Queensland Cleantech Industry Development Strategy* will also support these companies.

This Strategy aims to support Queensland's cleantech industry to grow its revenue by 20 per cent over the next five years and create 2,500 additional jobs. It will build on our existing cleantech strengths such as green building and capitalise on emerging strengths such as resource recovery and recycling.

It will take advantage of the unprecedented global investment and export opportunities in cleantech, create even more green jobs, and help position Queensland as a prosperous and sustainable State as it transitions toward a low-carbon future.

Theme one: Promoting Queensland cleantech solutions for a low-carbon world

The Government will help promote Queensland's green businesses as a global source of clean and smart solutions in a range of key industry sectors and as a major driver of new jobs.

Climate change and cleantech present long-term opportunities for business growth and the generation of new green jobs. The rise of a significant Queensland cleantech industry base is testament to these opportunities.

Despite uncertainties in international policy directions following the 2009 UN Climate Change Conference, combating and responding to climate change, and other environmental imperatives like water security, remain top priorities for communities and for industry globally. Economies which take decisive measures to invest in smart and sustainable cleantech solutions are likely to gain significant competitive advantage.

The Government will continue its regional leadership in promoting cleantech solutions to environmental challenges and job creation. It will work closely with industry associations to aggressively promote Queensland's green businesses as a global source of clean and smart solutions in a range of key industry sectors and as a major driver of new jobs.

A particular focus will be on working with industry to help rebrand Queensland green businesses as cleantech, given that cleantech has broad international recognition.

Actions

1. Further profile and market Queensland's cleantech industry as a leading source of smart and sustainable solutions for tackling climate change and other global environmental pressures such as water security.
2. Maintain and expand the Government sponsored directory of Queensland cleantech businesses and increase awareness of the directory in business and customer settings.
3. Assist Queensland cleantech firms export overseas by identifying the export capabilities of Queensland suppliers, providing export assistance and international business matching, and leading inbound and outbound trade missions with a specific focus on cleantech.
4. Resurvey the Queensland cleantech industry every two years to chart industry growth and provide a base for industry development planning.

Theme two: Building on strategic investments

The Government will build on smart investments already made in geothermal energy, solar energy, water, energy management, and green building to further catalyse innovation across the cleantech industry.

Queensland has had huge success in developing new industries and high value jobs centred on knowledge and innovation. This has been achieved through a set of smart and sustained investments in ICT and biotechnology research and innovation, education and workforce training and manufacturing.

The cleantech strategy will build on smart investments already made in geothermal energy, solar energy, water, energy management and green building to further catalyse innovation and entrepreneurship across the cleantech industry.

An initial focus will be on investing in research and development to support Queensland's expanding resource recovery and recycling industry under *Queensland's Waste Reduction and Recycling Strategy 2010-2020*.

The waste strategy proposes that an industry levy be placed on waste sent to landfill that will provide a powerful stimulus to the recycling industry, waste to energy streams and related manufacturing fields in Queensland.

Actions

5. Undertake a study in partnership with industry stakeholders to identify areas where future investments in R&D and/or demonstration projects may be required to support the emerging resource recovery and recycling industry in Queensland. (Note: this action will be undertaken in conjunction with Action 9.)
6. Assist cleantech manufacturing firms adopt world-class, sustainable practices and processes through initiatives such as the Queensland Government's *sustainable manufacturing toolbox* and ecoBiz.

Build your business capacity with the Cleantech Enterprise Pipeline2 (CEP2)

The Queensland Government is offering a dynamic program to assist local cleantech firms build their business capacity.

The *Cleantech Enterprise Pipeline2 (CEP2)* helps firms achieve:

- export readiness
- procurement readiness
- innovation success
- investment success.

Networking is a regular feature of this program.

To find out more go to **cleantech.industry.qld.gov.au**

Queensland materials recycling facilities are using manual, optical/ airjet and electric current methods to achieve world best practice in sorting waste stream recyclables.

