

REPORT OF THE EPCA 2016

50TH ANNIVERSARY ANNUAL MEETING

1 TO 4
OCTOBER 2016
IN BUDAPEST,
HUNGARY

50 YEARS OF GLOBAL CHEMICAL
INDUSTRY EVOLUTION: WHAT'S NEXT?





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SUNDAY 2 OCTOBER 2016

FINAL OF THE EUROPEAN YOUTH DEBATING COMPETITION (EYDC)

A JOINT STEM EDUCATION PROJECT BETWEEN EPCA & PLASTICSEUROPE
organized by young leaders GmbH

HOW WOULD YOU IMAGINE YOUR FUTURE – WITH OR
WITHOUT THE PETROCHEMICAL INDUSTRY AND PLASTICS?



**EYDC FINAL WINNERS IN BUDAPEST:
TIED FOR 1ST PLACE (LEFT TO
RIGHT): MS. CAROLINE GAKPETOR
(WINNER OF THE UK NATIONAL
EYDC FINAL) AND MS. GAÏA
JEANNOT (WINNER OF THE FRENCH
NATIONAL EYDC FINAL)**



National finals from April until September 2016 in nine countries in Europe. The European final will take place in October 2016 in Budapest.

**Giving young students the opportunity to debate the overarching theme
"50 years of the chemical industry. What's next?"**

The European Youth Debating Competition is a joint project between:

 **50 YEARS
CHEMISTRY FOR YOU**  & **PlasticsEurope**
Association of Plastics Manufacturers

Organized by young leaders GmbH

OFFICIAL EYDC 2016 BANNER





THE TEN WINNERS OF THE FINAL DEBATE OF THE EUROPEAN YOUTH DEBATING COMPETITION (EYDC) 2016 ALONG WITH HERMAN VAN ROMPUY, FORMER PRESIDENT OF THE EUROPEAN COUNCIL (2009-2014), EPCA PRESIDENT TOM CROTTY, PLASTICEUROPE EXECUTIVE DIRECTOR KARL-H FOERSTER, AND EPCA ANNUAL MEETING MODERATOR NADINE DEREZA, ON STAGE AT THE EYDC AWARDS CEREMONY DURING THE EPCA 50TH ANNIVERSARY ANNUAL MEETING CLOSING LUNCH

On Sunday 2nd October, EPCA witnessed the final of the European Youth Debating Competition¹ (EYDC), in which 32 young participants from across the continent were tasked to argue both for and against the petrochemical industry and plastics, highlighting its virtues but also its challenges.

Kicking off this Youth debate, former DOW Chemical executive, Theo Walthie, and marine biologist, Dr. Onno Groß, from the marine conservation group, Deepwave, provided two contrasting views of the industry and the future. Both the pro and con speakers made their points to the youth with exuberance.

Describing how petrochemicals continue to positively impact and transform practically every aspect of the world we live in, Theo Walthie said: "Chemicals is the industry of all industries!" Manufacturing, agriculture, transportation, food production and distribution, the appliances we use every day, medicine, communication, and information technology all both benefit from and rely on the petrochemical sector, the former DOW executive continued. "Today, your mobile phone has more computing power than Apollo 11, which went to the moon. That wouldn't be possible without petrochemicals." But Walthie said the industry is both coming

to terms with and offering solutions to the most pressing issue of our time: managing climate change and achieving sustainability. He believes the industry's capacity for technological innovation will help further transform computing to enable us to live and work smarter, and more efficiently. Petrochemicals can help foster a healthcare revolution as we move towards personalized medicine. But the industry is changing too, and Walthie reckons that over the next 50-100 years bio-feedstocks will replace oil and gas as the building blocks of production.

Dr. Onno Groß began by referencing fifteenth century theologian, Martin Luther, who, when asked what should be done in dark and difficult times, said: "Plant an apple tree!" Groß's point was that apple trees are self-sustaining and part of the circle of natural ecology, unlike the petrochemical sector, which is currently over-reliant on fossil feedstocks that are climate changing and finite – oil and gas – and contribute to a huge problem of waste that threatens the health of our environment. Human consumption of resources is already depleting the oceans: "90% of big fish – like shark and tuna – have been fished out of the water, and coral has been reduced by 50%." Another huge marine problem is plastic waste. It's reckoned there are 150m tonnes of plastic waste in the oceans today, and the quantity



AGATHE MARPLES

Runner-up of the Belgian National EYDC final and participant in the EYDC Final in Budapest

The European Youth Debating Competition provided me with an indispensable experience where I learned not only about the petrochemical industry, but also about its importance to our future and the part we play in it. The EYDC experience allowed me to interact with industry representatives and listen to the views of the important leaders of today. Debating has also taught me respect and open-mindedness for the knowledge that I haven't yet learned about, and how valuable it is.

¹ The European Petrochemical Association (EPCA) and PlasticEurope joined forces to promote STEM education (Science, Technology, Engineering and Mathematics) in Europe. They launched a new series of European Youth Debating Competitions (www.eydc.eu) throughout nine European countries, with a grand finale held in Budapest in the framework of the EPCA 50th Anniversary Annual Meeting.



**EZRA PARDOVITCH**

Winner of the Dutch National EYDC final and participant in the EYDC Final in Budapest

The EYDC for me was one of the best experiences of my life. I've established friendships with other youngsters from all over Europe and I see some of these friendships lasting a lifetime. I would like to thank young leaders GmbH and EPCA for this great opportunity and hope to be part of another EPCA Annual Meeting in the future, whether this is in Budapest or any place else.



GAÏA JEANNOT, JOINT WINNER OF THE FINAL DEBATE OF THE EUROPEAN YOUTH DEBATING COMPETITION (EYDC) 2016

is rising by up to 20m tonnes each year. Marine diesel emissions and oil spills are also contaminating the seas, which may be left both empty and dirty for coming generations. Waste is a human problem, the biologist continued. "There's no waste in nature: everything is reused or recycled." For these reasons, the petrochemical and plastics sector needs to develop a new plant-based economy and ecology, which is fossil carbon free. Bio-feedstock is the key, and the industry should come up with creative and responsible products, making better use of pre-design technologies. Groß concluded that the industry had to break its linkage with oil and gas, reduce hazardous waste, be more proactive, and develop a waste-free and sustainable "circle economy."

In the tradition of debating, both opening speakers were on the clock, and struggled to keep to the allocated time. But their younger counterparts followed them with an array of impressive, compelling and relentless contributions, all delivered within tight time constraints. With certain speakers tasked to either defend or criticize the sector, others were able to make their short contributions on a free basis. It was a lively, thoughtful, and entertaining session.

Those speaking for the industry peppered the judges and the audience with positives. It was suggested that plastics should be considered one of the greatest milestones in human development because these materials have transformed the world in which we live, by opening up the possibility of new products used in almost every sector of human industry and activity. Open a fridge, and there you will find a range of products

from food packaging to fridge parts that keep food safer for longer, improving human health and helping reduce waste. Get sick or need medical or surgical treatment, and petrochemical products – from drugs, syringes, bone cements, blood bags and lightweight prosthetics to plasters, delivery and drainage tubes, tissue engineering, cell growth scaffolding and artificial plastic organs – will help restore health and wellbeing. Petrochemicals have also transformed the way humans and machines communicate, facilitating the computing revolution from the mainframe to the laptop and smart phone. And the tough, lightweight, malleable materials that the industry produces are transforming industrial and domestic energy generation, delivery and use, and increasing the efficiency of road, rail, marine and air transportation.

A key point made over and over by industry proponents, was the sector's capacity for step-change innovation. When it comes to some of the most pressing problems facing the world today, this industry can help deliver solutions. Look how advanced materials are transforming the renewable energy sector. Look at the revolution in home energy use, with insulation and low-energy heating and lighting delivered thanks to petrochemical products. And look, too, at the industry's ongoing development of biochemistry as an alternative to oil-and-gas-based production.

But along with the positives, the industry had to face up to its problems, the critics argued. Here is an industry still reliant on finite resources that are set to run out within decades. And while bio-feedstock may be an interesting development, the quantities available are currently insufficient to replace

fossil feeds, so CO₂ emissions will continue to grow. The industry also has a responsibility for the waste generated by its products, and while the final consumer has a major impact in this regard, the producers have a cradle-to-grave responsibility to work with governments, politicians and educators to improve awareness of sustainability imperatives. Serious concerns were also raised about the impact of the industry's toxic and hazard products, and the as yet unquantifiable long-term effects of certain chemicals in the ecosphere. What impact is plastics ingestion having on people, animals and plants? Is genetic transmutation occurring? And what about the linkage between oil and gas and war?

Alongside the pros and cons, were those who saw both the negative and the positive outcomes of the industry. But in their judgment the good far outweighed the bad, and they were very optimistic about the industry's capacity to find and fix its own faults. Overall, these young people offered a critical but ultimately positive view of petrochemicals and plastics. This is an industry they believe has the ability to adapt to overcome both the challenges that it faces as an industrial sector and those facing the world at large. They insist on the need to work together for the generations to come and to educate people and society to act responsibly. The task ahead for the industry will involve recruiting sufficient talent to maintain its creative evolution. It should perhaps start by looking at the talent evident in every single young speaker who participated in this debate. They were all outstanding!

To learn more, please visit: www.eydc.eu



MONDAY 3 OCTOBER 2016

BUSINESS SESSION OFFICIAL OPENING

50 YEARS OF GLOBAL CHEMICAL INDUSTRY EVOLUTION: WHAT'S NEXT?

EPCA president and Ineos director Tom Crotty opened the first business session of the 2016 conference by welcoming another record number of delegates to Budapest. He reminded the audience that the chemicals sector is “the industry of industries” and, with EPCA celebrating its half-centenary, looked forward to a productive and profitable next 50 years. Conference moderator Nadine Dereza then introduced a panel of speakers comprising BASF’s vice-chairman and chief technology officer, Martin Brudermüller, Arkema’s chairman and chief executive, Thierry Le Hénaff, and LyondellBasell’s chief executive and management board chairman, Bob Patel. Together, they would offer the delegates a view of the future from the perspective of their own companies.



TOM CROTTY
EPCA President and Director
INEOS GROUP





DR. MARTIN BRUDERMÜLLER
*Vice-Chairman of the Board
 of Executive Directors & Chief
 Technology Officer*
 BASF SE

In his opening key note, BASF's Martin Brudermüller described the petrochemical sector as the foundation of Europe's manufacturing industry – today and tomorrow. However, Brudermüller, who is both vice-chairman of the board of executive directors and chief technology officer of BASF SE, said the European petrochemical industry faces mounting competitive challenges with respect to feedstock supply and costs, technological change and globalization in a world where new developments are occurring at a breathtaking pace.

BASF's vice-chairman praised the work of EPCA over the past 50 years. EPCA had fostered networking across the industry by successfully connecting producers, suppliers, customers and service providers: "EPCA has been creating real value for the chemical industry since 1967."

Briefly tracing BASF's own 151-year history, Brudermüller noted the company was among EPCA's founding members, and has, since the 1950s, been an important player in the petrochemical sector. Among the landmarks he mentioned were the BASF-Shell joint venture, ROW, Germany's first petrochemical plant established in 1953, the company's first steam cracker starting up in 1965, and BASF's propylene-based acrylic acid production coming on

stream 1977. This period over the past decades also marked BASF's transition to a transnational company and a truly global enterprise.

Brudermüller also mentioned the company's development and commitment to the "Verbund" concept, which is based on the close connection of production plants along chemical value chains – from base chemicals to specialty and performance products – making it possible to take advantage of logistics, energy and infrastructural synergies. Today, BASF operates Verbund sites in Europe, Asia and North America.

