

Remarks by Roy Krzywosinski

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At The

**American Chamber of Commerce in Australia
Business Briefing Breakfast**

On

***The Consequences of Complexity:
Energy and the Environment in the 21st Century***

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Good morning . . . and thank you for joining me at this American Chamber of Commerce in Australia Business Briefing.

It's a personal delight that this event is being held here on the beautiful grounds of the University of Western Australia . . . an institution with which Chevron has had a long-standing and highly-productive partnership.

The training and research that's conducted at the University . . . and which is being done in concert with work at Chevron's Global Technology Center in Perth . . . is essential to developing the skilled people and advanced technologies that will enable Western Australia to more effectively prosper from its abundant natural resources.

It's also great to see so many friendly faces in the audience . . . and others whom I hope will soon become good friends.

For those who haven't met me before, I have to commend you for attending a talk by a bloke whose name is K R Z Y W O S I N S K I . . . which at first glance might make a person think the speaker is from the planet Krypton . . . or maybe Mars.

The pronunciation is actually fairly easy, particularly if you say it fast - - Kriz – in – ski.

Where I grew up in the upper Mid-West of the United States . . . in a place called Bay City and where the Saginaw River flows into Lake Huron . . . Polish names like mine are common.

But for much of my career . . . colleagues often struggled with what certainly *looked* like a real tongue twister.

Chevron, however, has profoundly changed over the past 25 years.

When I started work as a design and construction engineer in 1981 . . . Chevron's focus was on the U.S. . . . and the vast majority of its workforce was American.

Today the corporation has a truly multi-national corporation . . . in both its operations and its workforce.

A simple glance at Chevron's global e-mail directory is revealing . . . with fabulous names that are clearly from Thailand, Kazakhstan and Nigeria . . . three of the 100 nations in which we conduct business.

In jobs that have taken me through Angola . . . Papua New Guinea . . . Indonesia and elsewhere . . . I've come to appreciate the diversity reflected by so many cultures . . . including the robust lifestyle that defines the great continent of Australia.

That diversity is also a strength for Chevron and its Australian operations . . . since we now find

ourselves in an increasingly complex and interdependent global energy business.

But there is yet another international component of this industry.

The production and use of energy is also having an impact upon the global climate . . . a challenge that societies and industries are just starting to address and no where more so than here in Australia.

Simply put, we are very likely facing *the* defining issue of this century . . . since the nexus of energy supply, demand, its price and its affect upon the environment will ultimately influence the well-being of every individual on our planet.

And that of course would be Earth . . . the home planet of the Krzywosinski family.

(Pause)

Thank you, Penelope Williams, for the invitation to be here . . . your great work on behalf of the American Chamber of Commerce is very much appreciated...and thanks again to everyone whom I hope are enjoying this morning's breakfast.

In my remarks this morning, I will touch on some of the consequences of complexities in our world today as it relates to energy prices . . . supply and demand . . . and climate change. . . and also share with you some of the exciting activities that are taking place at Chevron Australia.

First I'd like to make a few *general* observations about energy and its price . . . which has been so much in the news . . . and in our respective pocketbooks . . . over the past year.

Like most other folks in the energy business, I'm frequently asked by friends and acquaintances to

explain what's going on with prices and what will happen next.

Frankly, energy and economics are quite complex systems that they defy concrete explanations about what is really transpiring . . . even though it's happening right before our eyes.

Moreover, there is no one in this world who can honestly predict . . . and with absolute certainty . . . the price of a company's stock . . . or a barrel of oil . . . a two or three-decade LNG pricing contract....or a liter of gasoline . . . months or years in advance.

People make educated guesses . . . and build legitimate careers on predictions.

But the fact is that they are still guessing.

It's why the U.S. President Harry Truman once said he wanted to hire a one-armed economist . . . since

he was tired of hearing his advisors say “on one hand . . . and on the other . . .”

And so it is at Chevron, where company policy requires you to plan for a range of prices, but prohibits you from making a guess . . . and above all not in public.

And so sorry ladies and gents....but I won't be guessing today.

But I will say that one thing is clear:

When individuals respond to radical changes in these complex systems . . . *the collective consequence* is quite often an alteration in course.

We've certainly seen that in energy markets recently, especially in relation to the price of oil.

About this time a year ago, oil had climbed above \$80 a barrel for the first time ever . . . driven by the

weakness in the U.S. dollar, but especially by a soaring demand for energy in China, India and a number of other rapidly developing countries.

While more than a billion people in developed countries were enjoying a high and energy-intensive standard of living, billions more were and are seeking more quality in their lives.

