PACIA

PREPARE
THREATS & OPPORTUNITIES 2030

WORKSHOP FORUM

KEY THEMES & DIRECTIONS
22 APRIL 2010

PREPARE 2030
Threats and Opportunities

WORKSHOP FORUM:
KEY THEMES AND DIRECTIONS
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Acknowledgements

Plastics and Chemicals Industries Association thanks all of the contributors to this Prepare 2030 Program, in particular those who participated in the Workshop Forum held on 22 April 2010.

The Prepare 2030 Program is supported through the strategic partnership between PACIA and Sustainability Victoria and the Sustainability Covenant between PACIA and EPA Victoria. These partnerships enable our organisations to work closely together to ensure the sustainability of the industry.

Questions and Feedback

PACIA welcomes feedback and comments on the Prepare 2030 Program. For more information and to provide feedback, contact:

PACIA Sustainability team
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Disclaimer

PACIA has made all efforts to ensure that the information contained in this document is true and accurate. Views of Workshop Forum speakers and participants are not necessarily those of PACIA.

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Prepare 2030 Program - Introduction

WHAT

The Workshop Forum for a Sustainable Future was the public event through which the Plastics and Chemicals Industries Association engaged with its members, government, research agencies, community and other industry groups from across Australia to help steer a path to a more sustainable future.

This report presents the key themes and directions identified through the Workshop Forum. Prior to the forum, all participants were provided with a thought piece titled ***Passport to Your Future***, which was designed to help stimulate thinking and broaden participant's views beyond the short-term and towards 2030.

Together these documents describe the key drivers for change and those threats and opportunities identified by participants of the shifts required in policy, regulations and programs for government, industry and society.

PACIA looks forward to acting further on the information gathered, to supporting member companies plan for the future and continuing to work with our partners.

WHO

Internationally recognised speakers workshopping with companies across the chemicals and plastics industry, alongside government, research agencies, community members and the multiple industry sectors that use chemicals and plastics.

WHY

The chemicals and plastics industry, its supply chain relationships, R&D and skilled workforce are central to Australia's current high income economy and in particular, to attaining an environmentally sustainable future. For more than 150 years, chemicals and plastics have been at the heart of the solutions needed to achieve a more sustainable and successful Australia.

But there is no doubt that the horizon has changed. The next 20 years to 2030 will be very challenging and different to the last twenty. Changes will be required in order to provide the solutions for our future needs in Australia and worldwide – and chemicals and plastics are integral in delivering these solutions.

To this end, PACIA created the Prepare 2030 Program to explore the megatrends, threats and opportunities that the future holds for us to the year 2030.

Our goal for the Prepare 2030 Program is to identify the actions required to ensure a sustainable future.

Our focus is the leadership role of the chemicals and plastics industry in delivering the solutions needed to meet tomorrow's challenges today.

WHEN

22 April 2010

WHERE

Melbourne, Australia

SUPPORTERS

Sustainability Victoria, EPA Victoria

A Message from PACIA

Providing solutions to Australia's challenges

For more than one hundred and fifty years the science of modern chemistry has been at the heart of providing solutions to challenges faced by humanity. Since the beginning of the Industrial Revolution the chemical industry has been central to developing innovative products and services that make people's lives better, healthier and safer. From small improvements in everyday life to fundamental advancements in science and technology, the chemical industry has helped lift billions of people out of poverty and sickness and into a life of prosperity.

Chemistry is synonymous with innovation and innovative business practice. From medicine to energy to computing to transport and many more industries beyond, the chemicals and plastics industry has provided the products and services that make the world an amazing place.

Some of these products have been in response to an immediate need. Others have looked beyond the horizon opening up entirely new markets and opportunities that have driven solutions today to problems that seemed only achievable several decades into the future. It is these threats and opportunities that the Prepare 2030 Program seeks to address.

The Australian chemicals and plastics industry, through its industry association PACIA, is ambitious in its thinking. We are seeking to identify the overarching megatrend drivers and the key threats and opportunities that will impact upon the future prosperity of Australia and in turn our chemicals and plastics industry. We continue to look at and improve our own operations through the PACIA Sustainability Leadership Framework, but we need to build on that. We know that we have a key role in assisting those beyond our doors.

This is the challenge we set ourselves, and through broad partnerships with government, industry, the research community and the Australian community at large, we know we can achieve it.

The Prepare 2030 Program is front and centre to that challenge.

We give special thanks to Sustainability Victoria and EPA Victoria, and the Strategic Issues Advisory Council of PACIA. This document is possible because of their vital guidance and support, and marks the culmination of this stage in our journey.

Ross McCann, PACIA President

PACIA

A Message from Sustainability Victoria

Planning and partnerships for a new future

As decision makers of today we can choose to take action to address the challenges of climate change and resource scarcity or do nothing. However, the risks in doing nothing are high.