"EPCA HAS BEEN CREATING REAL VALUE FOR THE CHEMICAL INDUSTRY SINCE 1967"

DR. MARTIN BRUDERMÜLLER
*Vice-Chairman of the Board of Executive
 Directors & Chief Technology Officer*
BASF SE

In 2015, BASF Petrochemicals' sales to third parties were valued at €5.7bn. He also stressed that with its focus on cracker products, acrylics, alcohols and derivatives, as well as on alkylene oxides and glycols, petrochemicals is the foundation of the BASF group's Verbund.

Further to leading market positions, technology leadership, world-scale plants with their integration into Verbund sites as well as global presence with production plants in both mature and emerging markets are important success factors for BASF Petrochemicals.

Turning to the challenges the European petrochemical industry faces, Brudermüller

used a "sandwich" analogy, with Europe caught between North America and Asia, in particular China. The European competitive positioning is decreasing between booming capacities in North America based on shale gas and China where a still relatively strong economic growth drives new investments and the development of a coal-based petrochemical industry. The Middle East, despite its diminishing feedstock advantage, remains resource-rich and an export hub for oil and gas and for base chemicals.

Against this background, Europe has to cope with high energy costs and a lack of major feedstock and raw material resources. The BASF vice-chairman also pointed out that today's temporary low oil prices support the competitiveness of Europe's naphtha crackers versus a North American ethane-based and a coal-based Chinese production. However, a medium-term return to higher oil prices would reopen the competitive gap, which will make any new European investment decisions challenging.

In addition, the European petrochemical sector faces a stagnating market growth. Whereas the European petrochemical demand in the 10-year timeframe from 2010 to 2020 is expected to stay almost constant, the global demand is forecasted to increase by about 70% over the same period.

To address these challenges, the BASF executive added that, Europe should leverage its strengths and focus on innovation to remain competitive. He offered five key levers to pull for a profitable future. First, the industry needs to increase its feedstock flexibility, by looking at a variety of options such as increased LPG-based imports. He noted that an increased feedstock flexibility already assisted European crackers in significantly improving their cash cost competitiveness between 2010 and 2015.

Second, the European petrochemical industry needs a strong and competitive value chain integration as well as a closer



**DR. MARTIN BRUDERMÜLLER**

*Vice-Chairman of the Board of Executive Directors
& Chief Technology Officer*

BASF SE

integration of customers to improve efficiencies and synergies with particular regard to energy, raw material and logistics costs. As an example of such functional European industry clusters, Brudermüller cited the Benelux chemical cluster, where BASF operates a Verbund site in Antwerp and where a broad range of upstream and downstream players are closely interlinked and integrated.

Third, Europe needs to maintain technology leadership through both incremental and radical process innovation. By means of the acrylic acid technology, Brudermüller illustrated the significant cost reduction potential of incremental improvements, where over a long period of time a combination of continuous process enhancements have been achieved. As an example of more radical technological innovation, he pointed to the recently developed hydrogen peroxide-to-propylene oxide (HPPO)¹ process which drastically reduced specific investment costs.

Brudermüller explained the fourth lever, operational excellence, regarding the unlocked

potential of digitalization for the optimization of manufacturing processes. Within its BASF 4.0 smart manufacturing initiative, the company is driving various pilot projects to lower production and specific investment costs and to improve competitiveness. Using a range of digital applications – such as augmented reality, predictive maintenance, vertical integration, process optimization, or condition monitoring to control production levers – BASF is convinced that it will take operational excellence to the next level, Brudermüller says. Predictive maintenance – anticipating operational failures to carry out maintenance timely – can increase the availability of assets and is enabled by digitalization methods.

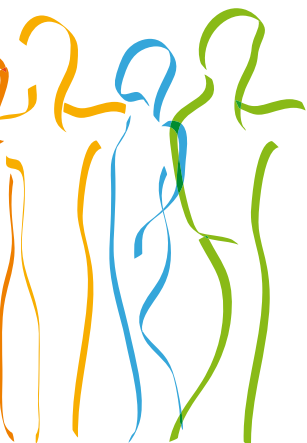
As a fifth lever, the European petrochemical industry should consider the smart integration of bio-based feedstock as a response to the increasing focus of customers and authorities as well as societies in general on sustainability. Brudermüller explained the bio-mass balance approach which uses BASF's existing, highly efficient and sustainable Verbund structures to produce bio-based products. The cracker is fed with

bio-naphtha and the share of bio-based feed is allocated to "bio-mass balanced" downstream products. "BASF's global use of renewable feedstock is now up to 4.5% and rising", Brudermüller says.

Summing up, Brudermüller said that over the next 25 years, Europe's petrochemical sector needs to continue but accelerate its process of transformation. Technological diversification to flexibly integrate inter-regional feedstock flows should be pursued. Interconnectivity between plants, sites and clusters should be further strengthened. Innovations and digitalization to enhance asset competitiveness as well as a continuously improving environmental footprint to maintain the license to operate are key. The BASF executive concluded that then Europe can remain a strong and competitive production centre with the petrochemical industry as its foundation, and he believes EPCA should facilitate and accompany the European manufacturing industry on this way forward.

¹ Hydrogen Peroxide to Propylene Oxide (HPPO)





"SMART PHONES BEING MADE IN 2016 ARE A WORLD AWAY FROM THOSE PRODUCED IN 2000, AND THEY CONTAIN MORE COMPUTING POWER THAN WAS USED TO TAKE APOLLO 11 ON MAN'S FIRST JOURNEY TO THE MOON."

THIERRY LE HÉNAFF
Chairman & CEO
ARKEMA



THIERRY LE HÉNAFF
Chairman & CEO
ARKEMA

Arkema chairman and chief executive officer, Thierry Le Hénaff, offered EPCA a vision of a global specialty business, and underlined the need for innovation and flexibility in responding to evolving challenges in the future. He said that in the ten years since its formation, Arkema has adopted a disruptive strategy to match today's rapidly changing and volatile world. The company has also transformed itself from a commodity player into a leading global specialty chemicals and advanced materials producer and supplier. "We are a designer of high performance materials and innovative solutions, with a balanced global footprint," Le Hénaff said. Today, Arkema is France's largest chemical

company with sales of €7.7bn, of which 38% are in Europe, 34% in North America, and 28% across Asia, the Middle East and the rest of the world. High performance materials account for 44% of sales, industrial specialties 32%, and coatings 24%. With 19,000 employees, Arkema has a presence in 50 countries, and operates three R&D hubs.

Arkema's chairman also highlighted the company's strong internal focus on occupational safety performance and reducing greenhouse gas emissions, and its emphasis on robust product stewardship in response to public concerns.

Looking at recent developments of the global chemical industry, Le Hénaff noted the extraordinary pace of change in the global chemical industry. He highlighted the evolution in global demand, which has seen the share of Europe, NAFTA and Japan shrink from 68% in 2004 to 41% in 2014, while China's share has boomed from 9% to 34% over the same period. At the same time, industry sales have more than doubled from €1.5tn to €3.2tn. Arkema's chairman said that the disruptive impact of China's economic development is set to continue as the current leadership focuses on developing self-sufficiency and accelerating the shift towards new technologies.

We are also seeing significant changes in key end markets for our products, Le Hénaff said. For example, the smart phones being made in 2016 are a world away from those produced in 2000, and they contain more computing power than was used to take Apollo 11 on man's first journey to the Moon. Similarly, we are seeing huge changes in weight-to-performance ratios, with for example today's soccer boots weighing two-thirds less than in the 2000's.

The energy landscape has also gone through a transformation, with a combination of increasing volatility and rapid change, which can be seen in the price volatility in the oil and gas market and in



sizeable increases in the generation of renewable energy using solar and wind power in response to climate change. Even in Texas, the home of the US oil industry, wind is now generating 16% of electricity whilst solar power is expanding rapidly. Regulators have also begun to roll out new pricing mechanisms that aim to encourage energy conservation and discourage new demand.

"These developments," said the Arkema chief executive, "provide important clues about potential key industry drivers for our industry in the coming years."

One key area will be sustainability, which was given a major boost at COP 21 in Paris recently, and is creating governmental interest in the circular economy. For the chemical industry, a key opportunity is recycling which requires innovation. For example, Le Hénaff suggested that by 2035, there could be 1mmt² of windmill blades to be recycled as a consequence of the growth in wind power. But this will be a difficult challenge as they are made of thermoset materials. So, Arkema has developed a new Elium® product to produce blades made from thermoplastic composites, which can then be recycled. "Another opportunity lies in material processing itself where new technologies – such as 3D printing – have major potential for reducing waste, and which can also bring production much closer to the customer."

Demographics are already and will continue to be a driving change in historical demand patterns, Le Hénaff continued. For example, increasing life expectancy means that by 2025 1-in-5 people will be in the lower earning and lower spending 55+ generation, twice the percentage in 1950, which will impact demand. Global fertility rates are also in decline. Whereas North America and Europe birth rates have been averaging at 2 babies per woman since the 1960s, birth rates in Asia have fallen from 6 babies per woman in 1950 to just 2 babies today. On a global basis,

fertility rates have already halved to just 2.5 babies per woman since 1950, which led to a reduction in the relative number of people in the Wealth Creator 25-54 generation. By 2020, only African women will still be having more than the replacement rate of 2.1 babies per woman.

Finally, geopolitics is also becoming a disruptive force, with tensions rising around the world, the uncertainty caused by "Brexit," the UK's decision to leave the EU, and a rise in protectionist sentiment, as we can see from the current US election, in a country that has previously championed trade agreements.

So, what key conclusions can be drawn from these developments? The first, Le Hénaff suggested, is that GDP is becoming a less reliable guide to future growth potential. In the US, for example, services such as healthcare, travel and entertainment already account for two thirds of personal expenditure. Secondly, digitalization is set to play a role in accelerating disruptive trends around the world. The music industry, where



THIERRY LE HÉNAFF
Chairman & CEO
ARKEMA

"IN A WORLD OF VOLATILITY AND INCREASINGLY SHORT-TERM FOCUS OF FINANCIAL MARKETS, I BELIEVE THE BEST WAY TO SURVIVE AND PROSPER IS TO KEEP A LONG-TERM VIEW!"

² Million Metric Tons



streaming technology has replaced CD sales, has transformed the market and our concepts of ownership while promoting the idea of the sharing economy, which is extending into areas such as car sharing. These are developments which are likely to affect chemicals demand in the future.

However, Le Hénaff said the industry must see every challenge as an opportunity. Our view at Arkema is that in the coming years we will see a continuum develop, and the chemical industry, which is very large, has the potential to develop a wide range of different value propositions. Some companies will maintain an upstream focus on supply-driven business models, while downstream companies like Arkema will be more asset light and market driven.

Nevertheless, these paradigm shifts and discontinuity generally create winners and losers. "The question," Arkema's chairman asked, "is who will be the winners in this new landscape and what does the changing environment imply for companies?" We will do better to rely on our own resources to achieve success, he continued.

In his view, implementation skills will continue to be a critical differentiator, particularly because companies often adapt similar generic strategies. Le Hénaff also sees soft skills as another important differentiator, because they enable companies to respond to today's challenges with creativity and innovation. Within Arkema over the past decade, we have come to appreciate that a company is fundamentally about developing these soft skills internally while also developing relationships externally with a range of business partners and customers.

"This is key to inspiring our own staff while also building trust with the wider public," the chairman stated.