Image courtesy of Amcor.

Theme three: Harnessing cleantech to manage a growing Queensland

Queensland faces huge challenges in managing current and projected population growth in the State's fragile ecosystems and managing the growing demand for diminished natural resources.

These challenges include ensuring the sustainable planning and development of major new satellite communities announced under the Government's growth strategy Shaping Tomorrow's Queensland.

A waste industry-wide network will help streamline adoption of new technologies in the emerging resource recovery and recycling sector.

The Government will work with the cleantech industry in the design and delivery of sustainable solutions to Queensland's growth – in areas such as clean energy, water, resource recovery and recycling, sustainable transport, mining, planning, green building design and land management – and by doing so, create high value green jobs associated with these opportunities.

Actions

7. Profile world-class green buildings and precincts developed in Queensland - such as the Joint Contact Centre at Zillmere - as models of sustainable and resilient development and local industry capability.

8. Provide Queensland Government demonstration sites to showcase selected green building solutions developed by Queensland companies.

9. Work with industry stakeholders to establish a Queensland Resource Recovery and Recycling Network to streamline the adoption of market-leading technologies in the rapidly emerging Queensland resource recovery and recycling sector, including solutions developed or adapted in Queensland.

Looking for a cleantech solution for your home, office or business?

The Queensland Environmental Technology and Services Industry Directory lists over 500 Queensland companies that provide environmental technologies and services.

The Directory includes environmental consultants, water and waste management companies and providers of insulation, solar power and carbon offsets.

To access the Directory go to **cleantech.industry.qld.gov.au**

A Queensland company has developed a mobile unit that converts agricultural waste into biochar for use as fuel or soil conditioner, avoiding the need to transport low-density biomass to central processing plants.

Image courtesy of Black is Green (BiG).

Theme four: Removing regulatory barriers to cleantech uptake

Reducing the growth rate of electricity consumption and peak demand is one approach to tackling climate change being taken by the Queensland Government.

The new Queensland Energy Management Plan will use a range of demand management, energy efficiency and energy conservation measures to help Queenslanders reduce their energy consumption.

Government regulations and industry standards which reflect outdated technologies and ways of doing things are often cited by cleantech companies as barriers to innovation.

Many companies report difficulties selling their products or services to State and local government agencies, or obtaining regulatory or planning approval for new cleantech facilities (e.g. in waste and water management), because of the innovation/regulation gap.

The Government will work with Australian and local governments and industry to identify and address regulatory barriers which inhibit the uptake of safe and effective cleantech solutions. It will also work with industry to ensure that industry standards keep abreast of cleantech innovation.

Actions

10. Address industry identified barriers to cleantech innovation, particularly those inhibiting uptake of Queensland products and services, in consultation with relevant agencies including the Queensland Office for Regulatory Efficiency.

Theme five: Accessing growth capital for Queensland firms

Emerging Queensland cleantech companies often report difficulties accessing capital within Australia, compared to their North American and Asian counterparts where the market, particularly for venture capital, is more mature, less risk-averse and more favourably disposed to innovation.

In Australia, governments have a key role in facilitating networking between growing cleantech firms and potential investors. For this reason, the Queensland Government will expand its existing investment-ready support programs to provide a customised pathway for cleantech companies.

A Queensland water technology company designs and manufactures solutions for water capture, pollution control, wastewater treatment and recycling that assist firms to meet their environmental and regulatory compliance obligations.

Image courtesy of Clearmake.

Queensland cleantech... Did you know?

Many Queensland cleantech companies have developed innovative solutions to measure, avoid, reduce or remediate negative environmental impacts. These innovations and achievements include:

- an **eCycling** company that has successfully diverted over 4 million tonnes of electronic waste from landfill
- development of the world's most **water-efficient brewery**
- the **low-temperature geothermal power** station that powers Birdsville in western Queensland (one of only a few in the world)
- development of a revolutionary process for **treating grey and black water** using sand
- selling highly **innovative ICT solutions** for sewage management around the world
- the 2008 Prix d'Excellence award by the International Real Estate Federation to the Currumbin Eco-village on Queensland's Gold Coast for **outstanding environmental design**.