For this reason, Sustainability Victoria is pleased to sponsor PACIA in this project and partner with EPA Victoria to help the Australian chemicals and plastics industry improve performance and create a clear path to change and prepare for 2030.

In undertaking this long term planning, we join some notable leaders on the international stage. The World Business Council for Sustainable Development developed three influential scenarios in 1997. For the last 30 years Shell has used scenarios forecasting forward 50 years to maximise the effectiveness of its strategies and investments.

At Sustainability Victoria, we recognise the importance of the chemicals and plastics industry to Australia's environmental, economic and social future. As the third largest manufacturing industry in Australia and integral to Australia's sustainability, we are pleased to partner on Prepare 2030.

Anita Roper, CEO Sustainability Victoria
Key sponsor Prepare 2030

Sustainability victoria

HISTORICALLY AUSTRALIA HAS BEEN INNOVATIVE AND ADAPTABLE. OUR OPPORTUNITY: INSTEAD OF 'DIG AND SHIP', WE 'MANUFACTURE AND CREATE' -

C DUNN, MD, FBT TRANSWEST, 22 APRIL WORKSHOP FORUM

Australia's Chemicals and Plastics Industry

Australia is one of the few countries in the world to have an integrated chemicals and plastics manufacturing industry. More importantly, this industry feeds directly into the strength and viability of virtually all other industries in Australia via its products, services, research, innovation and expertise.

PACIA is the peak body representing the chemicals and plastics industry in Australia. Our members represent the entire supply chain including the manufacture, processing, importation, transportation, storage and trading of chemicals and plastics.

The chemicals and plastics industry is the third largest manufacturing industry in Australia:

- Turnover in the industry is approximately $32.5 billion
- Industry value added is $9.6 billion
- Provide wages and salaries of $4.7 billion
- Employment in the industry is about 85,000 people directly
- The industry represents between 9 and 10 per cent of total Australian manufacturing activity.

The domestic chemicals industry is not only an important sector in its own right. It has a multiplier effect in productivity and cost saving benefits to the broader economy that would be foregone if sections of the chemicals industry moved off shore.

The industry is perhaps the most diverse and broad in its reach across Australian society, environment and industry. It can be broadly categorised as follows:

- **Basic Chemicals** (organic industrial chemicals, inorganic industrial chemicals, fertilizers, industrial gases, synthetic resins)
- **Specialty Chemicals** (explosives, plastics, paints, rubber products, other polymers and inks)
- **Consumer Chemicals** (pesticides, soaps and detergents, cosmetics and toiletries, medicinal and pharmaceutical)

In manufacturing these products, the industry uses a variety of inputs (from corn starch to gas or oil, mined minerals, 'waste' chemicals from other manufacturing, to sawdust) with the application of these products intrinsic to all our lives. **Figure 1** highlights this vital position in Australian supply chains. More than 85 per cent of the outputs from the industry become inputs to other industry sectors in the economy.

In short, the chemicals and plastics industry, its supply chain relationships, R&D and skilled workforce are central to Australia's current high income economy and in particular, to attaining an environmentally sustainable future.