"SCENARIO PLANNING IS NOW ESSENTIAL, BECAUSE AN ABILITY TO MANAGE THROUGH CHALLENGES SUCH AS CONSOLIDATION, SUPPLY BASE CYCLES AND ENERGY CYCLES WILL BE KEY TO REMAINING COMPETITIVE"

BOB PATEL

CEO & Chairman of the Management Board
LYONDELLBASELL

For Arkema, there are five critical areas, he continued. "Talent: which is about our people, their passion, and their ability to work in a team. Partnerships: which is about the ability to build external relationships that will enable companies to develop new offerings. Agility: which implies quick communication and less hierarchy for quick decision-making. Global: how to leverage our diversity by integrating the different national and regional silos within a global culture. Finally, the corporate values, which in this very complex world an 'idée fixe' point."

"This is the soft strategy that we have

adopted and developed in Arkema over the past decade," the chief executive added. "In ten years, we have come from being a supply driven company to being a designer of solutions, and now we intend to expand our market-led strategy to become more of a service provider, with the aim of achieving genuine customer intimacy. The mega trends – water, food, health, mobility and sustainability – highlight the potential for growth. An example is that more people have access today to smart phones than to clean drinking water. And, one-in-five people have no access to electricity. This means significant development opportunity for our industry, which experts suggest could double in size by 2030."

Concluding his remarks, Arkema's chairman said: "The chemical industry has a key role to play in future societal and economic development. It has a great capacity for

innovation, and is one of the world's largest employers of highly skilled and highly educated people. Looking to the future, what we know is what we don't know! That's why scenario planning is key to our understanding and anticipating the future. What we do know is that pressure from environmental issues and the circular economy, from changing demographics, and from digitalization, present us with opportunities as well as challenges. The world relies on us to respond to these challenges, with new products and services for today's more demanding and informed consumers. We need to be more flexible, locally based, and keep close to the consumer. And we need an adaptable mindset, that's looking forward and changing rather than sitting back and content to polish the stone. This is where developing soft skills can make the difference and move us beyond our traditional focus as a material-oriented industry. My last thought may sound counter intuitive: in a world of volatility and increasingly short-term focus of financial markets, I believe the best way to survive and prosper is to keep a long-term view!"



BOB PATEL

*CEO & Chairman of the
Management Board*
LYONDELLBASELL

LyondellBasell CEO and management board chairman, Bob Patel, offered a view of the future from the standpoint of a downstream, integrated commodity chemical and polymer producer. His aim, he said, was twofold: first, to explore how the evolution of demand for polyolefins, propylene oxide and derivatives,



in tandem with the availability and supply of feedstocks, will inform where future investments will be targeted; and, second, to review the likely impacts of innovation and environmental issues on the future shape of the industry.

Offering a quick overview of his company, Patel said LyondellBasell – one of the world's largest petrochemical companies – has a truly global footprint. It currently operates 55 manufacturing sites in 17 countries worldwide – with 50% of employees based outside the US – and has product sales in over 100 countries. Although 2015 revenues at \$33bn were lower than in other recent years, he explained that this was largely a result of wide fluctuations in oil and gas prices rather than company performance.

One of the world's largest polyolefin and PO producers, LyondellBasell currently markets over 10m tonnes of polyolefins each year. It is also the world leader in oxy fuels and polyolefins technology, both of which take the company closer to end-consumers, who have a decisive influence in shaping demand in terms of both product volumes and product performance.

Patel noted that LyondellBasell is an example of the evolution that has occurred in the chemicals industry over the past 50 years, and he mentioned some of the legacy companies – including BASF, Hoechst, Shell, Montedison, Cain Chemical, Millenium, Arco, Lyondell – from whose that are part of LyondellBasell's pedigree. Indeed, LyondellBasell has been a consolidator in both the US and Europe, and

its current footprint provides a particular perspective on global demand, and how that might evolve.

Over the last 50 years, LyondellBasell, like the industry as a whole, has been faced with many challenges that were not easily predicted, such as wide variations in oil and gas prices, recessions, geopolitical crises, and other events, Patel noted. For this reason, scenario planning is now essential, because an ability to manage through challenges such as consolidation, supply base cycles and energy cycles will be key to remaining competitive.

Turning to global trends, Patel pointed out that while significant population increases are anticipated in North America (from



“WE SEE ENERGY CYCLES, WE SEE SUPPLY CYCLES. THE KEY IS TO LOOK THROUGH THE CYCLES AND INVEST IN THE LONG-TERM FOR MARKETS, SCALE AND COMPETITIVENESS.”

BOB PATEL

CEO & Chairman of the Management Board
LYONDELLBASELL



484m to 597m), Europe (from 707m to 738m), and South America (from 634m to 784m) between 2015 and 2050, the biggest increases by far will be in Asia Pacific (from 4.4bn to 5.2bn) and Africa (from 1.2bn to 2.5bn). For this reason, he said, the industry must pay attention to what these new consumers in Asia and Africa will want and need, while also satisfying demand in the more mature markets of Europe and North America.

Today, annual polyethylene consumption per person per year is between 30-35kg in North America and Europe, compared with 15-20kg in Northeast Asia and the Middle East, and around 10kg in Southeast Asia, South America and the CIS & Baltic states, and less than 5kg in Africa and the Indian subcontinent, the LyondellBasell chief executive pointed out. And, for every 1kg per person increase in Asian demand, an additional 7-8 world scale PE plants will be needed. “In fact, the kind of growth that’s forecast will require around 50 new PE plants in the next six years. It’s clear that the demand will be there. The question is where will the supply come from?”

A key determinant will be feedstock costs, Patel continued, and where producers sit on the supply curve. When oil prices were sky high – up at \$110/bl – and gas was at \$3-4/mmbtu, the US enjoyed a huge feedstock cost advantage – the so-called shale gas advantage. But as oil prices have declined, that advantage has dimin-

ished, and, in Patel’s view, some of the planned investments in new plants could be scaled back. Indeed, as the gas cost advantage has diminished, Europe has been able to become more competitive again. “We see energy cycles, we see supply cycles. The key is to look through the cycles and invest in the long term for markets, scale and competitiveness.”

In terms of where to invest, an important factor is capital costs. “The cost of construction has risen by about 67% in the last 15 years, which is a tremendous increase in investment capital to build new capacity. But the costs in different parts of the world are quite different. So if construction costs in the US were at 1.0 on an index basis, it costs about 40% less – or 0.6 – to build similar capacity in China.”

By contrast, costs in Western Canada are at 1.25, or 25% higher than the US. So when you add lower oil prices to lower construction costs, then building outside the US or North America looks like a potentially attractive option.

Where’s the market? What do the local consumers need? How will feedstock competitiveness evolve over time? What are the investment costs? All of these factors impact return on investment.

So what is LyondellBasell doing? Patel said he considered it important to separate where you produce and where you sell.

Sometimes it may go together, but you really have to consider those separately, because today, as many of the logistics service providers in the room will tell you, global trade is increasing. It’s very easy to move PE, polypropylene, styrene, oxy fuels and so on all over the world at very low cost. Now it’s a bit more expensive to move ethane and natural gas and so on, but many companies are showing that can also be done.

“In the past five years, LyondellBasell’s approach has been to grow through debottlenecks and not so much by greenfield developments in the US, because we could see capital costs were rising. We’re about to commission one of our last debottlenecks in Corpus Christi, Texas, and once that is done we will in total have added capacity equivalent to one world scale cracker, but at half the cost of a new plant,” Patel said. For any future greenfield projects, the company would weigh all the factors to decide whether these should be in the US or elsewhere in the world.

LyondellBasell has also announced a new high-density PE investment, which illustrates the value of integration, Patel added. The plant will be built in LaPorte, Texas, a location where the company has in the past increased ethylene capacity and which offers value chain integration. The plant will also deploy a new PE technology, which was developed in Frankfurt, Germany and Ferrara, Italy, where the



company has heritage research facilities, and complemented by product research in Cincinnati. The company has also involved its global marketing network in order to better understand future market needs. So we're building the plant in Texas to serve the global marketplace, and to do so in the long term. The other big feature of this plant is that it will be able to produce multimodal polyethylene products, which will enable downstream converters to consume less resin per unit, and thereby gain an environmental advantage.

Segueing into environment aspects impacting the industry, Patel showed a chart, based on Pew Research, highlighting public environmental attitudes and concerns that are driving government regulations. Every nation surveyed said that we should make efforts to protect the environment despite the potential cost. Over half believe climate change is a very serious problem, while all

agree it is a problem. Almost 80% think changes in climate policy are needed to make a difference. There is also pressure for increased recycling of plastics, which is currently at 8.8% in the US. In response to these concerns and attitudes, the LyondellBasell chief executive noted that recently national governments have together reached climate agreements – COP 21 – while in the US and elsewhere there have been plastic bag bans, a microbead ban in the US, and a range of auto emission and chemical safety regulations across the world. However, in the face of these challenges, Patel believes his company can provide solutions to all these concerns through products that meet the needs of consumers.

Addressing the future of the European chemical industry, Patel said that it has managed its way through what seemed like dire circumstances, through tight cost

controls, focused investments and great technological development. He also noted the global leadership shown by Europe in terms of environmental protection and regulations, to which the industry has responded. For this reason, he believes the future remains bright but challenging.

So what are the key points to address for future competitiveness? In Patel's view, to focus on feedstock flexibility and feedstock advantage, maintain investment in R&D and new technology, always remember the end customer, and play a role in the responsible use of products. Underlying all these imperatives is the need to remain innovative, and to match products to customer needs in different regions. The petrochemical sector needs to work harder to alter public perceptions. Rather than being viewed as a polluter, we should work towards being perceived as an industry that society can't do without."

PANEL DEBATE

Q: HOW MUCH INNOVATION IS POSSIBLE, AND WILL IT BE INCREMENTAL OR RADICAL?

Martin Brudermüller believes there is a big opportunity, for both types of innovation. Incremental innovation can make a big difference to profit and loss accounts, but if the industry wants to remain successful as a technology leader responding to global challenges then radical innovation is essential. He suggested that digitalization will enable both types of innovation through modelling and simulation, which will provide insights into how different catalysts, reactor systems, or molecules will perform.

Q: WHAT IMPACTS ARE COSTS AND PRICES HAVING ON INNOVATION WITHIN BASF? YOU MAY HAVE DEEP POCKETS, BUT THEY CANNOT BE ENDLESS?

Brudermüller agreed with the second part of the question, and said that BASF had achieved an automatic 5% increase in R&D spending in the past five years. In the future, with the use and advantages of

digitalization, he feels that R&D departments will be able to run a mixture of virtual and lab experiments to shorten R&D times and do more with less money, while boosting both creativity and efficiency.

Q: HOW IMPORTANT IS INNOVATION TO LYONDELLBASELL?

Bob Patel said innovation is about products, manufacturing processes, and "doing what we do today better." He agreed that



NADINE DEREZA, THIERRY LE HÉNAFF, BOB PATEL, DR. MARTIN BRUDERMÜLLER



digitalization and big data offered innovation opportunities in many areas – from predictive maintenance to product development – but insisted that the key to success is remaining focused. It is easy to become over focused on day-to-day issues, but it is important to seek step-change opportunities and ensure that any successful development will create value.

Q: HOW SUCCESSFUL HAS ARKEMA'S STRATEGY BEEN IN PROMOTING INNOVATION AND HAS THE FINANCIAL BACKDROP HAD AN IMPACT?

Thierry Le Hénaff said that for him “innovation is first a mindset. But also before spending money, we need to focus on potential gains.” He said Arkema puts 15% of its total R&D budget into a corporate pot managed by the executive committee with a long-term view. This is to keep an eye to the future in times when markets are more challenging and divisional R&D is capped in response. Investing in R&D for the long term requires patience, because it can take up to 15 years to develop a new blockbuster technology and bring it to market, the Arkema chairman added.

Q: WILL SOFT SKILLS BE INCREASINGLY IMPORTANT IN ATTRACTING YOUNG RECRUITS TO THE INDUSTRY?

