The cost of doing nothing in a rapidly changing global dynamic

(Introduction)

Good morning ladies and gentlemen.

I'm very pleased to be invited to address the 13th Queensland Weeds Symposium.

Over the next few days, you’re going to hear expert presenters discussing the varied aspects of destroying weeds and the economic impact of weeds on the Australian landscape.

I thought I would use my presentation to demonstrate the importance of weed control in the broader context of what is possibly one of the biggest long-term global humanitarian issues of our day. I’m talking about the finite availability of land on which to grow food to feed an exploding world population.

Our ability to feed ourselves with limited agricultural land and the need to preserve the last standing forested areas to manage and offset global emissions, is becoming – and will be – a serious challenge for this and future generations.

The parallel issues of weed control and population growth have much in common, and in fact impact and influence each other. They are some of the world's biggest sleeping landscape management issues of today, along with the loss of top soil and climate change, that will impact on agricultural production. I will discuss the two former issues in more detail throughout this presentation.

Australia’s population is growing rapidly, and we are all well aware of global population growth issues, particularly in East and South Asia and North Africa.
And as I see it - invasive weeds, both native and exotic, and their impact on agricultural productivity is one of the major impediments to our long-term domestic food security, and our ability as a nation to help feed the future world’s population.

We have to act now to protect our agricultural land. It’s critical for our Gross Domestic Product or GDP, but it's also critical for our capacity to feed Australia and contribute to the global food supply.

In talking today about both weed control and our ability to feed a growing world population, I hope to emphasise the importance of valuing the condition of our landscapes and their biodiversity, and the unacceptable cost of doing nothing.

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(The Australian context)

First up, let’s look at the Australian context.

Regrettably, agriculture and landscape-based production have become a very small part of our national GDP, and that of most first world economies.

The Australian economy is forecast to be the 13th largest in the world in 2015, despite the fact the country is home to only 0.3% of the world’s population.

Our nation has more than doubled the value of its total production from a decade ago. Australia’s nominal GDP is estimated at US$1.5 trillion and accounts for 2% of the global economy.

Of that US$1.5 trillion, agriculture, forestry and fisheries only equates to 2.4% of Australia’s national accounts and the smallest by % of all of Australia’s outputs.

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(The move away from land-based industries as economic drivers)
This reflects a global move away from land-based primary production industries as primary economic drivers.

Prior to the First World War, land-based primary production economies across the world were the major source of capital, income and wealth – people mostly did agrarian work and paid rent to a landlord for the privilege. Today, land-based primary production industries are one of the smallest sources of wealth in the “first world” economies. As a result, the national importance placed on valuing and protecting land-based industries has also waned over that time.

This doesn’t mean that agricultural production has slipped, just the contrary: agriculture-based products, for example, have grown in volume at an expeditious rate. And they are going to have to continue to grow if we are to provide our world with the food it needs for future generations.

Under the Food and Agriculture Organisation’s definitions, agricultural land covers 33% of the world’s land area. This is broken into: arable land 9.3%, permanent crops 1% and permanent pastures 22.5%.

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(World demand for protein and a continued need for agricultural land)
We know there is a growing world demand for protein, as the large populations of North Africa, India, China and South Asia grow at rates well above the average of 0.8% rate recorded for the last 300 years.

According to the World Health Organisation, there has been an increasing pressure on the world’s livestock sector to meet the growing demand for high-value animal protein.
The world’s livestock sector is growing at an unprecedented rate, and the driving force behind this enormous surge is a combination of population growth, rising incomes and urbanisation. Annual meat production is projected to increase from 218 million tonnes in 1997-1999 to 376 million tonnes by 2030 – that is 150 million tonnes increase in 30 years.

However, the growing demand for livestock products is likely to have an undesirable impact on the environment. For example, there will be more large-scale, industrial production, often located close to urban centres, which brings with it a range of environmental and public health risks.

The lost energy conversion ratio from feed to meat is another concern, as increasing amounts of the cereal grain is redirected to livestock and ethanol production.

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(Australia’s role in the protein food supply chain)

Australia continues to play a major role in meeting this global demand for meat - but will this always be the case?

The Atlantic reports that Australian meat production has increased by a staggering 600% since 1950.

And since the animals that become meat live off the land, the demand for grass and larger areas of pastures has increased, while the actual supplies of agricultural land have decreased due to degradation and other factors such as urbanisation and nature reserves.

The Earth Policy Institute reports that there simply isn’t enough grass to keep up with the increasing demand for meat.
In 2015, Australia’s cattle herd continues to shrink, and it is on course to be at 26.1 million in 2016. This is 3.2 million head less than when the current dry period began to bite large parts of Queensland and NSW in 2012.