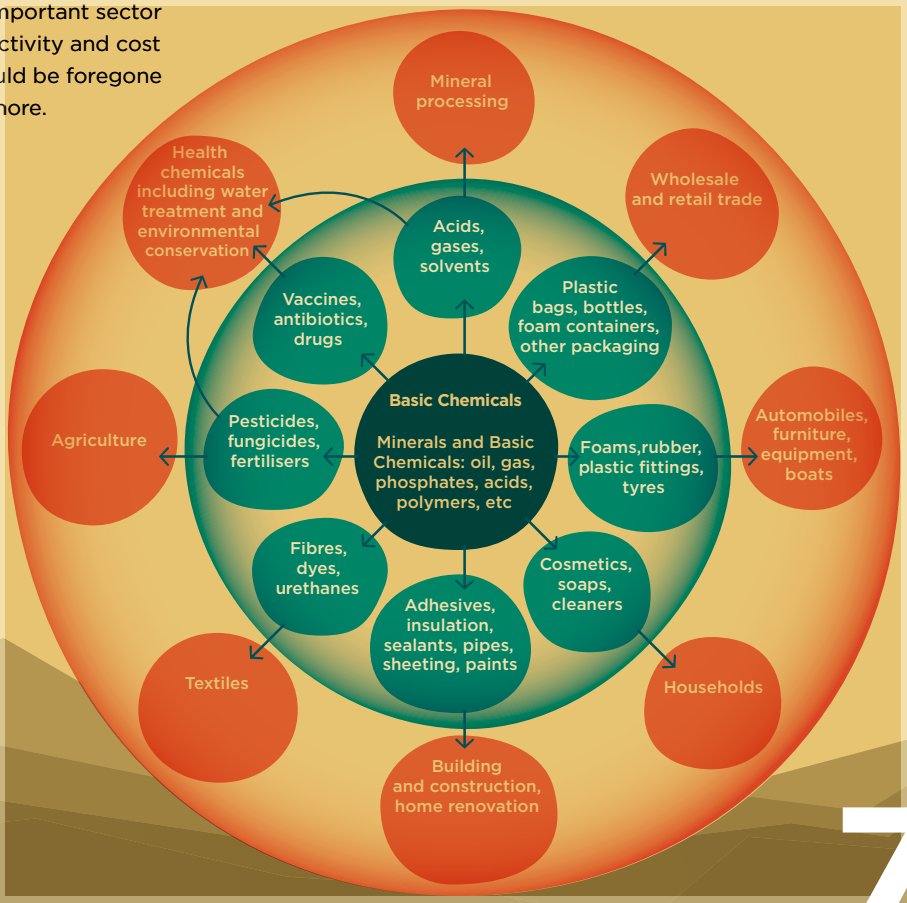


Figure 1:
Linkages between the Australian chemicals and plastics industry and other industries.

Basic Chemical Products

Refined Chemical Industry

General Industry Sectors

Providing Solutions - from the 1800s

For more than 150 years, chemicals and plastics have been at the heart of the solutions needed to achieve a more sustainable and successful Australia.

As an intrinsic supplier to most other sectors of the Australian economy now, industry leadership continues to enable significant positive change – environmentally, socially and economically.

In recent years, the industry's unique Sustainability Leadership Framework has become the key platform for initiating such change. The Framework was developed through PACIA's Sustainability Covenant with EPA Victoria, and officially launched by the Federal and Victorian Environment Ministers in 2008. Many PACIA member companies are now using the Framework to continue looking towards the horizon and providing solutions to new challenges facing us, including climate change, water shortage, population increases, and resource constraints.

1873-4

Australian manufacture of black powder and dynamite for the gold and mineral boom takes off, due to Victorian Government import duty. Key company is Jones, Scott and Co, which later becomes Imperial Chemical Industries (ICI).

1878

First manufacture of agricultural fertiliser commences in Australia, improving crop yields and farming practices.

1902

Transport revolutionised by development of rubber tyres. First tyre factory established in Port Melbourne.

1907

First man-made synthetic liquid resin invented by L H Baekeland, called Bakelite®. Offers revolutionary new properties and many uses.

1915

High-grade Aspro first produced by Melbourne pharmacist George Nicholas and Henry Woolf Smith, overtakes international market.

1920s

Nylon developed by DuPont and over time becomes a tough, lightweight and flexible replacement for natural fibres such as silk and cotton.

1930s

Range of plastics developed, including vinyl, polyurethane and polystyrene, all offering superior characteristics over alternatives such as timber and ceramic.

1936-40

ICI continues investment by acquiring or establishing key chemical production plants for water treatment and agricultural chemicals, explosives and cleaning solvents.

2005

Australians recycle 30.5% of plastic packaging – one of the best recycling rates in the world.

2008

Release of Australian Productivity Commission study on chemicals and plastics, identifying opportunities to improve effectiveness of regulation and improve solutions delivered by industry.

2004

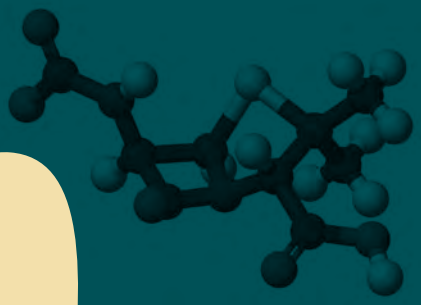
PACIA is the first industry group to sign a Sustainability Covenant with EPA Victoria.

2008

Launch of PACIA's world-leading Sustainability Leadership Framework for the Australian chemicals and plastics industry, endorsed by Federal and Victorian Environment ministers.

1941

World breakthrough for health and life, with Melbourne's Howard Florey putting penicillin into production.



2001

Development of Chemicals and Plastics Action Agenda, identifying opportunities through the Australian industry and importance of the industry to the Australian economy.

2010

Australian chemicals and plastics industry commences Prepare 2030 program, examining the societal challenges of the future and the industry's continued role as solutions provider.

2000

Australian Cooperative Research Centre for International Food Manufacture and Packaging Science develops biodegradable packaging material based on starch.

1952

Sir Alan Walsh of CSIRO invents the Atomic Absorption Spectrophotometer for high speed chemical analysis of metallic elements.

1991

Bone repair leaps forward with metal pins and screws replaced by plastic rods by Drs R Ryan and S Ruff at Sydney's North Shore Hospital.