To find out more about the extensive capabilities of Queensland's cleantech companies, visit the ETS industry directory at **cleantech.industry.qld.gov.au**

A Queensland company is manufacturing remote location control instrumentation for water and wastewater monitoring.

Image courtesy of Multitrode.

The Cleantech Enterprise Pipeline will provide Queensland cleantech firms with business skills and access to investment partners.

Actions

11. Nurture emerging cleantech firms through the roll-out of the *Cleantech Enterprise Pipeline 2 (CEP2)* - an expanded program for cleantech SMEs that will facilitate commercialisation of technologies and services by improving business skills and access to investment and commercial opportunities.

12. Work proactively with the Australian Government to attract providers of capital to Queensland, in particular fund managers licensed under the Innovation Investment Fund (IIF).

13. In partnership with Australian and local government agencies, continue efforts to attract major investment by leading international cleantech companies in the priority areas of biofuels and solar energy.

Theme six: Building local industry capability through smarter use of Government procurement

Collectively Federal, State and local governments spend billions of dollars annually on procurement of goods and services for construction, major works, government offices and office supplies. As such, they offer a potentially significant market for local cleantech products and services.

Major national cleantech initiatives such as the $1.5B Solar Flagships program also present significant opportunities for Queensland cleantech companies that are able to supply technologies, materials and services to the successful projects.

Opportunities for local cleantech firms to compete in State Government procurement are already supported by major State Government policies, including:

- the Sustainable Procurement Policy requiring State agencies to set targets for sustainable purchasing and construction
- the Local Industry Policy ensuring that local firms have full, fair and reasonable opportunity to tender and compete for major government work
- the ICT SME Participation Scheme enabling ICT small to medium-sized enterprises to access the Queensland Government's ICT-related opportunities. This includes Green ICT firms and recyclers of ICT products.

Actions

14. Increase efforts to link local cleantech SMEs with government tendering opportunities by conducting special cleantech Tendering for Government Business Workshops that will inform local cleantech businesses about tendering and prequalification requirements.

15. Ensure cleantech businesses register their products/services with the Industry Capability Network (Queensland) to help them access more tender opportunities.

16. Explore other opportunities for raising awareness among government purchasing officers of local cleantech industry capabilities.

Theme seven: Supporting regional cleantech initiatives

Opportunities in Queensland cleantech exist not only in South East Queensland. In fact, many of the current and emerging opportunities in renewable energy, energy efficiency, green building, biofuels, bio-commodities, and sustainable land and water management are in areas outside the South East corner of the State.

It is recognised that local governments and regional industry networks are keen to promote local cleantech enterprises and investment opportunities, as is State Government.

For example, Townsville, through Townsville Enterprise, is pursuing a strategy to develop and promote the region as a destination for investment in renewable energy. This approach aims to reduce the region's dependence on imported energy and to capitalise on its adoption of sustainable practices (through initiatives such as the Ergon Energy-led Solar City program).

The region is also keen to develop and promote its green building potential, taking advantage of north Queensland's particular strengths in tropical architecture and design.

Through the *Queensland Cleantech Industry Development Strategy*, and related strategies dealing with climate change, the State Government will take a lead in supporting regional cleantech industry development across the state. At the same time, the Government will also seek to support and co-ordinate with local and Australian Government initiatives to ensure maximum return to local businesses.

For example, through the Clean Energy Communities program the Government is working with developers and local governments to speed up the deployment of clean energy technologies in existing and master-planned communities.

Actions

17. Network with local governments and local industry partners to ensure maximum leverage and co-ordination of programs and initiatives that promote cleantech uptake and local industry development in regional Queensland.

18. Work with regional agencies to capture industry development opportunities arising from investment in cleantech areas such as algae, biofuels and green building.