Le Hénaff said soft skills are and will remain essential, particularly in a world that is increasingly globalized and complex. He said Arkema would continue to emphasize the importance and talent of its human assets, and promote their ability to co-operate across the company and with external partners, particularly to develop new ideas and innovate.

Brudermüller said that young people don't necessarily want to work in big companies, and may feel smaller companies and start-ups offer more freedom and quick results, which makes them more attractive. He said the chemical industry needs to improve its image, should look to develop both internal start-ups and external partnerships, and try to provide more freedom to employees.

Patel suggested that the younger people may have a greater sense of purpose, and want to feel they can make a difference through the work they do. He said the industry needs to tap into this enthusiasm, while accepting balances must be struck between wanting to specialize and contributing to a greater whole, and between entrepreneurial spirit and the need for corporate discipline.

Q: WILL EUROPE REMAIN A FORCE IN CHEMICALS, AND HOW IMPORTANT WILL CROSS-COMPANY AND CROSS-INDUSTRY CO-OPERATION BE IN FUTURE? HOW MUCH CO-OPERATION IS POSSIBLE GIVEN THE IMPACT R&D DISCLOSURE OR SHARING INTELLECTUAL PROPERTY CAN HAVE ON COMPETITIVENESS?

Thierry Le Hénaff believes co-operation will help Europe's industry remain a force, and suggests that companies will increasingly need to build and extend their partnerships. Accepting that there will be R&D and IP issues to be addressed, he said that companies need to build trust in order to lay the ground for knowledge sharing and for developing win-win relationships.

Bob Patel agreed that IP is a very delicate area when it comes to partnerships and knowledge sharing, particular regarding step-change innovation. However, he also noted that co-operation within organizations such as EPCA, Cefic and the American Chemistry Council provides an important lever for enhancing the industry's image and reputation, with the public, with consumers, and with regulators. “We need to help people understand what the industry does and contributes. We need to be more positive and less defensive!”

Martin Brudermüller echoed his fellow panellists in emphasizing the need to protect IP while also looking for opportunities to co-operate with external partners “because companies can't do everything in house.” He suggested that there are opportunities to co-operate with universities and start-ups, which may lack funds but have some great ideas or developments. The way forward may be to share IP or look at royalty payments to foster co-operation.

Q: IN VIEW OF BASF'S RECOGNITION IN RECENT GARTNER [SUPPLY CHAIN] RANKINGS, HOW IMPORTANT IS INVESTMENT IN SUPPLY CHAIN DEVELOPMENT AND INNOVATION?

Brudermüller said BASF welcomed the recognition, but said it is important to maintain a focus on constantly enhancing supply chain efficiency by reducing segmentation and increasing integration, particularly in view of the cost implications: “We need an interlinked ecosystem, and digitalization is helping us to do this.” He said the industry is already sharing information via ERP³ systems and the cloud, enabling more product to get to the right place at the right time, and shipment tracking has improved. But he urged further co-operation with customers and suppliers, and emphasized the need for producers to work more closely with logistics service providers.

Q: HOW WILL CHINA'S AGEING POPULATION IMPACT BUSINESS?

Bob Patel said people don't realize what's been happening to China's demographics: “China needs another baby boom. But it will take time for these young people to become productive, so we do need to think about how this will impact business in China, and how these trends will affect business across Asia and elsewhere.” He said China's labour force is not unlimited and noted that labour costs there are already rising. “We are constantly re-evaluating trends in China. For example, auto-sharing could grow in China. That will have an impact and we need to focus on the future not on the past.”

Q: HOW IMPORTANT IS FLEXIBILITY?

Le Hénaff suggested that alongside economies of scale, production flexibility and global reach, chemical companies need to be able to act locally and understand local cultures in terms of both doing business and attracting talent.

Q: WILL CHINA BE A DISRUPTIVE FORCE IN MARKETS IN ASIA AND FURTHER AFIELD?

Brudermüller noted the revitalization of the ‘Silk Road’ and said there is now a railway connection between China and Germany,

³ Enterprise Resource Planning





which can move product in about 15 days compared to 50 days by ship. But he suggested this was a two-way street. China is on one end of the Silk Road, but Europe on the other end, and it is up to companies wherever they operate to be competitive and look for market opportunities. However, we have to accept that China will have an increasing regional and global impact in the future. This emphasizes the need to work on our competitiveness.

Q: HOW SHOULD THE CHEMICAL INDUSTRY RESPOND TO THE CLIMATE CHANGE AGREEMENTS OF COP 21 AND ADDRESS CO₂ EMISSIONS?

Martin Brudermüller suggested that the industry should challenge the view that energy intensive industries are bad guys, whereas less energy intensive sectors are good guys. He believes increased integration and co-operation will enable companies to work together to reduce emissions, but also said that the industry as a whole must work harder to get across the benefits it provides and the solutions it can offer to the broader issue of climate change. Today it is not possible to just stick only with fossil

fuels, instead the industry should try to increase its use of renewable energy and feedstock. In time, he foresees CO₂ costs impacting industry in Europe, but the BASF vice-chairman expects renewable costs to fall and storage issues to be overcome. The answers lie in new technologies.

Bob Patel said the industry should work to persuade governments that regulations need to be framed in a global context, should be based on good science, and should target less energy per tonne of product.

Thierry Le Hénaff agreed that the chemical industry can provide many of the solutions to climate change and that the sector should use COP 21 and similar agreements to communicate its value to society and the global environment.

Q: PANELLISTS WERE ASKED IF THEY COULD SAY WHAT THEY VIEWED AS THEIR COMPANY'S OR THE INDUSTRY'S GREATEST SUCCESS OVER THE PAST 50 YEARS?

Bob Patel picked two areas: safety, which he said had improved tremendously over the period through a combination of focus,

innovation and co-operation. The second is the industry's resilience through both economic and energy cycles. This has been achieved through a combination of creativity and collaboration, particularly through clustering, along with drive and determination.

Thierry Le Hénaff said he thought the chemical industry had made a true contribution to all aspects of society, and in personal terms he was pleased with the success Arkema had achieved since its formation in 2006.

Martin Brudermüller said that people in the industry should be proud of its achievements, adding that in spite of the European sector's age, it was still vital to all other sectors and a tremendous source of ideas and creativity.

Asked for their thoughts on staying successful for the next 50 years, the panel suggested focussing on transformative technology, enhancing energy efficiency, and convincing the public and politicians of the industry's value.





**MONDAY
3 OCTOBER 2016**

DIVERSITY & INCLUSION SESSION

**DIVERSITY & INCLUSION: KEY TO BUSINESS
SUCCESS BETWEEN NOW AND 2040**

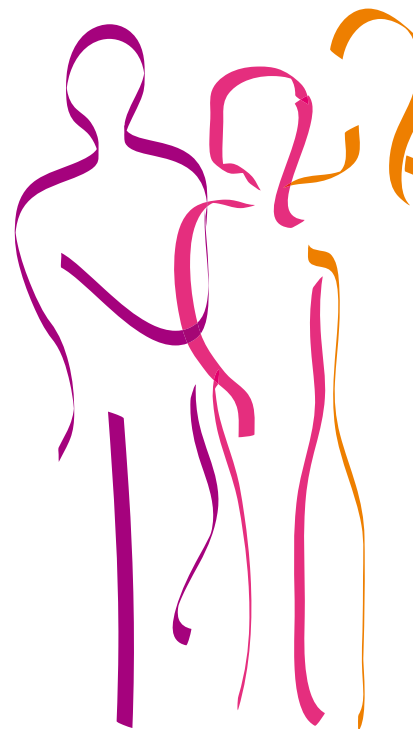




"LAST YEAR'S SURVEY SHOWED THAT THE BUSINESS CASE FOR DIVERSITY WAS NOT FORMALIZED IN MOST COMPANIES, AND WHILE SOME HAD TARGETS, THERE WAS LITTLE FOCUS ON PRACTICES"

NATHALIE BRUNELLE

CHAIRPERSON OF THE EPCA TALENT & DIVERSITY INCLUSION COUNCIL &
SENIOR VICE PRESIDENT CORPORATE AFFAIRS OF **TOTAL REFINING & CHEMICALS**



Opening this session, Nathalie Brunelle, chairperson of EPCA's Talent and Diversity Inclusion Council (TDIC) said she attended her first EPCA Annual Meeting in 2006, and since then has noticed that diversity is on the move! Brunelle has noticed how international EPCA has become, with delegates coming from across the globe, but also how 20% of those attending the morning business session were women, compared to 10% a decade ago. If the trend continues, she suggested, parity might be reached by 2050...

EPCA's TDIC chair also paid a warm tribute to the association's retiring chief executive, Cathy Demeestere, who has made a huge contribution to the organization as a whole and is responsible both for inviting students to come to the conference and for the new and now ongoing focus on talent, diversity and inclusion.

Following EPCA's first diversity session two years ago, the TDIC set out to draw a baseline and surveyed a number of member companies. The results, which were revealed at last year's EPCA, showed that women accounted for 24% of the total workforce and that 34% of women were in white collar roles, but only 15% in the top 100 positions. They also showed the chemical industry was rating above oil and gas but below healthcare and life sciences in terms of gender diversity. But Brunelle stressed gender is just one window into

diversity, which encompasses age, origin, ethnicity and culture. She also recognized that the industry faces challenges in terms of employee mobility and attractiveness of operational and high-skilled technical jobs.

She noted that last year's survey showed that the business case for diversity was not formalized in most companies, and while some had targets, there was little focus on practices. "It was like we were expecting something to happen, rather than making it happen," Brunelle noted. For this reason, over the last year the TDIC has set about promoting and sharing best practices. This has not only generated new ideas, but also enabled us to delve deep and look at root causes, and identify issues to address. One example is international mobility for career development, which can be tackled through a collaborative effort to find jobs for the partners of mobile employees; initiatives such as those of the IDCN can be extended to our industry.

Before handing over to session speakers, the Total executive said she was pleased that in the morning session Arkema chairman Thierry Le Hénaff had emphasized the value of soft skills and the need for workforce diversity to enable the industry to understand and operate effectively in the markets and societies in which it engages. In Brunelle's view, his intervention had underlined the business case for diversity.

NATHALIE BRUNELLE,
CHAIRPERSON OF THE
EPCA TALENT & DIVERSITY
INCLUSION COUNCIL & SENIOR
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CHEMICALS**



**DIANA BAREA**

*Managing Director, Strategy's
Talent & Organization Practice*
ACCENTURE

KEYNOTE SPEAKER

Diana Barea, who is managing director of Strategy's Talent and Organization Practice, Accenture, said her job is client focused, working with companies who want to change the way they do business, through transforming their culture and their people's behaviors. In her experience, diversity has significant implications for attracting and keeping talented people, effective decision-making, and creating a balanced workplace for employees and for contractors. Barea also emphasized that diversity is not just about gender, but also ethnicity, culture, age, nationality, sexual orientation and levels of both physical and mental enablement. The Accenture managing director also underlined the importance of inclusion, which means creating a workplace environment where all individuals participate and feel a sense of belonging. This is important for employee engagement and productivity, and,

ultimately, business results. "Diverse and inclusive organizations are talent magnets, and represent an important competitive advantage," she stressed.

Barea said the reason the petrochemical industry is still talking about diversity and inclusion (D&I) is because earlier initiatives have not worked. For example, 20 years ago efforts were made to attract more women into STEM (science, technology, engineering and mathematics) based jobs and then keep them in the workforce. Success has been limited. However, the Accenture executive said that some companies – both in and beyond the chemical sector – have transformed structures and established networks that are making a difference. Initiatives such as mentoring and sensitivity training are also bringing about change, in part because they act as "bias checks" within organizations. Barea urged companies to look at what their peers are doing and borrow the best ideas.