1960

Australian company Scientific Optical Laboratories designs the world's first plastic spectacle lenses, which are 60% lighter than glass lenses.

1988

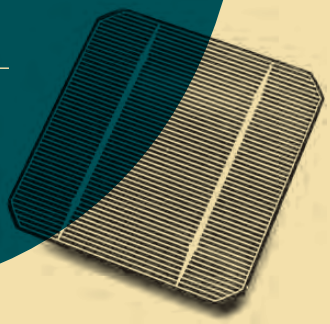
Partnership between CSIRO and Note Printing Australia leads to the world's first plastic bank note, providing a longer life than paper and drastically cutting counterfeiting.

1979

Chemistry combined with plastics technology by Professor Graeme Clark of Melbourne University becomes the bionic ear.

1985

World's most efficient solar cells are produced by Dr Stuart Wenham and Professor Martin Green of NSW University using plastic composites.



The Prepare 2030 Program

The chemicals and plastics industry has always recognised its role as a solutions provider. For the Australian industry, a watershed moment in its recent history occurred in 2006 with decision of the PACIA Board to take leadership role in sustainability. This culminated in the release of the PACIA Sustainability Leadership Framework in 2008.

The Sustainability Leadership Framework:

- Describes a vision for the industry and the role of Australian chemicals and plastics companies in a sustainable society
- Identifies priority areas of action and opportunity relevant across the industry
- Presents a strategic approach for each PACIA member to take leadership action
- Links members with tools, programs and policy to underpin implementation and communication of the framework; and
- Initiates integrated reporting on progress, success and challenges for the industry.

More importantly, it looks not only at the operations of a company, but also the activities in the market and the supply chain along with step-change transformative approaches into the future.

There is no doubt: the next 20 years to 2030 will be very challenging and different to the last twenty years. The horizon has altered. Changes will be required in order to provide the solutions for our future needs in Australia and worldwide – and chemicals and plastics are integral in delivering these solutions.

Taking the initiative in this space and building on the Sustainability Leadership Framework, PACIA created the Prepare 2030 Program precisely to explore the megatrends, threats and opportunities that the future holds for us to the year 2030. Our goal for Prepare 2030 is to identify:

- The megatrends facing Australia and its chemicals and plastics industry
- The consequent opportunities and threats, and
- The actions required to ensure a sustainable future.

The Prepare 2030 Program has been designed to deliberately engage across the industry, as well as with governments, research agencies, the community and the multiple sectors that use chemicals and plastics. This engagement creates a shared understanding of the threats and opportunities we will all face.

It is clear that there are major upheavals in four key areas, and to this end, the PACIA Board and Councils identified these four key drivers as a starting point for Prepare 2030 planning and action:

1. Resources and materials
2. Climate and environment
3. International dynamics
4. Social change.

Early in the development of the 2030 Program, it became clear that industry did not have all the insights and all the answers. PACIA therefore chose to be inclusive in bringing together not only our own members, but also partners in government, research, community and the multiple industry sectors that use chemicals and plastics through a public Workshop Forum in Melbourne on 22 April 2010. We recognise we will best achieve a strong sustainable future through cooperation.

"WILL USE THOUGHTS SETTING FOR BUSINESS PLAN RECRUITMENT AND RETENTION

Outcomes from the 2030 Workshop Forum

In preparing for the workshop, PACIA commissioned writer and editor Richard Collins to produce a scenario document. This short paper was distributed to all Workshop participants.[1] This *Passport to your Future* takes current data and trends and describes a possible world in 2030 covering the four drivers. It was principally designed to stretch our vision toward 2030 thereby moving beyond short-term thinking.

Over ninety of Australia's best minds and strategists, our members and partners attended the Workshop Forum on 22 April 2010, facilitated by Geoff Kelly. They were welcomed by Anita Roper, CEO Sustainability Victoria, Ross McCann, President of PACIA and Margaret Donnan, Chief Executive of PACIA. Ably assisted by four keynote speakers tasked with providing specialist insight, key information and stretching our thinking, the workshop participants were asked to identify the key threats and opportunities out to 2030 within the four drivers.

The future drivers were addressed by:

• Driver 1: Resources and materials	Dr Calum Drummond
• Driver 2: Climate and environment	Robyn Williams
• Driver 3: International dynamics	Richard Watson
• Driver 4: Social change	Mark McCrindle

Each keynote speaker presented for twenty minutes and was followed by thirty minutes of brainstorming among eleven tables of eight or more participants.

The key future strategic issues of each session are presented in the following sections, identifying:

- An overview of the keynote address;
- Key themes emerging from the brainstorming exercise; and
- The major threats and opportunities out to 2030 most frequently mentioned during the workshops.

All copies of the speakers' powerpoints and the *Passport to your Future* are available on PACIA's website. Audio of the day is available upon request from PACIA.