Meat and Livestock Australia 2015 third-quarter projections calculate that this loss of cattle will have ramifications for the processing sector, which, by 2017, could only have access to 6.9 million cattle – 23% less than the 9 million head processed in 2015.

For the industry in general, 2016 will mark the lowest number of cattle in the Australian herd for the last 20 years – even though demand continues to grow.

Meat and Livestock Australia predicts that there will be little or no slowing of demand for processed meat in 2015 and meat exports will exceed the 2014 record by 2% at 1.32 million tonnes shipped.

This high global and domestic demand has partly been offset in the past by steadily increasing carcass weights over time, due to improved genetics and the growing number of cattle on feed. But there will be a time when the improvement in genetics and the amount of grain available for the lot feeding of cattle will not be able to meet the increase in demand.

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(Cumulative growth – a parallel approach)

It’s an interesting exercise to look at the parallels in growth between weeds and population. Each is spreading almost as quickly as each other, using the same cumulative effect of multiple generational reproductions.

I don’t often draw parallels between weeds and population growth, but these two issues are more intrinsically linked than we might normally consider.
Food security and the need to feed a growing world population are placing just as much pressure on our agricultural land as the weeds that are encroaching on it.

And if weeds are left unchecked, it significantly reduces production capacity.

To grow food - we need to protect available and fertile land.

The law of cumulative growth is one of the marvels of finance – in other words, the effect of interest on interest compounding, grows the initial sum by an accelerated rate.

This is no different in regard to population growth or the spread of weeds. In fact, it has a greater impact when you take it generation by generation (a 30-year period), or over a period that isn’t particularly long in humanity’s timespan – say 100 to 300 years.

In the year 1700, the world population was estimated to be in the vicinity of 600 million. In 2012, it stood at 7 billion – a little more than a 10-fold increase. Interestingly though, that was achieved at an annual increase of only 0.8%. If this growth were to continue for the next three centuries, the world population would be at 70 billion by 2300.

At the start of the First World War in 1914, the Australian population was a little less than 5 million; in 1964, 50 years on the Australian population was just over 11 million; in 2014, after another 50 years, that rose to 23.25 million. But the land mass of Australia hasn’t changed nor has the landmass of the world.

Why does all this matter? All these people need food and Australia has the opportunity to become an increasingly important player in world food production – providing we can effectively protect our agricultural land.
Let’s take a look at the reality of cumulative growth from a weeds perspective. I’ll use the spread of Prickly Acacia across the Mitchell Grass Downs as a prime example.

Prickly Acacia an invasive weed and one that is front and centre of Desert Channels Queensland’s core community work and assistance to landholders attempting to contain and destroy this exotic species.

Prickly Acacia first spread widely in Australia from the early 1900s, when it was planted as a shade and ornamental tree in the Bowen and Rockhampton districts of Queensland. In 1926, the Queensland Department of Agriculture recommended planting Prickly Acacia for shade and fodder for sheep in western Queensland.

A present, we estimate that since those first plantings, Prickly Acacia has spread in various densities to over 22 million of the 56 million hectares of good grazing land across the Mitchell Grass Downs Bioregion. The pest is predominately in the Desert Channels Queensland and Southern Gulf Catchments Natural Resource Management (NRM) areas with smaller infestations in the South West NRM area.

The core infestation of this highly invasive weed has doubled in size from approximately 6 million hectares in 1996, to possibly over 12 million hectares in 2015.

The cumulative effect of its spread since that first planting just over 100 years ago is quite incredible.

The last 20 years alone have shown a 100% increase in the core infestation. This is an annual cumulative percentage of only 3.5% over a 20-year period.
A mature Prickly Acacia tree produces as many as 175,000 seeds per tree per year – there is no wonder we are seeing these extraordinary increases.

It certainly surpasses the cumulative growth in our current domestic population of 1.15%, and global population growing at a rate of around 1.13% per year – or an extra 80 million persons on current population projections.

That’s only a single weed, and it’s growing, more or less unchecked, at a much faster rate than global population.

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(Economic impact in Australia)

Let’s face it – dealing with weeds is a very expensive activity, but in the long term it will certainly be a lot more expensive in not dealing with them.

Whether you are in agriculture (which takes in farming, grazing, horticulture forestry or aquaculture), managing public lands (parks and gardens or town commons and community reserves) or larger public areas (road reserves, stock routes, camp and water reserves or recreation reserves), the time and expense of dealing with weeds has a significant impact on your bottom line.

According to the Australian Weed Strategy Final Report 2013, weeds in general were estimated to cost the Australian economy $4 billion per year in 2005.

