

Uncertain times ahead

1. Saaed Al Remeithi, Emirates Steel
2. Conference delegates
3. Dr Edwin Basson, worldsteel
4. Yu Yong, HBIS

Highly unpredictable, challenging times and downside risks - three ways of describing the current state of play in the global steel industry. **Matthew Moggridge*** flew to Monterrey, Mexico, to attend the World Steel Association General Assembly and found more than one glimmer of hope

THE Quinta Real hotel in Monterrey, Mexico, is largely hidden from view. It can be found squeezed between the SAFI hotel on its right and a cream and black skyscraper on its left. Visitors follow a short and shaded driveway guarded by petrified angels and soon find themselves in the lobby of this old and, some would argue, tired hotel, the venue for this year's World Steel Association General Assembly.

Proceedings always kick off with a press conference on worldsteel's Short Range Outlook (SRO). Journalists were told that steel demand in China will grow by 7.8% to reach 900.1Mt and that the rest of the world is expected to record 0.2% growth to 874.9Mt.

The SRO predicts that Chinese steel demand will grow by 1% and that steel demand in the rest of the world will grow 2.5%, driven by 4.1% growth in the emerging and developing economies, excluding China.

For 2019, global steel demand will grow by 3.9% to 1.775 Mt and by another 1.7% in 2020, reaching 1,805.7Mt.

'China has surprised us'

Saaed Al Remeithi, chairman of the World Steel Economics Committee, told journalists that Chinese steel demand was showing high growth this year owing to a strong real estate sector and despite the country's lowest expected GDP growth since 1992.

"China has surprised us," said worldsteel's director-general Dr. Edwin Basson.



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According to Dr. Basson, the top three downside risks to the global steel industry are based on the uncertainty of the international trade environment. He highlighted growing protectionist notes in a number of countries; government support measures introduced into the construction and automotive industries; and consumer uncertainty.

"In China we have seen interesting support of the construction sector as well as legislation changing the strength of material in building practices. In some

South East Asian markets there has been similar support for those moving into urban areas. The risk is if the government turns off the tap quickly, but it's not likely so when we factor this in, even though we live in a pessimistic environment, if you look at what's happening on the ground, there is surprising robustness," Dr. Basson added. "Consumers are waiting for more clarity, more certainty."

Dr. Yu Yong, chairman of HBIS Group, echoed Dr. Basson's remarks about the situation in China and said that even though there are tensions between the USA and China, the situation is under control.

Dr. Yong said that steel demand was robust. He argued that the Chinese economy in 2019 was doing well, with strong figures for steel demand driven by infrastructure spending and government support for the manufacturing sector.

According to Dr. Yong there was still a lot of space for infrastructure investment

*Editor, Steel Times International

in China. "The Chinese economy remains resilient and growth will continue as we still have a lot of space to bolster the economy," he said, acknowledging that there had been a contraction in the Chinese automotive sector, but not because of a slowing down of the economy, more a case of consumer uncertainty.

Saeed Al Remeithi, chairman of the worldsteel economics committee, commented: "The current SRO suggests that global steel demand will continue to grow in 2019, more than we expected in these challenging times, mainly due



to China. In the rest of the world, steel demand slowed in 2019 as uncertainty, trade tensions and geopolitical issues weighed on investment and trade. Manufacturing, particularly the auto industry, has performed poorly, contracting in many countries. However, in construction, despite some slowing, a positive momentum has been maintained."

The global economic outlook, Mr Al Remeithi said, was 'highly unpredictable'. There were, he said, 'significant downside risks' ahead if the current level of uncertainty prevails.

Long-term challenges

Dr. Basson spoke of the long-term challenges to the industry. Environmental change is one, he said, but so is the shift of economic power from the West to the East and the shift of people into urban areas, a subject that would be covered in greater depth in a later session about smart cities.

Digitalisation and increased automation will impact everything we do, said Dr. Basson, and will provide opportunities and challenges. "This conference will try to shed light on these challenges," he said.

Andre Johannpeter, executive vice chairman of Gerdau SA and chairman of worldsteel, said that occupational safety would always be top of the agenda. "Nothing is more important than the safety of our workers," he said, adding that the industry had come a long way on safety. He said that the image of the steel industry was intact and that energy consumption had been declining over the years. The construction industry, which accounts for 50% of steel demand globally, has been reducing waste, Johannpeter said, arguing that acting within the principles of the circular economy was crucial.

The steel industry employs 96 million worldwide and for every two jobs, more than 13 jobs are supported throughout the value chain, Johannpeter claimed, adding that major challenges lie ahead, notably that of tackling overcapacity - a perennial problem.

Sitting in the press room listening to Alfonso Romo, chief of staff to the President of Mexico, proved a little problematic as the sound kept cutting out, but I managed to learn that Mr Romo and Gerdau's Andre Johannpeter both competed in the Sydney Olympics. I also heard Mr Romo state that 'we don't control President Trump'. Who does?