1 PACIA website http://www.pacia.org.au/Content/Prepare2030.aspx

AND IDEAS IN SCENE NING SESSIONS AND IN STAFF PLANS" - W KOEDYK, CEO, CHEMCOLOUR, 22 APRIL WORKSHOP FORUM

Driver 1: Resources and Materials

KEY POINTS: Calum Drummond

- **Secure profitability** – businesses pursue efficiency, utilisation, enhanced product performance.
- **Security of supply** – develop renewables, increase recycling, minimise risk.
- **Licence to operate** – driven by regulators, customers, community.
- **Enhanced service provision** – more value adds to product sales.
- **Custodianship of Planet Earth** – environmental footprint a key metric.

Keynote speaker on the driver of 'Resources and Materials', Dr Calum Drummond, sees the future as 'Sustainability Cubed', a phrase that captures the emerging need for an integrated sustainability focus on the three key areas of business models, manufacturing processes and products that supply industry and society.

As the Chief of Materials Science and Engineering at CSIRO, Calum said the science organisation contemplates the Possible, Probable and Plausible, but in doing its business planning only develops the latter two. It recently distilled information from 100 key staff to inform its next five-year plan and identified five mega-trends, one being 'More from Less' [2]. Those vital global resources under pressure range from crude oil and fresh water to agricultural land and high-grade minerals, while global energy demand is expected to rise 44% by 2030.

Key themes from Driver 1 workshop session

1. No value adding

- Australia's resource wealth, skilled workforce and political stability were recognised as key advantages in attracting global investment, but there was considerable criticism of today's prevailing 'Dig and Ship' mentality.
- One group of workshop attendees noted the potential for that "Dig and Ship" mentality to be a self-fulfilling prophesy: "An inaccurate perception of industry – with declining manufacturing – has a negative effect." Several called for greater government vision in supporting key industries, including chemicals and plastics.

2 CSIRO Our Future World, an analysis of global shocks, trends and scenarios, April 2010, http://www.csiro.au/files/files/pw2c.pdf

2. Scarcity of resources and materials

- Growing resource pressures by 2030 were recognised as a reality by all participants; however policy responses remained open to debate. Almost all the working groups saw a lack of frameworks and mechanisms to support more efficient use of resources and recycling as being a major impediment to innovation and sustainable industry planning and investment.
- Supply chains that rely on global sourcing may be vulnerable to increasing resource competition and political insecurity in source countries. In addition, energy stocks may experience competition between end uses, either as a fuel or feedstock.
- Locally, infrastructure platforms will evolve to support more efficient resource use, such as decentralised water and energy, smart buildings and urban farming.

3. New technologies

- The next 20 years will demand new technologies. Futurist Richard Watson, the keynote speaker on international dynamics, said so-called GRIN technologies – Genetics, Robotics, Information technology and Nanotechnology – are all following a curve of exponential change.
- CSIRO talks of adaptive and responsive materials, and multi- and enhanced functionality materials. Renewable energy will rise in prominence. Efficient food production, including genetically modified, and enhanced food preservation will be embraced.
- However, some attendees noted low support by Australian venture capital and government financing of green innovation; others a slow uptake of clean tech in the local manufacturing sector. In addition, ABC science journalist Robyn Williams, who spoke on Climate and Environment issues, sees no appetite for step change: "This is a noisy age but not an innovative age... The gap between the high tech science and its application in the world is gigantic."

4. New business models

- The deeper change that Calum and many attendees forecast to 2030 was the need for new business models, pulled through by market sustainability demands and pushed by regulation.
- There was considerable discussion about what those models may look like. For example, social demands for more efficient and less environmentally damaging products may drive research and cross sector collaborations. Resource scarcity and nationalism may drive new regulation. Supply chain risks may demand relationships that are both resilient (diverse sources) and risk optimised (transparent, strong relationships).

Table 1. Most frequently listed priority threats and opportunities from Driver 1 Workshop, Resources and Materials.

THREATS	OPPORTUNITIES
Continued high demand with minimal recycling of scarce finite resources, in particular oil, water and raw minerals.	Improve value adding in manufacturing.
There are too few mechanisms and frameworks designed with a long term view (ie cradle to cradle), which is an obstacle to innovation.	Increase efficiency, set targets.
'Dig and ship' mentality as Australia lacks local value-add to natural resources (ie gas, coal, ore), meaning jobs and economic benefit are shipped offshore.	Support innovative thinking on Corporate Social Responsibility and Sustainability, so these become a 'market pull'.
Short term thinking and political expediency.	Australia as stable environment for local and international investment.
	Increase reuse of water, waste and materials, efficiency and cradle to cradle.