But even as the oil industry typically met the demand . . . the global infrastructure that moved crude oil, natural gas and refined products was - - and still is - - strained.

An incident at a single large manufacturing facility anywhere in the world . . . or a tropical cyclone moving toward an offshore production area . . . could create temporary shortages.

And when there are shortages . . . real or merely possible . . . the consequence is that those thousands of

refiners and fuel-buyers competing for products upon which their customers rely bid up the price to lessen demand.

Just a couple of months ago, oil soared past \$140 a barrel . . . and “experts” were predicting a relentless rise to above \$200.

As a result, gasoline prices in the United States rose to more than \$4 a gallon . . . and here in Australia to around \$1.50 per litre.

In the U.S., that price seemed to be a tipping point that caused my fellow citizens to reconsider some of their driving habits.

According to the U.S. Department of Transportation, from last November through August, Americans drove some *53 billion miles less* than during the previous period a year earlier.

To bring this close to home, that reduction is the equivalent of 85 *billion* kilometers . . . or driving 3.5 million times around Australia on Highway 1. (1)

(Pause)

In general, miles driven and gasoline consumption dropped by roughly five percent in the U.S., which has led to nearly a \$1 drop in the price of gasoline.

These higher prices that we have been experiencing have also weakened demand in other parts of the world.

It seems that Sir Isaac Newton's Third Law of Motion . . . in which for every action, there is an equal and opposite reaction . . . also has some application in commodity markets.

And that's why we're seeing crude oil futures prices falling to near the \$100 per barrel mark.

It's entirely possible, of course, that a geopolitical conflict could disrupt the system and send prices soaring once again . . . as could a resumption of global economic growth and stronger energy demand.

But my point is that millions of small and dispersed actions . . . evident by people changing their driving habits . . . or the cars they drive . . . can have an impact on even the largest and most intricate systems.

(Pause)

That brings me to the environment and climate change . . . which by several magnitudes is even more complex than either energy or economics . . . and as I mentioned previously is one of the defining issues of this century.

I've been reading a number of books on the subject and the more I learn, the less I seem to know about the efficacy of any one remedy or response.

As an institution, Chevron recognizes and shares the concerns of governments and the public about climate change.

We realize that the fossil fuels used to meet the world's energy needs also contribute to an increase of greenhouse gasses in the earth's atmosphere . . . mainly carbon dioxide and methane. ¹

These gasses are released during the production and consumption of coal, oil, and natural gas . . . and the widely held scientific view is that this increase is driving the climate change . . . and which in turn has adverse effects on the environment.

The thing is, a temporary drop in energy use is not going to create an abiding change in the course of energy demand.

¹ Source: Chevron's "Climate Change" paper: "An interview with . . . CEO" Dave O'Reilly

Based on current projections of population and economic growth . . . the world's annual consumption of energy is expected to grow by 55 percent by 2030.

Most of that will come from fossil fuels . . . even as lower-carbon alternatives emerge.

Consequently, we need to develop more cleaner-burning energy *and* find ways to mitigate its environmental impact.

Now in its sixth year, Chevron's action plan on climate change is addressing this issue through short and long-term measures.

Much of the effort is centered on reducing emissions and improving efficiency . . . and in particular the venting and flaring of natural gas . . . a by-product of oil production in regions where the gas does not currently have a ready market.

Along with other efficiencies in day-to-day operations . . . such steps are not only environmentally responsible . . . but make economic common sense.

Wasting a natural resource - - *any* kind of resource - - should not be a part of 21st century ethical behavior.

Chevron is also investing in a variety of environmental research, development and technology projects.

One of the most ambitious has been proposed here in Western Australia.

Chevron Australia plans to build one of the largest geo-sequestration projects in the world . . . which will remove carbon dioxide contained in the natural gas produced by the company's Gorgon Liquefied Natural Gas project located on Barrow Island . . . and inject it into a deep sandstone reservoir beneath the island.

The Project's plans to reduce total greenhouse gas emissions represent a global milestone and once achieved will make the Gorgon Project one of the most greenhouse-gas-efficient developments of its kind in the world.

It will also position Western Australia as a center of excellence in the CO2 injection technology.

From the Gorgon Project alone, we can also help achieve a net global reduction in greenhouse gases that is the equivalent of taking about two thirds of all vehicles off Australian roads . . . or a reduction of over eight percent of Australia's total annual greenhouse emissions.

There's another benefit from producing more natural gas . . . since this clean-burning energy source displaces the use of more carbon-intensive fossil fuels.

For a customer of Gorgon LNG such as China . . . air quality issues could be significantly improved through the use of natural gas instead of coal.