The reason why D&I are so important to the petrochemical sector is that its collective culture – the sum of behaviors and ways of doing business – poses challenges

for future recruitment and retention of people with essential talents and skills. For many would-be recruits, international roles, which may mean extensive travel or even relocation, or the rotational nature of jobs, can make life difficult for both women and men and their families. For example, Barea said the "Millennial" generation – those who reached adulthood around 2000 – are more family-focused than previous generations and tend to be dual-career families.

The global nature of the industry also poses challenges, because petrochemical companies are operating in many different countries with multiple cultures. Furthermore, the industry remains male dominated – 70% of employees are male, with only 15% of women in top management jobs – and is also faced with an ageing workforce, with 30% of workers over 50. The industry is also viewed as conservative, which in part is due to recruitment policies long-dominated by the view that "success looks like ourselves" – older, male, and dressed in traditional business attire. Barea said these factors combine to make succession planning and the recruitment and development of



highly skilled and talented people difficult. Similar challenges are encountered in local and regional recruitment and retention. However, she says the answer lies in developing an inclusive leadership culture that enables diversity of thought which is so essential to effective decision making in a complex and rapidly changing business environment. Customers and society at large also expect diversity and cultural sensitivity in the companies which they do business with and buy from, the Accenture managing director added. Her advice? "Dial-up diversity and inclusion!"

Barea said the industry's ageing workforce poses a particular problem when experienced employees are an essential component of effective operations. How can retiring employees be replaced, or will other workers want or need to postpone retirement? What are the implications for corporate knowledge retention and knowledge management?

In the face of all these challenges, Barea believes that pursuing D&I provides solutions because of the contribution they can make to innovation. D&I can expand problem-solving

capabilities and increase creativity. They also encourage debate and discussion, lessen the potential for companies to get stuck in 'group think', and engender better, more effective decision making, she said. In her view, and as research demonstrates, D&I must be viewed as a key enabler, and Barea noted that at the World Economic Forum in 2016 the oil and gas industry had issued a "call to action" to close the gender gap among its employees, to which some EPCA members are signed up.

So how can D&I be transformed from a "coffee club" activity into a business imperative that becomes embedded in corporate culture? Barea listed four pillars of success that can make D&I part of a company's DNA. First, master a business-led

approach. Second, engage the company's leadership to champion and drive D&I across the organization. Third, embed D&I in the organizational structure, policies, and life-cycle. Fourth, target sustained cultural change. Barea then offered some examples of what EPCA member companies are doing that illustrate these four pillars.

Offering an example of the first pillar, Barea said BASF has been working to boost diversity within its business divisions, which have very different maturities and cultures vis-a-vis D&I. So what works in one division, may

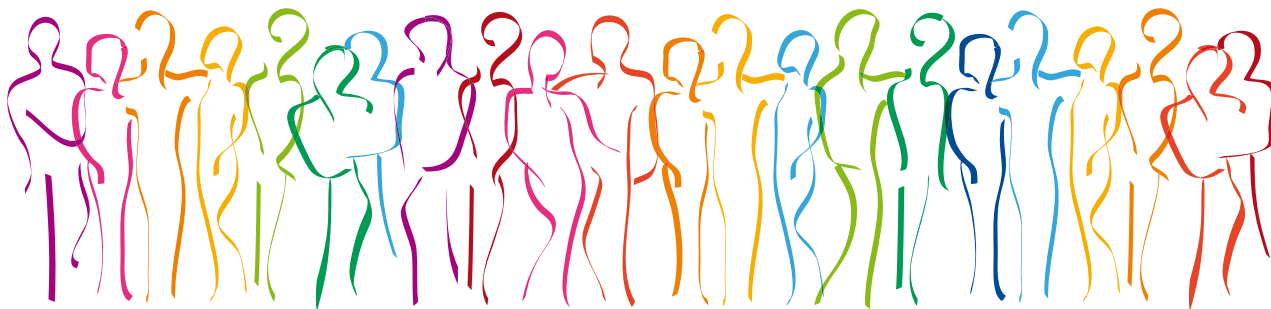
not work in another. So BASF created an executive diversity initiative to address both the gender balance in leadership levels and specific challenges. This enabled D&I managers to provide targeted, concrete solutions that fit specific situations rather than a 'one-size-fits-all' approach. BASF analyzed business areas along employee life-cycles to identify areas for improvement, then gave business managers a D&I toolbox with a suite of options to choose from, which could pinpoint problems – such as culture, attraction, selection, promotion, retention – and offer ways to tackle them. While a D&I manager provided support for tool selection, the businesses themselves had to choose which ones to use. So, for example, they could develop women in the talent pipeline by providing mentoring and training support, or they could use a simulation tool to target specific actions and assess outcomes. Having piloted this initiative, BASF is now rolling it out across the organization.

Turning to leadership engagement and support, Barea said that leaders need to listen carefully to understand why D&I are so meaningful. Total, she said, has created a

"DIVERSE AND INCLUSIVE ORGANIZATIONS ARE TALENT MAGNETS, AND REPRESENT AN IMPORTANT COMPETITIVE ADVANTAGE"

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council – with a chair appointed by the chief executive and drawing members from across the organization – that debates, promotes and tracks diversity against implementation targets. This means the company has a dashboard of 10 major performance indicators to measure both progress against targets and benefits achieved in areas such as cultural and gender diversity. Total's two key global targets are 25% of women and 40% non-French citizens in executive management roles. There is an additional goal to have 20% of women in all management councils in all areas. Total also encourages middle managers to propose new initiatives to increase their engagement.

Dow has a "sponsor to success program" that has created 'reverse mentoring,' which is open to all female employees in every career track and level. Women are paired with a male mentor from the business leadership, which gives the mentees access to the leader's advice and network, and the mentor can gain insight into the challenges facing the women. Barea believes this insight is particularly valuable because it gives male leaders a better understanding of how they can help women by making behavioral or organizational changes. Dow also has a women's innovation network, which creates structured and well planned events where colleagues – women and men – can discuss issues, and is helping to enhance men's understanding of the challenges their female colleagues face.

Shell, meanwhile, has really focused on embedding D&I by implementing discussions along the whole career journey to provide employee touchstones. These begin with recruitment, and progress through induction and career transition, understanding stated values, capability building and learning, everyday experiences, leadership influence and behaviors, performance management, rewards and recognition, promotion, and consequences management to retirement or company exit. Taking everyday experiences as an

example, Barea explained that Shell uses a tool called "D&I dilemmas" as an icebreaker for prompting small group discussions about how managers could address issues and challenges in promoting D&I.

"AN IMPORTANT ROUTE TO DIVERSITY & INCLUSION IS THROUGH HUMAN UNDERSTANDING"

**PROF. STEFAN GRÖSCHL
ESSEC BUSINESS SCHOOL**

Concluding, the Accenture manager emphasized the strategic importance of D&I as a means to enhance competitive advantage and urged EPCA delegates to start implementing and sharing initiatives and developing ideas to make a difference in their own organizations.

PROFESSOR STEFAN GRÖSCHL – FROM MANAGING TO LIVING DIVERSITY

Responding to Diana Barea's presentation, Professor Stefan Gröschl from the management department of ESSEC Business School, France-Singapore discussed how to move from managing diversity to living diversity. An expert in business management, the professor has authored several books on diversity, responsible leadership, and sustainability.

Quoting Unilever's Paul Polman, Stefan Gröschl began by saying that today's complex challenges mean we need different types of leaders, and that certain skills – such as the ability to focus long-term, be purpose driven, and think systematically – are increasingly important. This is no time to think about

doing 'business as usual' because what's required is a "business as unusual approach!" It's time to think differently, the professor continued, because without changing mindsets organizations can't be changed. However, to change mindsets, organizations need to be changed. And making change is difficult, which is why organizations struggle.

He praised Diana Barea's presentation for its breadth and the suggestions and examples it contained. Taking up some of her points, he said it is imperative that top management agrees with, engages with and energizes drives to understand, implement and embed D&I. But Gröschl implored delegates: "Don't just wait for D&I leadership from top management. Get going on D&I. Engage early in your careers, or at an operational level. Don't worry about changing the world by tomorrow. Give yourself a little bit of time!"

For example, at SAP in Germany it wasn't the chief executive who said the company should recruit people with autistic characteristics, the professor said. "It was a guy in India, who gave a laptop to a community, which fell into the hands of a child with autistic characteristics, and whose use of the computer to communicate and be creative was mind-blowing!" Now SAP has a Europe-wide initiative to recruit people with autistic characteristics. The lesson here is that starting small can have a snowball effect and create great initiatives with widespread relevance and impact.

One thing usually found in all companies engaged in fostering D&I is the 'silo' or 'employee working group,' the professor continued. "Here are the groups for women, the disabled, the Germans, the Italians, and so on. The problem is that these silos can be good or bad." They may generate some positive results, but they may reinforce stereotypes, or alienate other groups or individuals, or create opposition among those left out." So when creating working groups, try to make sure they are not used





PROF. STEFAN GRÖSCHL
ESSEC BUSINESS SCHOOL

simply to promote members on a career ladder but instead ensure they have defined business goals based on their expertise, he suggested. For example, over the years IBM has created a number of specific groups to help it address specific issues. It set up a group of Caucasian male employees, which often got left out of activities, which caused resentment. It also created a group for people with disabilities, because it could help IBM keep up to speed with changes in the American Disability Act or related legislation. The professor said that leveraging this group knowledge or expertise engages employees and highlights the value of their contributions: "They can help develop anything from products to policies."

In an effort to illustrate the scale of the challenge for attaining D&I in any organization, Gröschl reminded the audience that bias begins at an early age. He showed a slide with 'girls' toys' – a kitchen – and 'boys' toys' – a workbench/fuel station. "We need to start early. Before work, college and high school. We need to start in kindergartens, and in the home before school starts." The problem, he said, is that stereotypes are encouraged and reinforced

early on, so that bias and perceptions are deep rooted before people reach the employment stage. "But just as society shapes us, we can shape society."

For example, he said that children who go to integrated kindergartens – where children with and without disabilities mix, play, work and fool around together – don't recognize their differences unless they are pointed out or defined for them. "If you label someone 'disabled' and tell them repeatedly that they are not 'able,' then people will eventually believe it, and, worse still, they and others will act on it," he said.

The professor noted that there are many companies now embarked on D&I initiatives, which they are formalizing with D&I officers, policies and programs. But he urged smaller companies not to be put off by this formalization, noting that promoting D&I does not have to involve specific officers or significant investment. For example, creating cross-functional teams of existing employees brings together people with different skill sets and backgrounds to work together to achieve specific business objectives.

He also urged people and companies to fight against unconscious bias by getting individuals to think about their backgrounds, their own prejudices, and then thinking about how other people think, and how they are affected by their backgrounds and experiences. For example, how many of us think about what others think about us? Gröschl asked: "What would you like people to say about you? What are your values?" In response, he suggested: "Try writing your own obituary. Try writing your own life mission statement."

In concluding, the professor said that an important route to D&I is through human understanding. "This goes beyond intellectual understanding and explanation, beyond objective knowledge. Human understanding implies subject-to-subject knowledge. Measuring the salt content of tears won't help to understand why someone is crying. That is knowledge which comes from identifying with their distress," Gröschl said. "Human understanding is about empathy, identification, projection. It demands an open heart, sympathy and generosity."





PANEL DEBATE

Before the question and answer session began, the speakers and moderator Nadine Dereza were joined on the panel by Eelco Hoekstra, chairman and chief executive officer, Royal Vopak, who talked briefly about the experiences his company has with developing and embedding D&I.