Driver 2: Climate and Environment

KEY POINTS: Robyn Williams

- Barriers to implementation of disruptive innovation.
- Climate change is real – temperature records, biodiversity impacts.
- New technologies will break down business silos *(are genetic foods agriculture or chemistry or both?).*
- Trust in institutions is failing.
- Big picture solutions required, including fusion energy, geothermal power.

The current devotion to incremental change in Australian business and political circles will increase the ultimate disruption of environmental and climate impacts, ranging from wilder weather to desertification, environmental refugees to the spread of disease. ABC science journalist Robyn Williams, keynote speaker on the Climate and Environment driver, said policies to mitigate and adapt to these impacts will also be more urgent when they do eventually come into play.

Speakers throughout the day reiterated the environmental pressures; workshop participants suggested over 50 opportunities and threats in response, though no clear consensus emerged on the key issues. The discussion revolved around climate issues, environment issues and social responses.

Key themes from Driver 2 workshop session

1. Climate and carbon

- "Climate change is real; in fact we under-report it," said Robyn, who illustrated the point with evidence well beyond global surface temperatures, such as species extinction. Potential climate impacts and policy responses underpinned many participant perspectives on a 2030 world.
- Imposing a price on carbon was perceived as probable, driving development of new technologies and business models but, conversely, potentially also leading to greater resistance through a conflict of "cost versus environment" and the rise of the blame game slowing action.
- A low-carbon economy was seen to include alternative and diverse energy sources, climate-proof infrastructure and socially resilient solutions such as more mixed use neighbourhoods to reduce commuter times and impacts.

2. Environmental pressures

- CSIRO sees environmental footprint as a key metric for businesses in the years ahead as environmental pressures and social concerns grow. Attendees recognised there is an imperative to improve communications and understanding of the issues, including development of such tools.
- CSIRO's Calum said 12 million hectares of agricultural land is already lost each year globally to degradation and growing cities, which will displace 50 million people by 2020. Urban agriculture, such as vertical gardening, was seen as one idea to help feed a growing population from dwindling fertile land.
- Other resources will necessarily be viewed differently, particularly water and energy. Adaptation to a scarcity-based world was seen as a major opportunity, with current capacities transformed to future circumstances. That could mean both new industries (carbon traders, water managers, service-based businesses) and greater synergies between industries, including industrial ecology, technology fusion, supply chain collaborations and extended product life cycles crossing industries.

3. Social settings

- Environmental problems are 'constructed' by society and several attendees saw a threat from skewed perceptions and growing disagreement creating uncertainty and unwillingness to pay. Unless well managed there was concern society could get stuck between the extremes of 'green everything' and eco-cynicism.
- The most cited threat was short-term thinking and political expediency leading to deferral of hard decisions and a slowing of action generally. Well targeted regulation and legislation could drive good solutions; poorly targeted it could stifle and skew innovation.
- One implication of a failure to achieve consensus is the public will not be willing to pay the higher costs associated with carbon (and other) pricing, rising standards and compliance with more rigorous reporting regimes.

Table 2. Most frequently listed priority threats and opportunities from Driver 2 Workshop, Climate & Environment

THREATS	OPPORTUNITIES
Short term thinking - political expediency does not support long-term solutions given the conventional view that people won't vote for pain.	Australia has great alternative and diversified energy sources (solar, biofuels, uranium).
There is uncertainty and lack of social dialogue, plus different views between generations (eg nuclear).	We can adapt and transform our capacities to future circumstances.
There is an unbalanced perception of the state of environment within media, impacting upon awareness of issues.	Through product lifecycle and supply chains we can identify clever reuse opportunities, especially across industries.
People do have goodwill but are not willing to pay more for environmental protection.	We can achieve a mindset change through localised debate, personal responsibility / accountability.

Driver 3: International Dynamics

KEY POINTS: Richard Watson

- Power shift eastwards, US goes protectionist.
- Resource competition, resource nationalism.
- Product and service outsourcing to Asia.
- Increasing migration, Asian values and aesthetic.
- Global connectivity - collaboration, volatility, location-based services and RFID networks.
- Wild cards – include energy shortage and price spikes, radical greening, extended drought, global pandemics, rogue stakeholders.

Futurist Richard Watson conceived of four possible sociocultural settings in a 2030 world: Moreism, Enoughism, Personal Fortress and Smart Planet. Which future comes about will be dictated by two parameters – society's level of market optimism/pessimism and of social activism/passivism.

As keynote speaker for the International Dynamics driver, Richard acknowledged there were many "wildcards", a view picked up by the workshop participants who flagged 20 opportunities and an equal number of threats.

Australia was typically seen as well positioned to prosper in the coming Asian century, but there were calls for both long-term visioning and enhanced flexibility in responding to the issues facing global society.