Ecosciences Precinct at Boggo Road, a world's best-practice research facility is a collaborative investment, by the Queensland Government with CSIRO, into the future of Queensland's Environmental Technologies.

Coordinating implementation of cleantech initiatives

The Queensland Government is supporting the cleantech industry through a broad range of policies and programs and continues to develop new strategies that directly, or indirectly, support the cleantech industry.

Some relevant Government cleantech-related initiatives include:

- *Queensland's Waste Reduction and Recycling Strategy 2010–2020*
- the *Queensland Renewable Energy Industry Development Plan*
- a discussion paper examining the opportunities to establish a bio-based industrial products sector in Queensland.

The Government is committed to ensuring the cleantech industry maximises its benefits from the combination of these new policies, the actions detailed in this Strategy and other relevant programs.

To coordinate the development and implementation of cleantech-related policies and programs across Government, round-table meetings will be held every three months of relevant Government agencies responsible for specific cleantech initiatives announced by the Government or under development.

Action

19. Department of Employment, Economic Development and Innovation to convene round-table meetings of relevant Government agencies every three months to coordinate existing and planned Queensland Government cleantech industry initiatives.

APPENDIX A

Queensland Cleantech industry sectors		
Queensland Cleantech represents a diverse range of innovative technologies, products, services and processes that avoid, measure, reduce or remediate negative environmental impacts.		
1. Environmental Services	**Agriculture and land management**	Energy, feed or water efficient systems for agricultural applications, agricultural waste management, plant and seed suppliers for land rehabilitation, agricultural water and soil consultants, soil, compost and organic fertilizer manufacturers, natural pest and land management services.
	Air and Environment	Environment and sustainability services, environmental monitoring and analytical services, soil, water, air and noise pollution solutions, air-handling equipment, carbon advisory services, carbon and biodiversity trading and offset providers, environmental product specifiers.
2. Green Building and Materials	**Green building - Residential and Commercial**	Green design providers, landscape architects, insulation producers and installers, providers of other environmentally friendly building products.
	Manufacturing/ Industrial	Industrial process efficiency and control systems, manufacturers of new materials or products from waste or scrap, manufacturers of environmental technology products or components – e.g. waste/ water handling and control equipment, renewable energy generator components, energy and water efficient devices.
	Materials	Animal or plant based materials and cleaning products, biodegradable and re-usable bags, energy efficient materials.
3. Clean Energy	**Energy efficiency**	Energy auditors, Green IT, intelligent grid systems, designers of energy saving devices and systems for buildings including lighting, insulation and heating/ventilation/cooling.
	Energy generation	Renewable energy and co/tri-generation technology providers, large renewable energy generators, renewable energy system designers and installers, engineering services for renewable generation, producers of biofuels, waste to energy systems, domestic and pool solar hot water technology providers. Excludes: nuclear power, carbon capture and storage technologies and fossil-fuel derived gas-fired power stations.
	Energy storage	Manufacturers and suppliers of energy storage devices/systems and fuel cells.
4. Resource Recovery and Recycling		Landfill and recycling facility operators, solid and liquid waste collectors, waste management equipment providers, waste management consultants.
5. Sustainable Transport		Sustainable transportation/logistic systems and products, vehicle emission reduction and fuel efficiency technologies, and emerging alternative technologies.
6. Water and Wastewater		Sustainable water and wastewater handling, treatment and recycling equipment, system designers, constructors and operators, maintenance service providers, water conservation technologies and services.