The collective consequence of such actions on a global scale could be a significant reduction in greenhouse gasses . . . and a shift in the course of unwanted climate change.

(Pause)

This promising project notwithstanding . . . the relationship between the Western Australia and Australian government and the energy business is not all Fosters lager and shrimps on the barbie.

As some of you are aware, the Australian government issued a Carbon Pollution Reduction Scheme “Green Paper” in July . . . which outlined a proposed emissions trading plan for the Liquefied Natural Gas industry.

We acknowledge that the Green Paper is intended to facilitate discussions around this issue . . . rather than serve as a firm policy position.

However, there are a number of elements in the proposed scheme that could well be obstacles to the further development of the Australian LNG industry.

Consider that LNG is the most capital intensive industry in the entire country.

To get any of these projects up and running, we are talking about tens of billions of dollars.

(Optional: Chevron alone has already \$XX billion into Western Australia.)

These are huge investments . . . and they also have long lead times before there's a cash flow that provides even a modest return.

But some of the provisions suggested in the Green Paper could very well *double* the operating costs of two major LNG projects that are in their infancy . . . a burden that could put the health of these developments in jeopardy.

Chevron is very much in favor of climate change policies that are transparent . . . promotes energy security . . . enables technology . . . and has a broad and equitable treatment of all industries.

As important if not more so, we strongly support policies that take a more global view of the proposition's basic intent.

If the goal is to reduce global greenhouse gas emissions . . . and Australia's clean-burning LNG can help other nations meet reduction targets by displacing other fossil fuels . . . then it is probably not in Australia's best environmental interests to impose

schemes that jeopardize the rapid develop of that LNG production.

An important next step will be the unveiling of the government's prices and economic modeling . . . at which point the LNG industry can better assess and understand the impact of such a scheme.

In any event, Chevron welcomes the opportunity to make the company's concerns clear to government . . . and intend to do so in a response to the Green Paper.

Just as Chevron is working closely with governments on this very issue in many other parts of the world . . . we are trying to make sure our concerns are known here in Australia.

In fact, the emissions trading scheme is just one of several issues that the government and industry must address . . . if Western Australia and the nation as a

**whole is to build the most prosperous economy possible
... and enjoy the social well being that comes with it.**

**I'll come back to the need for a range of more
stable policies and government & business partnerships
... after covering several of Western Australia's most
promising opportunities.**

(Pause)

**As I mentioned, global demand for energy is rising
... inexorably.**

**Sustaining that growth therefore requires massive
investments ... which the five major international oil
companies are most decidedly making.**

**Indeed, in 2007 those five companies invested more
than \$100 billion to find and produce oil and natural
gas ... a 10 percent increase over 2006 expenditures.**

And this year is bringing even larger investments.

For example, Chevron's nearly \$23 billion capital and exploratory spending program for 2008 is 15 percent more than its 2007 program . . . *and triple* the investment of just four years ago.

These investments, moreover, are spread across the entire energy value chain, including oil and gas . . . solar and geothermal energy development . . . and on the refining and transportation infrastructure that's so vital in moving products smoothly and reliably into markets.

Western Australia and the rest of the Asia-Pacific region is one of *the* most important areas for Chevron.

In fact, one out of every five Chevron employees works in this region . . . which also accounts for a quarter of the corporation's total reserves and production.

What's more . . . nearly half of the company's proven natural gas reserves are also in this area.

And we're not exactly a newcomer to Western Australia....Chevron has been here for 50 years.

The company's North West Shelf partnership began exporting natural gas from Karratha to Perth back in 1984 . . . five years before the partnership began converting the gas to LNG and exporting it to Japan, China and Korea.

Another joint venture . . . in which Chevron is the operator . . . is the massive Greater Gorgon Area . . . which contains an estimated 40 trillion cubic feet of gas.

We think this area can yield energy for the next 40 years . . . if not longer.

Gorgon will bring many economic benefits to Australia.

At peak construction there will be more than 6,000 people working on the project . . . and when finished will account for 3,500 direct and indirect jobs over the life of the project.

In addition, recent research completed by the independent research group . . . ACIL Tasman . . . confirms that Gorgon is the largest resource project ever undertaken in Australia . . . with key economic findings based on 30 years of operation and an annual production of 15 million tons of LNG.

We expect that the government will earn \$39.8 billion of today's Australian dollars from the project . . . which will also require the purchase of roughly \$33 billion of local goods and services.

(Pause)

We have several other very promising offshore projects, including the development of our wholly-owned Wheatstone natural gas discovery that was made in 2004 . . . and which is in the same general area as Barrow Island, Gorgon and the North West Shelf.