Key themes from Driver 3 workshop session

1. Global growth

- The global population will grow 50% over 40 years to nine billion people, most of that in the developing world - India is adding the equivalent of Australia's population each year. The world is also urbanising, with China projected to build three cities larger than Sydney every year until 2030 to cope with urban migration.

2. China rising

- The China boom is already underwriting Australia's economy and was expected by attendees to continue. However, a number pointed to Australian vulnerability through over-reliance on a single market (concentration risk); others to the possibility of local push back against Chinese investment, particularly if "resource nationalism" rises.
- Richard Watson flagged a possible counter-trend: the minute China becomes the world's biggest economy, the US and EU may go the other way and put up trade barriers. He asked 'Where would Australia sit?'

3. Scale and location

- Australia's small size and Asia-Pacific location are threat and opportunity respectively. The local chemicals and plastics industry, being just 1% of the global industry, lives with the risk of being sidelined in the global supply chain, particularly if rising oil prices crimp the economics of shipping and, as CSIRO predicts, multinationals narrow their global supply relationships to minimise social and regulatory exposure.
- On the other hand, proximity to Asia and an existing multicultural society aids skilled migration and business linkages, such as access to capital/markets, collaborative projects and ability to provide real-time services.
- A benefit stemming from having no shared land borders is a measure of protection from global food, energy, land and water security issues – but this may also attract unwelcome interest from other countries. National stability and modern (clean) industries were also seen as an investment and branding opportunity.

4. Regulation

- Multilateral regulation is on the global agenda, such as common labelling of products through the Asia-Pacific Economic Cooperation (APEC) forum and a push to accept foreign testing regimes. Lower levels of regulation offshore were seen to pose a challenge to the competitiveness of Australian industry, particularly from centrally controlled economies imposing lower costs.
- On the other hand, strong regulation offers a potential 'licence to operate' benefit, especially if, as some suggested, there is a global market backlash against private enterprise.

5. Instability

- The number of environmental refugees may grow through the loss of agricultural land and climate change impacts including rising sea levels and shrinking watersheds.
- Countries that share rivers have a statistically higher probability of war, particularly if the river basin is under drought stress. Declining snow fall in the Himalayas threatens much of India and East Asia; the Middle East is also water vulnerable, threatening global oil security and costs.
- Finally, with one billion people expected to have PCs and four billion to have mobiles by 2030, Richard noted the ramped up speed and connectivity of global society would also ramp up global volatility.

Table 3. Most frequently listed priority threats and opportunities from Driver 3 Workshop, International Dynamics.

THREATS	OPPORTUNITIES
We face skills shortage and aging population, cuts to immigration.	Move from consumerism to smart planet.
A high reliance on Asian market for exports of raw materials, and that they do the 'value add' instead of Australia.	Diversify reach into other markets and supply chains including China.
The volatility of China and Asia threatens existing supply chains.	Promote Australian industries' competitiveness - clean, green, R&D niche focus, connected.
An increase in nationalism and protectionism in countries, along with inconsistent regulations and standards.	Regulation and investment leads to innovation ahead of competitors.
Global food, energy, oil, land demand and insecurity of supply.	Good at collaborating to solve problems.

Driver 4: Social Change

KEY POINTS: Mark McCrindle

- **Demographic boom** – 35 million people by 2050.
- **Ageing population** – Today there are five workers per pensioner; in 2050 that will be just 2.7 workers.
- **Permanent understaffing** – the rise of the "skinny organization".
- **Rising expectations** – People pursue self-actualization over accumulation.
- **Asymmetrical power** – Internet generations create their own reality.

Divergent demographics, more than any other dynamic, were cited as the biggest driver of change coming down the pipeline over the next 20 years. Social researcher Mark McCrindle, the keynote speaker on the Social Change driver, gave working groups plenty to consider after listing the top issues as population growth and ageing, looming skills shortages, changing social expectations and new "bottom-up" power dynamics courtesy of social media.

Key themes from Driver 4 workshop session

1. Demographics

- The headline trends are a strongly growing population, to 35 million by 2050, and an ageing one, with the percentage of the population 65-75 years old rising from 7.6% to 10.6%.

  Attendees saw the twin trends as providing new opportunities for business, but also significant policy challenges that will impact society-wide.

2. Skills shortage

- Skills will be at a premium in the years ahead. "Peak labour" hits Australia next year, according to Mark, when for the first time more people retire than join the workforce.
- Even more than that, the biggest threat perceived by attendees was the mobility of Generation Y, which will fire up turnover rates in the workforce that will lead to loss of skills and corporate knowledge.
- "It's the end of 'career' as we know it," said Mark, with average job tenure falling from 12 years in 1970 to just four years today. "We are going to be permanently dealing with lean organisations."
- It saw attendees note that business will have to focus on managing workforce rollover rather than retention; capturing knowledge rather building it; and carefully planning leadership transitions.
- The skills shortage may be most acute in the technical disciplines, with decreasing numbers of engineering and science personnel and graduates, and indeed decreasing numbers of people willing to work in "dirty" industries. Immigration may fill the gap – China is apparently graduating 264,000 environmental engineers a year – but this also introduces cultural and language issues that companies will need to manage in their workforces.