APPENDIX B

Queensland Government funded programs for cleantech businesses	
Queensland Cleantech represents a diverse range of innovative technologies, products, services and processes that avoid, measure, reduce or remediate negative environmental impacts.	
Australian Institute for Commercialisation (AIC)	Provides innovation and commercialisation services for businesses to help them grow. Works with entrepreneurs, businesses, research organisations and governments to identify opportunities to convert ideas or intellectual property into successful business outcomes. www.ausicom.com
Business and Industry Transformation Incentive (BITI) Grants	BITI grants are available for businesses to undertake projects that will promote transformation in priority Queensland industries. Incentives are available for progressive businesses with significant growth potential. www.industry.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=4978
Cleantech Enterprise Pipeline 2 Program (CEP2)	Networking events that bring together cleantech companies, finance industry stakeholders, commercialisation agencies and government agencies. Includes access to the State government's Mentoring for Growth, Mentoring for Export and Mentoring for Investment programs. www.industry.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=15781
Ecosciences Precinct	The Ecosciences Precinct is one of the largest R&D centres focused on environmental sciences in the southern hemisphere with a particular focus on climate change and natural resource management. www.science.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=6521
Innovation Coaches (Q-WIN)	The Queensland-Wide Innovation Network (Q-WIN) integrates and enhances existing innovation and commercialisation services, providing resources and facilitation linkages across Queensland. Dedicated Innovation Coaches work with clients in partnership with the Queensland Government. www.science.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=13654
HEAT Architecture	HEAT Architecture is a Queensland Government initiative to increase international sales of Queensland architectural and related design services. HEAT promotes Queensland architectural expertise to a range of overseas markets. www.heatarchitecture.com.au
Queensland Environmental Technologies and Services (Cleantech) Industry Directory	Provides a listing of over 500 Queensland Cleantech companies, including contact information, business description, and the cleantech sector the business operates in. The directory is available online, and new entries can be added or existing entries amended as required. www.industry.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=15505
Queensland International Fellowship Program	Enables Queensland researchers to travel overseas and undertake a high quality, technically feasible and strategically valuable project with a leading international knowledge partner. www.science.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=13219

Queensland Sustainable Energy Innovation Fund (QSEIF)	Assists Queensland based organisations to develop innovative technologies that reduce consumption of fossil fuels, water or greenhouse gas emissions. Focuses on the development and commercialisation of sustainable technologies, rather than pure research. www.derm.qld.gov.au/environmental_management/sustainability/energy/queensland_sustainable_energy_innovation_fund_qseif/index.html
QWESTNet	Informal business networking events designed to assist businesses looking for simple, low cost or innovative ways to improve their environmental sustainability and increase profits. The networking sessions provide attendees with a chance to meet other businesses looking to incorporate green practices or products, suppliers of sustainable solutions and experts currently working in the sustainability field. www.derm.qld.gov.au/environmental_management/sustainability/industry/qwestnet_queensland_water_and_energy_sustainable_technologies_network/index.html
Trade and Investment Queensland	Provides export assistance services through a team of experts with international business experience, multilingual skills and international business contacts. Includes export capability assessment, practical export advice, export skills development programs, introduction to potential business partners, visits to overseas markets, and introduction to inbound buyers visiting Queensland.
QMI Solutions	QMI Solutions is a not-for-profit organisation dedicated to helping industry on the journey to manufacturing excellence through research, education, and implementation of world class practices and technologies. www.qmisolutions.com.au
Ulysses	Ulysses is a business program to make Queensland businesses internationally competitive through design. The program works with mainstream businesses helping them to become design-led. www.ulyssesdesign.com.au