The economic impacts of Prickly Acacia on Queensland’s grazing industry are estimated at $50 million per year.

And the control costs of a weed such as Prickly Acacia considerably outweighs its intended benefits as a shade tree or a source of drought fodder.
The introduction of cattle into the traditional sheep grazing area, and a run of good wet seasons in the 1950s, 1970s and early 1990s, contributed to an explosion in the abundance and range of Prickly Acacia throughout the Mitchell Grass Downs of central and western Queensland.

This was further exacerbated as more producers moved from sheep to cattle after the collapse of the wool industry in the early to mid-1990s.

The difference being - sheep chew and digest the seed thus destroying it, whereas with cattle – the seed just passes through the digestive system and is spread with the manure.

Prickly Acacia has a significant direct and indirect cost to property budgets. Not only are costs increasing to control it - but the longer it is left untreated - the greater the increase to variable costs such as mustering, fencing and water infrastructure maintenance. And over time - the property’s carrying capacity falls, along with annual income, then ultimately, the market value of the asset.

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(Land for agriculture)

It’s not all bad news.

There is a huge economic opportunity for Australia, as one of the very few countries across the world that produces much more in agricultural products than we consume.

Australia is the planet’s sixth largest country after Russian, Canada, China, the USA and Brazil.
At 7,692,024 km², Australia accounts for just 5% of the world’s land area of 149,450,000 km², and although it is the smallest continental landmass, it is the world’s 6th largest country and the 55th most populist nation.

In 2012, the World Bank estimated that 53% of Australian landmass or 409.7 million hectares was dedicated to agriculture.

Agriculture, including grazing, accounts for approximately 85% of land use in Queensland.

The State Government’s recent Queensland Agricultural Land Audit identifies limited opportunities to expand the total amount of land available for agriculture. However, of greater promise is the opportunity to expand the intensity of land use through more intensive farming methods.

In November 2013 the Australian government reported that agriculture, forestry and fishing businesses employ approximately 330,000 people or 2.8% of the workforce – this is forecast to grow by 12,000 or 3.7% by 2019. This was 60,000 more jobs than the mining sector at 270,000 or 2.4% of the workforce – which is forecast to fall by 40,700 or 17.8% by 2019.

For us as a Nation to reach our food production potential, we need quality land on which to grow crops and feed livestock - and one of the greatest threats to available agricultural land - is unchecked weed infestation.

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(Strategies to address the issue)

So, what do we need to do to address this escalating issue? What’s happening with Australian public policy to influence our capacity to fund better land condition and management strategies? The short-term answers seem to lie in having access to a
natural resource management revenue stream from more progressive taxation policy, adherence to compliance and the development of new technologies.

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(Taxation)

The Wentworth Group suggests a new land tax should be levied on all property owners by the federal government to pay pastoralists, farmers and indigenous landowners to restore and maintain their environmental assets for the broader benefit of Australian society.

The push for a new federal land tax, expected to reap $3 billion a year, is one of four key recommendations to be submitted by the Wentworth Group of Concerned Scientists to the Abbott government’s tax review.

The Wentworth scientists base their recommendations on earlier calculations that more than $100 billion is needed to restore damaged rural environments and maintain healthy landscapes and natural assets for future generations.

The report says this equates to $5 billion spending a year for at least 20 years. Commonwealth environmental programs have traditionally invested around $400 million a year in private and public land by conservation - recent budget cuts have almost halved this investment.

To quote the Wentworth report:

“The reality is that there is not, and most likely never will be, sufficient funding from governments to repair past damage and maintain Australia’s natural capital in a healthy condition unless market value is placed on the ecosystem services farmers and other landowners provide to society.”
Together with the sale of carbon farming offset certificates, and budget money saved from not subsidising fossil fuel production, the Wentworth Group estimates this rebalanced tax and incentive system would benefit farmers, society and the environment without costing the federal government’s bottom line.

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*(Compliance)*

An obvious area in need of improvement in weed management is compliance.

In the past 20 plus years, we as a society have moved away from both regulation and the enforcement of compliance with regulation – often described as red and green tape - as a means of keeping the balance between personal benefit and the greater benefit of the community or nation or the world.

This has also been evident in the deregulation of many industries like the finance sector, utility services, trading terms, land management etc. In turn, this has taken away many of the checks and balances that once served the common good and increased examples of ill-thought, foolish, greedy and self-serving behaviour.

Most importantly to the theme of this conference is the gradual wind-back of regulation and compliance in rural land management – to where we have virtually none today. Not to say the rules aren’t there. We simply choose not to enforce them, except for maybe native vegetation management.