Hoekstra said, "First of all, I have to say that Royal Vopak is not known for inclusiveness and diversity. Most of the time we are seen as male dominated, with women accounting for 16% of employees, and of our top 150 managers at least half are Dutch. So that's been the image of our company for at least a decade. When I joined the executive board six years ago, I would say we were more focused on running the company than on the culture of the company as a whole. But something changed, at least for me, a couple of years back. We started talking more seriously about what kind of organization we wanted

to be, about leadership issues, and we talked about our cultural mindset. We came to the conclusion, and I certainly felt, that our leadership culture wasn't sustainable in the long term and that I'd like to see the society in which we operate better reflected in Vopak, and that is not the case today.

"However, at first I was thinking rationally about it, and I'd seen some presentations, but then I realized it was about moving D&I from the mind to heart. So that changed everything enormously for me, and we started to discuss and debate the issue among quite a wide audience, in the executive board, and strategy committees, and decided that we needed to change things, to change part of our culture. I also had some discussions with people from minority groups to understand what they thought, and it was quite an emotional experience hearing how they felt they were treated. That was a call to action.

"It takes courage and leadership to change part of the culture, and it also means you have to look at the company structures. As we are

just getting started, I feel quite humbled to be here and to hear what others are doing. But I can say that we believe wholeheartedly in what we are doing because it's a good thing." Hoekstra added that when he raised the issue of D&I and the need to embark upon cultural change, he was encouraged by how positive the all-male committee's reaction was to his suggestions, and at how ready they were to offer their full support. He said they all agreed that Vopak needed to better reflect the customers and the wider society that it was serving.

Nadine Dereza asked him: "Although it's early days, are you seeing an impact – in attraction, retention, etc.?" The Vopak chairman replied: "Yes, and we're seeing it around the globe. Already this year, of all vacancies, we've hired 46% female head office staff, one third of our global directors' staff are now women, and we've hired more different nationalities. So we're already implementing things that we believe in. But if you asked me if the culture of Vopak has changed, I'd have to say 'no,' because we have only started this journey."





NADINE DEREZA, PROF. STEFAN GRÖSCHL, DIANA BAREA, NATHALIE BRUNELLE AND EELCO HOEKSTRA

"IT TAKES COURAGE AND LEADERSHIP TO CHANGE PART OF THE CULTURE, AND IT ALSO MEANS YOU HAVE TO LOOK AT THE COMPANY STRUCTURES"

EELCO HOEKSTRA

Chairman and CEO

ROYAL VOPAK

The session moderator then asked Nathalie Brunelle to sum up what progress had been made in the past year in her company. Speaking about Total, Brunelle said: "Well, we have changed the name of the company's council from just 'diversity' to D&I, and it is now chaired by an executive committee member of African origin. We also asked ourselves, what are the 10-12 key characteristics that define and demonstrate inclusion." She said that Total had also appointed another member of its executive committee who besides her demonstrated merit, is a woman, a lawyer, and from India. Brunelle said that was a visible sign of the Group's transformation.

Nadine Dereza then asked Diana Barea to explain the difference between diversity and inclusion, and whether it is possible to have one without the other.

Barea said: "They are equally important, they're like 'ying and yang'. You need diversity

if you want to value people's individual differences, and you need inclusion to keep people engaged in a diverse workforce, otherwise they may not stay." For her part, Barea said that at work she surrounds herself with people from different backgrounds and who tend to disagree with what she thinks. "Decisions take longer, and we have a lot of debate. But I think it improves the quality of our decision-making. I ask people what we're missing, and what will go wrong, what will work. That lets people express what they're thinking."

Stefan Gröschl was asked whether he feels more optimistic about the adoption of D&I and the acceptance of its importance than he did several years ago. "It used to be about 'show me the numbers' if you wanted to make a business case for D&I. But I think now company leaders are realizing that there is no collective or single solution to the challenges businesses are facing and that they need to look beyond their traditional recruitment patterns if they want to find the diversity of solutions."

Both Eelco Hoekstra and Nathalie Brunelle agreed that the petrochemical industry needs to work harder on D&I as part of its efforts to compete with other industries in attracting talented recruits. Brunelle said that while it is relatively easy for the food and pharmaceutical sectors to explain their purpose and societal contributions, the chemical sector needed to promote and project its own purpose and communicate the contribution it makes to all other industries and societal well-being. Hoekstra concurred, saying the industry operates worldwide and with great precision, but has failed to get this message across.

Asked for some final practical D&I takeaways, Diana Barea said: "Pilot one thing!" Stefan Gröschl said: "Have the courage to change, and create a work environment where people can be confident and express their views and ideas." Eelco Hoekstra suggested: "Ask people for their experiences, then look harder and listen better." Nathalie Brunelle urged delegates: "Be aware, Talk about it, Act on it! Even in your local work community, you can make a difference!"



EELCO HOEKSTRA

Chairman and CEO

ROYAL VOPAK





JOHAN DEVOS
*Chairperson of the EPCA Supply Chain
Program Committee, Sales Manager Europe
BERTSCHI*

TUESDAY 4 OCTOBER 2016

LOGISTICS AND SUPPLY CHAIN SESSION

50 YEARS OF CHEMICAL LOGISTICS AND SUPPLY CHAIN EVOLUTION: WHAT'S NEXT?



Opening this session, EPCA Supply Chain Committee chairman, Johan Devos reflected on the work of the committee and the programs it has promoted over the past 20 years. "We've talked about pipelines, about chemical clusters, co-operation, IT, young talent. But the world is changing and bringing us a lot of new challenges, which will impact supply chain and logistics as strategic capability." Devos, who is also European Sales Manager for Bertschi, then asked session moderator Nadine Dereza to introduce keynote speaker **Patrick Dixon, chairman of The Global Change Ltd.** A highly entertaining and thought-provoking presenter, Dixon is a recognized futurist and business thinker. After 50 years of chemical logistics and supply chain evolution, he had come to offer his thoughts on what might be coming next!

"This morning, I'm going to make 10 predictions about what's going to happen over the next 10-50 years," Dixon told delegates, then launched into the future. "First, everything is going to be large scale. Just look at what's happened to retail in the EU and you see the future of India in 30 years' time. In many EU nations, 70% of retail spend is in only eight companies. And consolidation will continue, in every sector, because our world is too small for too many companies." There'll probably be just two major airline manufacturers, and perhaps just six large automakers, he suggested. In 50 years, we'll all be driven, because insurance will be too expensive to allow humans to take the wheel. There'll be just two computer operating systems, two or three mobile phone operating systems, two-to-three Amazons or Ubers. "Our world is looking for scale – unimaginable, gigantic scale. And I expect we'll see the same in chemicals."

But, Dixon cautioned, there are also gigantic risks. "It doesn't matter whether you are an airline, a shipping company, an oil company. There are geopolitical risks, manufacturing risks. There'll be miscalculations by politicians, miscalculations by engineers, and strategies will continue to be overtaken by events. Our world is changing faster than

you can hold a meeting of your board!" Dixon recounted his experiences working with a European specialty chemicals producer, and the challenges of relocating and restarting a large manufacturing facility – with all its people and equipment, IT and communication systems – across a country. It was accomplished in 20 days, but only because the company had more than one strategy for supply chain and logistics, Dixon continued.

He argued that benchmarking across sectors is "toxic" because it tends to push all companies towards a single strategy where everyone is liable to be overtaken by the same problems and events. He pointed to the crisis in microprocessor chip availability after severe flooding caused by the tsunami that hit Japan in 2011. He also referenced

"the banks following each other over the subprime cliff" in 2007-08. Turning to the UK's recent 'Brexit' vote to leave the EU, Dixon said, "In 50 years' time the UK will be part of Europe, because it has been for 100,000 years!" He also suggested the EU will still be an important global force in 50 years because of the need for scale.

Dixon highlighted how fast-occurring events can trigger fast changes in strategy. "It took 40 seconds during an earthquake in Japan to change 40 years of energy policy in Japan and Germany. They both cancelled nuclear investment plans." For that reason, agility is an essential quality – a survival issue – in business. In fact, agility will create opportunities for small-scale local specialist suppliers to benefit from the overall trend to larger scale, if they can react quickly and





"1 BILLION HUMANS WILL MOVE FROM POOR AREAS TO WEALTHIER AREAS IN THE NEXT 50 YEARS, IN THE SEARCH FOR FOOD, HEALTH, EDUCATION, SAFETY, SECURITY"

PATRICK DIXON

*Futurist and Business Thinker, Chairman
THE GLOBAL CHANGE LTD*

smartly to changing events. "Every trend shapes a counter-trend," he said.

Think, too, about the need for speed, Dixon urged. "Imagine you are watching TV, on the phone, doing emails, and you are also 'googling' Britney Spears' birthday, and you are waiting for her web-pages to open. How long are you prepared to wait before you press the back button? 5 seconds! That's how long." How long do your children wait? 2.5 seconds! How long will you wait in 2020 to press the back button? 2.5 seconds. How long in 2045? Less than half a second! How many people are irritated by the time it takes to fill their car fuel tank, or get cash

from a cash machine? How many people are annoyed by having to press select buttons to get to the right answer when they call their electricity suppliers? "Our world is becoming very impatient and very fast, and very tough and very cruel!" Yet, he noted, chemical companies are still taking weeks and months to sign supply contracts. If companies can sign contracts in a week or a month, or by halving the time it takes now, they will win contracts, Dixon forecast. Further, companies need to be able to respond fast and in the way their customers want and expect, regardless of language or technology challenges, because they need to know where their goods or products

are and to be assured of their safety. The answer is the provision of live data – real-time information, available immediately.

In contrast, however, some trends are slowing. "How long would it take to update a friend who had been in a coma for 20 years with all that had happened in that 20-year period? Perhaps just 2 hours, because some things also change slowly," Dixon argued. Take cash, for example. Dixon said. "20 years ago, we were predicting a cashless future. But in the EU today, we're using more banknotes than we did 20 years ago." If your 20-year coma friend got dressed in the clothes he was wearing 20 years ago and came to an EPCA meeting, he would not look out of place fashion-wise because not much has changed in the industry's style, the futurist suggested. The key is to focus on the things that are really changing fast in contrast to those that are changing more slowly.

He pointed to the slow pace of change in robotics in the chemical industry. "Look at the Digital Enterprise 4.0," Dixon said. "Yes, we have new technologies such as 3D printing. But that's boring! What can you print with a 3D printer? Toys?" They may be important in niches, or prototyping, but 3D printers are not yet bringing about fundamental changes in manufacturing, he argued. So what are the big issues? The big change engines?

Dixon offered some statistics. "There are 1 billion children alive today. More than there have ever been before and more than there will ever be again. All of them want your lifestyles, and all of them will be adults in 18 years."

"1 billion humans will move from poor areas to wealthier areas in the next 50 years, in the search for food, health, education, safety, security. There will be more money spent on infrastructure in the next 30 years than in the whole of recorded history, and that's tremendous news for the chemical industry."



PATRICK DIXON

*Futurist and Business Thinker, Chairman
THE GLOBAL CHANGE LTD*





"85% of all humans will be living in emerging markets in the next 20 years," Dixon said. Most future global growth will come from these areas, and not from mature markets such as the EU or North America. For example, where have the majority of Science, Technology, Engineering and Maths (STEM) graduates come from in the past 6 years? Answer: from the emerging markets, he added. "China and India are ruling the world of STEM because of their emerging middle classes. Most of these people are the first in their family to go to university, to own a car, to have a pension, own a house, etc." The future, Dixon suggested, will be "south to south. Emerging market to emerging market. As far as China is concerned, the EU is becoming irrelevant: what's much more important to China is Africa and Southeast Asia." Dixon also said that despite globalization, global trade is in decline as a percentage of global production. He also suggested that Europe's push for REACH-compliant products or high-purity products could be impacting its ability to sell into markets where high specifications are not essential. However, REACH also has a dampening effect on imports, because there's a sense that compliance is too expensive.