Other Queensland Government programs stimulating demand for cleantech	
Carbon Reduction Strategy for Government Buildings	Provides a framework to achieve carbon neutrality in each Queensland Government owned office building by 2020. Applies to all departments responsible for government owned office buildings. www.works.qld.gov.au/downloads/tdd/climate-smart-buildings_crs.pdf
ClimateQ: toward a greener Queensland (Office of Climate Change)	Establishes Queensland's long-term goals for action on climate change. Provides a platform for the government, community and industry to move to a low-carbon future. www.thepremier.qld.gov.au/initiatives/climate_change/index.aspx#ClimateSmart
Carbon Outlook	Analyses the impacts and opportunities of emissions trading for Queensland's SMEs under the Australian Government's previously proposed Carbon Pollution Reduction Scheme (CPRS) shows how businesses have opportunities to increase efficiency and reduce emissions by reducing energy and waste and adopting clean technologies. www.industry.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=14734
ecoBiz	A free self-help program for identifying and measuring water, energy and material resource saving opportunities to assist Queensland companies cut costs and increase profit through eco-efficiency. Provides up to a 50 per cent reduction in environment license fees. www.derm.qld.gov.au/environmental_management/sustainability/ecobiz_queensland/about_ecobiz.html
QFleet ClimateSmart Action Plan	Focuses on lower-emission vehicles to improve the environmental profile of the QFleet fleet, carbon offsets to negate vehicle greenhouse emissions, and minimum standards for passenger and light commercial vehicles. www.qfleet.qld.gov.au/community/GI/Pages/Climatesmart.aspx
Queensland Government Solar Hot Water Rebate	The Queensland Government is offering rebates to eligible households that replace their electric hot water system with a solar hot water system or heat pump. The system must be purchased on or after 13 April 2010. www.brightthing.energy.qld.gov.au/get-solar-hot-water.html
Draft Queensland Waste Strategy 2010-2020	Outlines a new direction for waste and resource management in Queensland, including the proposed industry waste levy model that will encourage greater investment in resource recovery and recycling. www.derm.qld.gov.au/environmental_management/waste/strategy/index.html
Smart and Sustainable Homes Program	Provides industry and the community with display homes that incorporate principles of sustainable design and performance utilising the Smart and Sustainable Homes Design Objectives. www.sustainable-homes.org.au
Smart Energy Savings Program	Seeks to increase the adoption of energy efficient technologies by business, drive organisational behaviour change towards positive energy management practices, improve business competitiveness by reducing energy costs, reduce growth in Queensland's electricity demand, and reduce greenhouse gas emissions from Queensland's commercial and industrial sectors. www.cleanenergy.qld.gov.au/smart_energy_savings_program.cfm

Solar Bonus Scheme (net feed in tariff)	Pays households and other small customers for the surplus electricity generated from roof-top solar photovoltaic (PV) panel systems. Designed to make solar power more affordable for Queenslanders, stimulate the solar power industry and encourage energy efficiency. www.cleanenergy.qld.gov.au/solar_bonus_scheme.cfm
Solar Energy and Efficiency in Schools Program	$60M solar and energy efficiency program will see solar panels and other energy efficiency measures in all Queensland state schools over three years. Funding will also be provided for other energy efficiency measures in state schools including improved lighting technology to reduce electricity consumption. education.qld.gov.au/facilities/solar/energy.html
Solar Initiatives Package	$115M over five years for a range of solar initiatives to help build the solar industry and double solar energy uptake, turning Queensland into the Solar State. This includes $60M to fund the solar hot water rebate. www.cabinet.qld.gov.au/MMS/StatementDisplaySingle.aspx?id=70091
Sustainable Procurement Policy	The State Procurement Policy requires Queensland government agencies to integrate sustainability practices into the procurement of goods, services and construction. www.qgm.qld.gov.au/10_sus_procure/index.htm
Manufacturing Sustainability Toolbox	The toolbox provides manufacturing companies operating within a carbon emission-constrained economy with the information and tools to adopt sustainable manufacturing practices that will assist manufacturing companies reduce inputs, waste and costs, improve efficiencies, increase productive performance, achieve greater competitiveness and improve the triple-bottom-line. Sustainable manufacturing practices will help address customer demand for sustainable and low carbon products, reduce impacts on the environment and reduce firms' carbon footprint. www.industry.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=14842
Information and Communication Technology for Tomorrow's Queensland	The Growing Industry in a Low Carbon World theme of *Queensland's ICT Industry Development Strategy* aims to encourage the uptake of eco-friendly ICT solutions by Queensland Government agencies, local government and businesses, as well as supporting Queensland's ICT industry in reducing its own carbon footprint. ict.industry.qld.gov.au/ict-qld/qld-ict-strategy.htm

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