We have seen the *Integrated Planning Act* place huge responsibilities on urban and agricultural development and land use, but we have ignored the need to regulate and comply with what we don’t do, as our responsibility to caring for the land and other people.

It is much like the parable ‘The tragedy of the Commons’.
The tragedy of the commons is a term originally used by Garrett Hardin to denote a situation where individuals acting independently and rationally according to self-interest, and behave contrary to the best interests of the whole group by depleting some common resource.

As it says in the famous 17th century folk poem – “The Goose and the Commons”

* The law locks up the man or woman
  Who steals the goose off the common
  But leaves the greater villain loose
  Who steals the common from the goose

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(Technology)
The third emerging response is through technology.

Desert Channels Queensland is helping to reverse the spread of Prickly Acacia through using technology and innovation – working smarter not harder, and giving landholders some hope against this highly invasive pest.

DCQ has been pioneering a range of new technologies and refinements to existing techniques.

These techniques and the introduction of supporting legislation have reduced treatment costs by up to tenfold - and as a result - landholders are re-engaging in weed control. Science is being focused to support on-ground delivery - and a wave of innovation has been stimulated across western Queensland.

Investment by the Queensland Government over the last 2 years has killed vast areas of Prickly Acacia in strategically important areas, and funding is sought to continue this work.
DCQ is focused on eradicating Prickly Acacia in the Lake Eyre Basin – as well as supporting our neighbouring NRM Groups in removing small outlier populations in the South West NRM region, and core infestations from the Southern Gulf Catchments region.

The most common technique used to date, utilises agricultural unmanned aerial vehicles (UAVs) or drones, which target very dense infestations of Prickly Acacia, while ground staff using all terrain vehicles (ATVs) target buffer areas and landholders treat lighter paddock infestations.

DCQ has worked with the Queensland Government to develop modified satellite mapping, thereby allowing easy identification of high-risk areas.

DCQ has also pioneered the use of the UAVs to apply residual chemicals with a high degree of accuracy.

The DCQ program has such a high degree of precision that the federal body governing the use of chemicals has issued a special permit, which allows the use of residual chemicals within watercourses, and the Queensland Government has issued a special Area Management Plan to complement this exemption.

Combined, these two instruments have provided significant efficiency gains and cost reductions, which now means that eradication of the core areas of Prickly Acacia are both possible and affordable.

I am sure DCQ’s Field Supervisor, Mr Peter Spence will go into much more detail on these innovative and ground breaking practices in his presentation.

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(Measuring benefit)
In all the discussion on weed management and population control, we often lose sight of why it all matters. Yes, we talk about ‘benefits’, but how do we define and measure them?

The mission statement of the David Suzuki Foundation says “Our dedicated team ensures that even the smallest contributions go a long towards protecting nature in Canada”.

In an essay last year, Dr David Suzuki said that governments, media and much of the public are preoccupied with the economy. That means demands, such as those for recognition of First Nations treaty rights and environmental protection, are often seen as impediments to the goal of maintaining economic growth.

The gross domestic product has become a sacred indicator of well-being. Ask corporate CEOs and politicians how they did last year and they’ll refer to the rise or fall of the GDP.

It’s a bizarre way to measure either economic or social well-being. The GDP was developed as a way to estimate economic activity by measuring the value of all transactions for goods and services. But even Simon Kuznets, an American economist and pioneer of national income measurement, warned in 1934 that such measurements say little about “the welfare of a nation”. He understood there’s more to life than the benefits that come from spending money.

We need and deserve better indicators of societal well-being that extend beyond mere economic growth. Many economists and social scientists are proposing such indicators. Some argue we need a “genuine progress indicator”, which would include environmental and social factors as well as economic wealth.

Whatever we come up with, it has to be better than GDP with its absurd emphasis on endless growth on a finite planet.
But no matter how you define and measure societal wellbeing, and the benefits of protecting our agricultural land - there is no doubt we must take action now.

As author and Noble Prize Winner for economics and former advisor to President Bill Clinton, Professor Joseph Stiglitz said, in an interview with ABC's Richard Fidler

‘If we had 1000 planets, it wouldn’t matter if we got it wrong, and the disaster occurs – we would shift to the next planet – but we have only one planet”.

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(Sign off)

Australia – and Queensland in particular – is expected to play a significant role in addressing world food supply issues in coming years and decades. To ensure we can feed ourselves, and contribute meaningfully in a global context, we must protect our agricultural assets – and we must do it today. Effective weed control is a major component of that.

The cost of doing nothing in a rapidly changing world is far too high to even contemplate.

Thank you.