Despite the boom in China, there are risks, the Global Change chairman said. As manufacturing costs are rising in China, some companies are looking to switch production into lower cost markets, such as Vietnam or Myanmar. In fact, he knows of some companies in other sectors that are finding it cheaper to manufacture in Slovenia or Slovakia than in China. "When you're looking at 8% a year inflation in China, compared with 1.5% or negative inflation elsewhere, it

makes sense to move manufacturing." Similarly, US firms are utilizing plants in Mexico using US-made auto parts to make cars for the US market.

Dixon said we are witnessing a \$40tn green technology revolution. "We have seen energy use halved in the chemical sector over the last 20 years. And I predict – per unit of production – that energy use will halve again in the next 20 years." However, he noted that the shale gas revolution in North America means that US investments in petrochemical projects have ballooned, which poses a threat to Europe unless producers can dramatically reduce their costs. Dixon also noted that we should expect to see the impacts of new innovation that will transform the energy and chemicals markets over the next decades. He said China is installing 75% of the world's new green technology because 'going Green' is essential for internal economic and political stability and to meet the demands of a growing middle class that will not accept current levels of pollution. "The days of China selling fridges to Europe are coming to an end. The Chinese are investing in new technologies – Green tech, nano-tech, every other tech – because Vietnam can sell fridges for half the price!" What's more, it is becoming possible to convert 'Green tech' to petrochemicals – wind power-to-methane-to-chemicals, Dixon continued.

"85% OF ALL HUMANS WILL BE LIVING IN EMERGING MARKETS IN THE NEXT 20 YEARS"

PATRICK DIXON
Futurist and Business Thinker, Chairman
THE GLOBAL CHANGE LTD

"Solar power is transforming energy supply. The price of solar cells is falling towards zero, very fast. In parts of Africa, solar is already the cheapest form of power," Dixon continued. In Germany, energy prices went negative, because on a particularly sunny and windy day, energy companies were calling their industrial customers imploring them to increase production or turn on their air-conditioning or heating systems to use power that could not be stored. "It was free power! They were being paid three times the normal commercial purchase rate to consumer power," he said.

Dixon also foresees a significant change in the provision of auto fuel. But it won't be bio-fuel in a world that needs food, and it won't be LPG or hydrogen on a very large scale. In his view, it will be electricity. "And

it's not a question of if, but when." He sees a difficult future for landlocked countries as foreign trade declines, but those with seaboard and ports will benefit, particularly in the petrochemical sector where plants are located near shipping facilities. Dixon also suggested that the EU chemical sector needs to re-evaluate road transport efficiency: "20% of EU trucks are driving around empty! It's not only an economic scandal, it's also an environmental mess. Trucks are driving air for 180 million km a year in Europe. But that's an easy thing to sort out – we need to Über-ize it to ensure every truck gets filled, and quickly." Dixon also suggested that companies should look at local product swaps in order to prevent long distance transportation – and CO₂ emissions – of products. Dixon ended by offering some good news. "In the last two years, we've been seeing economic growth but static CO₂ emissions. In the next 50 years, we'll see continuing economic growth and continuing decreases in CO₂ emissions."





LEFT TO RIGHT: NADINE DEREZA (CONFERENCE MODERATOR), ESSA AL-SALEH (PRESIDENT AND CEO OF AGILITY GLOBAL INTEGRATED LOGISTICS), HANS-JÖRG BERTSCHI (PRESIDENT AND CEO OF BERTSCHI GROUP), PETER MARSHALL (DIRECTOR FOR SUPPLY CHAIN OPERATIONS, EMEA, DOW CHEMICAL) AND DIRK JAN DE WITH (CHIEF PROCUREMENT OFFICER, COVESTRO DEUTSCHLAND AG)

PANEL DEBATE

Following Patrick Dixon's speech, moderator Nadine Dereza welcomed several people to join him on stage for a panel discussion.

Opening this session, Dereza asked **Essa Al-Saleh, President and CEO of Agility Global Integrated Logistics** how he sees the future shape of chemicals supply chain and logistics. "First of all, I agree with Patrick, that we need agility!" he answered. "But what got us here in the last 20 years won't get us to where we want to be in the next 20 years. I see three major forces at work: slower growth, and less globalization; increasing complexity, particular with regard to environmental, health and safety regulations; and finally, the accelerating pace of everything." In order to respond to these challenges,

Al-Saleh said, companies need three things: first, an engaged and empowered workforce working to shared goals through a common strategy; second, behave and operate like a technology company – to iterate, to continuously improve, and have a mindset of speed, and provide customers with information and not just the physical move; third, companies will need speed, flexibility and responsiveness in order to meet customers' requirements, and look at different approaches."

"How is Agility addressing the need for speed?" Nadine Dereza asked him. Agility's president said he sees the 'need for speed' relating in large part to information. "Our customers want to know where their product is, how much they're spending, what challenges they may face, and also how we are going to react to that by providing them with insights for decision-making. That's the

speed we need. It's not necessarily about getting the product to a destination faster." Al-Saleh said that is why digitalization has had a major impact on how Agility does business. "We generate huge amounts of data because we have 17,000 people worldwide generating close to 5 million transactions every year. It gives us – and our customers – huge insights into how the supply chain works and moves. But we're on a journey and there is always more to do to accelerate the pace and behave as a knowledge company, providing solutions for our customers."

"Is Agility seeing a need to work on the 'soft skills' or change its company culture?" Dereza asked Al-Saleh. He said this occupied a significant amount of his time, and explained that since 2012 Agility has embarked on a performance management strategy, not a top-down strategy, but one to engage our people





“KEEP LEARNING, AND FOCUS ON CONTINUOUS IMPROVEMENT AND USE TECHNOLOGY AND DIVERSITY TO KEEP UP WITH CHANGE”

ESSA AL-SALEH

President and CEO of Agility

GLOBAL INTEGRATED LOGISTICS

in understanding and responding to the challenges the company is facing based on a true diagnosis of the business situation.

Next, **Hans-Jörg Bertschi, President and CEO of Bertschi Group**, and member of EPCA's executive committee and board of directors was asked for his thoughts on the future. He agreed with Patrick Dixon that consolidation has been a feature of the industry over the past 10 years, and that digitalization is having a significant impact on how business is done and information shared. But he wanted to highlight what he sees as a tremendous wave of further globalization. “Back in 2000, only 5% of chemical products were exchanged across continents. Today, that number is 10%. Now 8-10 new crackers are being built in the US, with most of their product bound for export. Specialty chemical plants being built are not just for regional markets but also to meet global demand. So I see

global trade expanding – doubling by 2025, perhaps trebling by 2035. This presents major challenges for the chemicals supply chain. Companies will need more IT, more automated handling, but also more diverse and talented employees to cope with these challenges.” He also made a plea for more women to join the industry.

Nadine Dereza asked whether European logistics companies may be facing a difficult future due to a lack of investment in new chemical production capacity despite state-of-the-art ports, transport facilities and production clusters. Bertschi's response was that European companies have blazed a trail in global logistics, with global reach, global facilities, and increasingly global cultures and networks. “If you look at the ports, only one in Europe – Rotterdam – is in the global top 10. Six of them are in Asia. But what's really important is the global network. When I look at global shipping, the top four global players are all European. For chemical parcel tankers, storage, and so on, the major players are European. So I think we're taking advantage of globalization.”

Asked whether he thought the outlook for the European chemical industry was difficult, particularly given the landlocked location of many plants, Bertschi said the sector always faced challenges, but always responds creatively. “Year after year we have managed to improve our trade balance, even though for 22 years no new crackers have been built in Europe. The future's challenging, but it's also bright!”

Dow Chemical's Peter Marshall, Director for Supply Chain Operations, EMEA, said because the chemical sector is a supplier of essential materials for other industries – ‘an industry of industries’ – it has a long-term future. In his view, supply chain and logistics will play an increasingly critical role in the industry. It is now rec-

ognized as an academic discipline across universities, and is constantly discussed in the boardroom. “It's a great area to work in, and we should be encouraging young people to build their careers in supply chain management.” In terms of developments and trends, Marshall noted that digitalization is coming very fast. “At Dow we're working on end-to-end visibility in the supply chain, so that we can see where products are and what's happening to them, and connecting this with our whole operating system. It's changing how people work on a daily basis.”

He noted that Patrick Dixon had suggested that the industry can be difficult to do business with and suggested that chemicals could benefit from the experiences of those sectors that are more closely connected with end-consumers, particularly in issues relating to speed and agility. “We need to make the best use of new technologies to change the way we work.” While the chemical industry has made continuous progress in areas such as safety, environmental protection, and regulatory compliance, Marshall sees technology as a way to increase transparency in response to the demands of both the public at large and the sector's critics.

The Dow manager said it is hard to predict how supply chains will look physically in the future, but suggested that driverless trucks, automated port systems and warehousing, and hyper-loop frictionless transportation systems may all be on the horizon. He sees these potential developments as both changing people's jobs and also enhancing their safety.

Asked whether it's possible to strike a balance between consumer demands for speed and convenience with sustainability, Marshall said: “I guess consumers would actually say they want both: speed and



ESSA AL-SALEH AND
NADINE DEREZA

convenience, and sustainability. I think the key is to segment our customer base and deliver in the most efficient way. We need to mix and match, and to talk to our customers and suppliers." On the issue of recruitment, he suggested that in addition to trying to attract students with STEM degrees, it is important to try also to recruit people who have different backgrounds. Marshall said it is important to make sure new recruits are quickly engaged in real work so they feel they can immediately make an impact. Dow, he noted, has a supply chain rotation program that enables new hires – who often have bachelors' or masters' degrees in supply chain studies – to gain widespread experience in real work from day one.

Dirk Jan de With, Chief Procurement Officer, Covestro Deutschland AG sees a need for the industry to act. Coming from a consumer and agriculture industry background into chemicals, he said he knows the importance of meeting consumers' needs and their perceptions, because together these two factors drive markets. As an industry that is much further upstream, de With said that chemicals "needs to wake up to address the needs of these consumers. I don't want to be here in 10 years and hear Patrick Dixon say 'we should have done this or done that,' so we have to act!" He said there are a few things that the industry should do. One is to collaborate and use technology to work

more closely together with partners. "I know Patrick was talking about increasing consolidation with fewer companies operating on a larger scale. But I can see a different model, where collaboration provides that scale." De With also suggested seeking value through asset sharing – like car sharing – rather than always looking to own assets outright, making sure that trucks are fully loaded, and looking to technology to build platforms – such as those used by Uber, booking.com or Airbnb – to facilitate collaboration and greater efficiency.

Finally, he said the industry needs to keep on developing its processes and materials, because this is how – through light weighting or transforming CO₂ into usable materials – chemicals can transform other sectors and maintain its role as an essential supplier to virtually every other industrial sector.

Asked by Nadine Dereza for their final thoughts, the panelists offered the following: Essa Al-Saleh said, "Keep learning, and focus on continuous improvement and use technology and diversity to keep up with change."

Hans-Jörg Bertschi suggested that the industry "look for collaboration opportunities and act on them!" Peter Marshall said, "There's a lot going on and it's going to be an exciting future. But we need the right people with all the right skills to deal with the paradigms we face." Dirk Jan de

With concluded: "Be curious, be courageous, be colorful! Think out of the box, and have an open, progressive mindset and attitude. Collaborate throughout the supply chain, and act faster!"