The Wheatstone Project will be a Greenfield LNG and domestic gas project . . . and it's an exciting opportunity indeed.

Chevron is building up the Wheatstone Project team . . . even as we're conducting studies to determine the size of the plant . . . its location . . . setting key project milestones . . . and investigating potential markets.

You will hear a lot more of Wheatstone in the near future.

Further to the north, Chevron holds an interest in yet another natural gas endeavor . . . called the Browse LNG project.

And we are certainly not done . . . given that Northwest Australia is one of the four major exploration focus areas for Chevron . . . and that we've successfully bid for seven new exploration permits in this area since 2005.

The company obviously has big plans for its Australia operations.

(Pause)

However, both Chevron and Western Australia face mutual challenges if we are to fully develop the province's resource potential.

As James Pearson . . . a friend and former colleague . . . said in a speech in this very same business breakfast forum about two weeks ago, Western Australia is going to need some 400,000 new workers

over the next decade . . . if the state's economic growth and prosperity are to be maintained.

He added that estimates indicated that only 150,000 people will be available to fill those jobs.

As for Chevron Australia, we've been increasing our workforce by 25 percent annually for the past two years . . . and within the next year expect to add 300 new people to the 1,850 employees and contractors already in our employ.

The Gorgon project already has about 700 people on it, but it will need another 500 by next year.

As we continue to commercialize Gorgon and move forward on Wheatstone . . . the demand for skilled workers will become critical.

We are recruiting as hard as we can . . . offering young talent a variety of career options . . . flexible

work arrangements . . . competitive pay from a corporation with a excellent reputation . . . and a chance to participate in engaging projects in other parts of the world.

Earlier I mentioned our partnership with the University of Western Australia . . . a three-year, \$6.9 million joint-funded program to create a Chair in Natural Gas Process Engineering . . . fund two post-doctoral appointments . . . and two PhD scholarships.

Moreover, Chevron's Energy Technology Center in Perth also has a partnership agreement with the Western Australian Energy Research Alliance . . . which is a government-sponsored program that brings together CSIRO's Petroleum Division . . . Curtin University . . . and also the University of Western Australia.

The research collaborations from this program are focused on developing knowledge and technology

**around commercializing oil and gas resources . . .
investigating other energy sources such as hydrogen
and coal . . . while looking into the management of
related health, safety and environmental impacts.**

**Equally important are the students who work on
these programs . . . and who we hope will choose to join
Western Australia's energy industry.**

**However, given the state's over-all demand for
more workers . . . Western Australia alone may not
provide enough people to sustain these economically
vital projects.**

**As James suggested in his talk . . . and which I will
most certainly echo . . . there is a clear need for the
Australian and the state and territorial governments to
set policies that are flexible enough to enable the private
sector to recruit the talent needed for specific roles.**

Indeed, stable and predictable tax and regulatory regimes are vital if energy partnerships . . . probably the most lucrative government partnerships to be found anywhere in the world . . . are to flourish.

In addition, contracts must have a high degree of sanctity . . . so that investors can trust that rules won't be changed in the middle of what is a very expensive and risk-laden game . . . especially considering the billions of dollars that are invested in major offshore developments.

And while climate change is clearly a great concern for the entire world . . . we believe that it is also in the interests of the Australian government to protect the international competitiveness of its industries . . . and ensure that all businesses . . . large, medium and small . . . are not hindered or ruined by an imperfect and unrealistic national emissions trading scheme that is too far reaching.

(Pause)

Most of my remarks have centered on Western Australia . . . and rightly so.

We live in a world where individuals and corporations are whip-sawed by massive movements in markets and commodity prices.

But the things I've been talking about . . . including educational developments . . . research partnerships . . . and projects encouraged by government policies . . . are things over which we have at least *some* control.

Moreover, we should never forget that much of the energy we produce in Western Australia brings heat, light and drives manufacturing prosperity in Japan, China and several other nations.

And what we produce for these markets frees energy produced elsewhere to enhance the quality of life in *still other* developing nations.

What we do here makes a positive difference for people - - people striving for a better quality of life for themselves and their children - - all over the world.

So perhaps it is only just and proper that Chevron Australia - - as well as other energy companies in this region - - has a multinational workforce.

I've been privileged to see that interconnection in person.

And while we don't all have complicated names like mine . . . we do face a complicated task with an impact that goes far beyond the shores of this great continent.

**And if you don't believe it . . . as we so often say in
the United States . . . then my name's not Roy
Krzywosinski.**

Thank you for listening.