3. Psychographics

- Another key impact identified by attendees was changing social expectations. Mark talked of a "post-structural" world, where people have little allegiance to, or trust in, country, community, career, employer, brands and the like. CSIRO's Calum Drummond sees maintaining a social "licence to operate" as one of the big five manufacturing issues.
- He also introduced the idea of asymmetrical power, a shift in influence from central players such as business and government to the internet generation, who increasingly shape their own reality.
- The working groups clearly recognised that managing the high expectations of today's generation as employees and consumers will be a challenge, but also an opportunity to build a competitive advantage.
- In addition, International Dynamics keynote speaker Richard Watson identified two possible dynamics: the counter-trend "tech no" push to simplicity and also the increasing integration of Asian values and aesthetics in Australia through business and immigration links.

4. New-look cities

- All working group participants agreed on the prospect of rising urban density, of cities growing up rather than growing out. An expanding and ageing population will demand greater density, which will reshape our cities, our infrastructure and our daily patterns.
- A glimpse of this future was provided by Sustainability Victoria CEO Anita Roper, who set the framework for the day with an introductory presentation. She outlined the vision for the Armstrong Creek precinct in Geelong, which will integrate work and home opportunities, boast near zero net energy use and embed smart infrastructure concurrently with development.

Table 4. Most frequently listed priority threats and opportunities from Driver 4 Workshop, Social Change.

THREATS	OPPORTUNITIES
High Gen Y mobility – challenge to retain workforce and skills.	New business strategies to manage people's mobility (attract and retain staff) and gain benefit of new ideas, lifestyles.
Skills shortage with an ageing workforce.	Flexibility, adapting to changing behaviour, accommodate aging workforce.
Managing the high expectations of today's generation as employees and consumers.	Invest in knowledge, cross fertilisation of different streams.
Difficulties in changing buyer behaviour, with companies too slow to respond to new dynamics.	Industry reputation - leverage current positive level; rise of 'licence to operate' issues.

Summary and Next Steps

The chemicals and plastics industry's journey to 2030 has commenced. But it is not travelling without a map. In building on the PACIA Sustainability Leadership Framework, the industry has committed to the Prepare 2030 Program.

The goal of the program is to identify:

- The megatrends facing Australia and its chemicals and plastics industry;
- The consequent opportunities and threats; and
- The actions required to ensure a sustainable future.

We acknowledge our history and our future role as solutions providers to society's needs and challenges.

We have engaged a broad range of partners and sought insights from:

- The chemicals and plastics industry;
- Other industries, including suppliers and customers;
- Government;
- Research community; and
- Community organisations.

We have identified four key drivers:

1. Resources and materials;
2. Climate and environment;
3. International dynamics; and
4. Social change.

Together we have identified a set of Threats and Opportunities within each of those drivers.

And now we are working to act on this, supporting our members and seeking to progress this thinking together with our partners so that we can better prepare for 2030.

We will take stock and work with our partners on:

- Where there are consistent themes across the drivers;
- What policy options might address the broad range of threats;
- How to ensure that the opportunities are taken; and
- How we can integrate these ideas into strategic planning.

We welcome input and feedback to this document and the Prepare 2030 Program.

All comments and suggestions can be directed to PACIA via telephone, email or fax using the contact details inside the front cover.

"GREAT DAY, LOTS OF STIMULATION, GREAT PEOPLE, GREAT LEADERSHIP, THANK YOU"

R FISHER, BETTER FOR BUSINESS, PRESIDENT, ENVIRONMENT VICTORIA, 22 APRIL WORKSHOP FORUM

"TAKE IDEAS TO BOARDROOMS, MANAGEMENT MEETINGS AND SHOP FLOOR"

M HILL, BOARD MEMBER SUSTAINABILITY VICTORIA, EX-BOARD MEMBER EPA VICTORIA, DIRECTOR ACCORD, 22 APRIL WORKSHOP FORUM

"CONTINUE LEADERSHIP ROLE WITH GOVERNMENT RELATIONS AND CONTINUE PROVIDING OPPORTUNITIES FOR MEMBER COMPANIES TO MEET AND DISCUSS/SHARE ON THE JOB EXPERIENCE"

T GUNNING, GM MARSTEL TERMINALS, 22 APRIL WORKSHOP FORUM

Notes

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PREPARE
THREATS & OPPORTUNITIES 2030

WORKSHOP FORUM

KEY THEMES & DIRECTIONS
22 APRIL 2010

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