"BACK IN 2000, ONLY 5% OF CHEMICAL PRODUCTS WERE EXCHANGED ACROSS CONTINENTS. TODAY, THAT NUMBER IS 10%. NOW 8-10 NEW CRACKERS ARE BEING BUILT IN THE US, WITH MOST OF THEIR PRODUCT BOUND FOR EXPORT"

HANS-JÖRG BERTSCHI
President and CEO
BERTSCHI GROUP



TUESDAY 4 OCTOBER 2016

CLOSING LUNCH SESSION



50 YEARS OF EUROPE IN THE WORLD: WHAT'S NEXT?

KEYNOTE ADDRESS BY HERMAN VAN ROMPUY, FORMER PRESIDENT
OF THE EUROPEAN COUNCIL (2009-2014)



HERMAN VAN ROMPUY

Former President of the European Council (2009-2014)



"Societies, polities, economies always live somewhere between stability and change. Every election campaign is about stability or change. If people reject their current situation, they want change, whatever that may mean. If they are satisfied, or anxious about change, they prefer stability," so began Herman Van Rompuy, Belgium's former Prime Minister and the first President of the European Council.

"In today's world there are so many changes taking place and at such short notice. In Europe, people are concerned about migration, about terrorism, they want financial stability restored, they want long-term jobs, they are concerned about the planet, and they want to see international fraud and tax evasion tackled. And if traditional parties can't provide answers, then voters are ready to believe empty promises, and even lies, coming from outsiders or even extremists. If people are really afraid, they will be ready

to prefer less migration even at the cost of their own prosperity, and even give up some of their own freedom. We are at that stage."

Despite this stark evaluation of today's EU and the world it inhabits, Van Rompuy remains optimistic about the Union's ability to cope with the many difficult challenges it faces. However, he raised serious concerns about a retreat to insular nationalism for a region and a world crying out for transnational and global solutions to global problems.

We live in a world where the unexpected constantly happens, he said. "Look what can happen in the Anglo-Saxon world, once a monument of stability: Brexit and Trump, and they're two sides of the same coin." Europe and the USA, he said, are experiencing similar societal revolutions. Fear and insecurity are common feelings, after the financial crisis of 2008-9 and the impact of terror attacks. Globalization is no longer ac-

cepted as self evident, and the Transatlantic Trade and Investment Partnership (TTIP⁴) between Europe and USA is now under threat because of concerns between two former champions of free trade – the USA and Germany. Imports from China and other countries are now seen as threats to jobs in North America and the EU. The glorious days of free trade are apparently over, although TTIP is not dead, at least not yet, Van Rompuy suggested. But a resurgence of protectionism would be a big mistake.

Today, the EU needs strong, visionary leadership, Van Rompuy continued. Europe is surrounded by wars. In the East, over 9,000 people have been killed in Ukraine. In the South, over 400,000 have died in Syria. But they are not the only flashpoints, and Europe is facing a huge influx of war refugees and economic migrants from the Middle East and from Africa. At this time, Europe's leaders should assume regional and global responsibility, and not retreat





"WE NEED A NEW SOCIAL CONTRACT, AND MORE CONSENSUS, MORE HARMONY, LESS FORMALIZATION, AND MORE MODERATION, AND WE NEED COUNTERVAILING REGULATIONS TO COUNTERACT BRUTAL FORCES OF THE MARKET"

HERMAN VAN ROMPUY

*Former President of the European Council
(2009-2014)*

into nationalism, which has in the past led to world wars.

Migration from Africa is very likely to increase over time, the former Belgium Premier suggested. This will be driven by instability and demographics as the continent's population grows from 1bn to 4bn by the end of the century. The EU responded to this issue at the Valetta Summit in 2015, showing a readiness to engage and co-operate, to encourage development and increase prosperity in Africa, in order to stem the flow of migrants. But migration is an issue requiring the involvement of all global actors, Van Rompuy said. "Europe, North America, China and Japan, all need to join forces to co-operate. They can't just turn away from this global challenge." Europe is not an island isolated from the world's problems, and will find it difficult to achieve stability living in an unstable neighbourhood.

Despite the picture of doom and gloom that the Anglo-Saxon press paints of the EU, the Union is neither inactive nor in a wait-and-see mode, the former European Council President said: "We overcame an existential crisis by 2012, and we're seeing

a recovery in the Eurozone economies, with around 5m jobs being created between 2012 and 2017. Together, the G20 countries and the EU are combating fraud and tax evasion in a determined manner. Just look at Apple's tax-related fine! And fairness is a major priority." Moreover, the EU has a global lead in the low carbon economy, and spoke with one voice during the COP 21 meeting on the biggest issue facing the world: climate change, Van Rompuy said.

Europe's difficulty is that it has been facing what the Belgian politician calls a "polycrisis," causing deep shocks and unhealed wounds. Some elements, such as the global banking crisis and wars, originated outside the EU. Others, such as the Eurozone issues and Brexit, came from within. But they all add up to a sense of broken trust, and leave people worried about their jobs, incomes and savings.

Within Europe, citizens want solutions from the European Commission and from National governments, said Van Rompuy, but it takes time to address and then fix problems. In the EU, decision-making requires unanimity between the 19 Eurozone members and the full 27, depending on the scope of is-

sues. Achieving agreement can be long and arduous, but the EU is not alone in facing this challenge: "Even in the US we can see how tough it can be to find majorities [in Congress] to approve budgets and other legislation. It's not just a European problem."

Paradoxically, Van Rompuy continued, those seduced by the idea of "less Europe" should be in favour of "more Europe" to solve their problems and address their concerns. "The paradox in Britain is that Brexit will hurt those who voted 'Leave' because they feared the excesses and insecurities of globalization. But now, UK ministers are looking to grow existing markets, or find new ones, outside the EU, which will result in more globalization, not less."

The challenge for Europe and the EU is to restore a sense of stability and security, creating space for development for everyone, from investors, companies and workers to students, which means change. "Progress is always a process of creative destruction," Van Rompuy said. "But right now destruction seems to prevail over creation."

⁴ Transatlantic Trade and Investment Partnership





This is definitely evident in the labour market. For example, the digital world requires fewer workers, and in many countries employment levels are now lower than before the financial crisis. However, there is an irony that in the USA and UK, which have relatively low levels of unemployment, there are very high levels of social disharmony and discontentment. "In politics, the old adage, 'It's the economy, stupid!' is no longer true," Van Rompuy contended. "People need to feel at ease and at home. But even those who have a job fear they will lose it, and the lower middle class has become resigned to lower wages and declining standards of living over the last five years."

The dichotomy between the desire for stability and the need for change in today's world has created, in Tom Friedman's view, 'Wall people' versus 'Web people'. Van Rompuy suggested this category clash could be seen as playing out in the UK's Brexit referendum. "In the UK, the older, more insular 'Wall people' voted 'Out.' They wanted a return to an older world. But younger people, and the older more outgoing and outreaching 'Web people' voted 'Remain.' They know that the old world won't return."

So what's the solution? Where do the answers lie? Van Rompuy said that the EU faces some fundamental and inevitable choices, and needs to bridge the gap

between place and space. "We need a new version of the social market economy at the European and Global levels. We need a new social contract, and more consensus, more harmony, less formalization, and more moderation, and we need countervailing regulations to counteract brutal forces of the market." The financial crisis was a warning shot, he said, and there is still much at stake. But answers can be found. In a climate of uncertainty, governments are still struggling with massive public and private debt. But while they look for long-term structural reductions, they need to ease up on austerity. And while low interest rates might encourage borrowing and public investment, there is a danger in over-borrowing and over-investing."



HERMAN VAN ROMPUY





EPCA PRESIDENT TOM CROTTY THANKS CATHY DEMEESTERE, CEO OF EPCA (1998 – 2016), ON BEHALF OF EPCA MEMBERS ON THE OCCASION OF HER LAST EPCA ANNUAL MEETING.



GUSTAVS ZILGALVIS

Winner (3rd place) of the EYDC Final in Budapest and Winner (2nd place) of the Belgian National EYDC Final

The European Youth Debating Competition was an engaging and enlightening experience, introducing me to new concepts and providing me with the opportunity to speak to experts in their fields and learn about fascinating future initiatives and challenges of the modern world.

The former European Council President also pointed to differing views on what constitute the EU's biggest challenges. "For countries in the North, it's migration. For those in the South, it's poverty, austerity, and unemployment." On the economic front, the EU has not been idle. Van Rompuy said the 'Juncker Plan' is driving a combined public and private investment of €350bn over three years, and the European Commission may even seek to double this. In general, investment requires a positive business climate, because investors hate instability. But with the migration agenda overshadowing the economy, it is currently difficult to achieve.

Van Rompuy noted that the 'Brexit' vote has only increased instability, for both the UK and the EU. But he forecast that UK business will be the loser as a result, because 45% of the UK's exports go to the EU, but only 10% of EU exports go to the UK. "The aim of the 'Leavers' was to regain National Control. But this is unrealistic in a global world. The Brexit negotiations will be very hard for the UK because free movement of capital, people and goods is central to the EU. The UK is facing a really serious issue," he said.

Explaining that 'Brexit' involves a two-tier process (first a Separation Treaty, then a Framework deal) Van Rompuy added that this means a bridging deal will also be required, since the gap between triggering Article 50 and agreeing a long-term deal is likely to take years. Furthermore, any deal must be agreed on by every single EU national parliament, which, he forecasted, is likely to be very difficult to achieve.

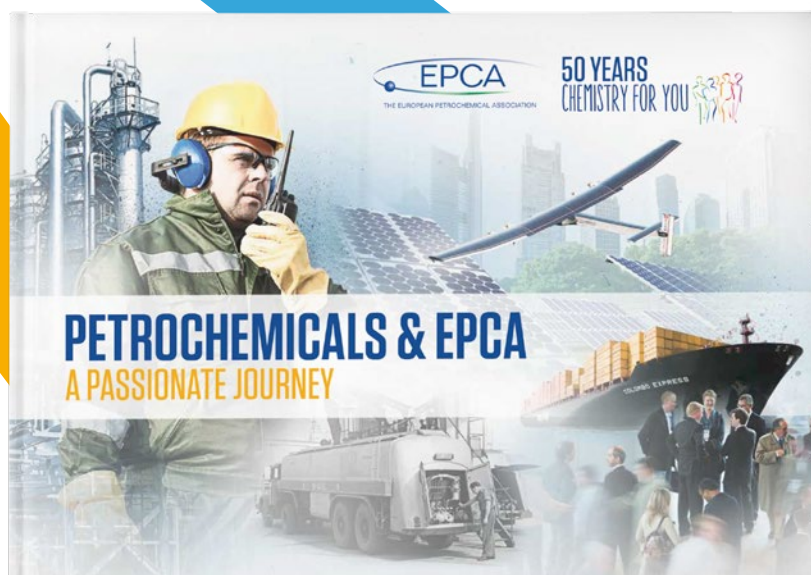
However, despite 'Brexit,' Van Rompuy remains optimistic about the European Union's future. The EU, he said, is based on gradualism. "We don't need to agree on all long-term goals, but we do need to focus on agreeing intermediate goals and measures to achieve them." He noted that France and Germany remain key to the progress of European integration, and suggested that acceptance of the reality of the challenges facing the Union can help progress towards enhanced economic integration. "The EU needs peace and harmony, shared values and shared goals, and to turn fear into hope. There is no need to reinvent the EU, but it is essential that we reinvigorate and reenergize the Union."







"EPCA IS ALL ABOUT PEOPLE"
"EPCA IS ABOUT CONTENT"



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It looks back on the beginning of the petrochemical industry and its evolution, but it also outlines the industry's way into the future.

The book is available as an interactive e-book that can be downloaded as a printable PDF version. Included in the book as an insert is an illustrated timeline depicting achievements of the petrochemical industry.

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