A very strong sector

Dr. Jesus Seade, Deputy Foreign Minister, Government of Mexico, said he was very fond of the steel industry. "It is a very strong sector as its name suggests," he said. He spoke of the North American Free Trade Agreement (NAFTA) and said that Mexico went from being a single product country to becoming a formidable manufacturing nation. Looking back, Seade said that Mexico made 'crisis after crisis' a permanent way of life in the 50s, 60s and 70s, but after joining GATT (the General Agreement on Tariffs and Trade) and then

NAFTA, Mexico became an open economy, a great exporter, the biggest exporter in Latin America. But despite the benefits of NAFTA, Seade said that growth in Mexico was 'abysmal' and people started to blame NAFTA. While a policy of repressed salaries gave Mexico the edge as an exporter, there were no resources to grow demand.

Seade described the new USMCA as both user and business friendly. He said a major impact of the new treaty was to make it more attractive for companies to invest in the region and benefit from free trade. While there had been a lot of animosity - a terrible year - it was now down to correcting specific points and the treaty is moving clearly towards completion. Ultimately, Seade believes Mexico will have a pretty good future in North America.

The opening session of the conference returned to worldsteel's Short Range Outlook and the global economic downturn of late 2018, which was aggravated in 2019 by global trade tensions between the USA and China, not forgetting issues surrounding Brexit and conflicts in the Middle East, all of which were clear factors adversely affecting business governance.

Brexit uncertainty

Brexit uncertainty was undermining confidence and investment in Europe and increasing the risk of an EU recession, while in the USA the 'long lasting boom' was coming to an end. Manufacturing in Japan and Korea was suffering from weakening exports and in China, GDP of 6.1% was the lowest figure since 1992. US/China trade tensions have led to further pressures on the Chinese economy resulting in weakening consumption and manufacturing.

Elsewhere, there is a mixed picture with headwinds from slowing export markets in Asia, reform and policy uncertainty in Latin America and geo-political instability in the MENA region where oil prices are dictating the regional outlook. In Turkey, last year's currency crisis has led to deep contractions in many sectors, problems further complicated by Turkey's recent invasion of North Eastern Syria and the possible ramifications from resulting US sanctions.

A slowing global economy and declining investments have hit key steel-using sectors this year, although an automotive 'recession' will draw to a close at the end of 2019 with a moderate recovery expected in 2020. The automotive situation has been

affected by many factors including market saturation, a fading of stimuli, regulation change and, of course, the transition from petrol-driven to electric vehicles.

A moderate rebound in construction is expected in 2020, but not in China, and no rebound at all is visible for the machinery sector. In fact, there was strong growth recorded in the mechanical machinery sector during 2017/18, but such growth will decelerate in 2019 to just 2.3% and will reduce further to 0.4% in 2020. In the European Union, however,

replaced by Vietnam, which might well put in a steel demand figure of 25.3Mt.

In China, however, a strong real estate sector has boosted construction activity as have new safety regulations, which have increased the steel content in new buildings. Manufacturing, on the other hand has been sluggish due to trade tensions and a slowing economy, although focused stimuli will boost infrastructure investment and the automotive industry in 2020. There is, however, a downside risk from trade tensions. China was by far the



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- 5. Alfonso Romo, Govt of Mexico
- 6. John Ferriola, Nucor Corporation
- 7. General Assembly delegates
- 8. Andre Johannpeter, Gerdau
- 9. Jesus Seade, Govt of Mexico
- 10. Guillermo Vogel, Tenaris



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residential construction, which is driven by infrastructure investments, will still benefit from low interest rates. In the USA and South Korea the spectre of stressed household budgets will certainly cast its shadow and in emerging markets.

Global steel demand will continue to grow during 2019 and 2020 at a similar pace to 2018. In 2020, most regions expect a rebound except China where growth will slow. Global growth will be driven by other developing nations, not just China.

Comparing steel demand in 2015 with estimated figures for 2020, China's 2015 figure of 672.3Mt will soar to 909.1Mt, India from 80.2Mt to 108.7Mt, and the USA from 96.1Mt to 101.2Mt. Japan will edge up slightly from 63Mt to 64.1Mt, Russia will move from 39.8Mt to 43.9Mt and Italy from 24.5Mt to 27.5Mt. Other nations' steel demand figures are less impressive. South Korea will dip from 55.8Mt to 54.2Mt, Germany will be down from 39.1Mt to 37.8Mt and Turkey is likely to fall from 34.4Mt to 27.7Mt. Mexico, which recorded steel demand of almost 25Mt in 2015, falls out of the top 10, but is



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biggest driver of steel demand this year. In Russia there has been an upward trend and stronger than expected growth. Demand rose from 41.2Mt in 2018 to 43.2Mt in 2019 and an estimated 43.9Mt in 2020. In Brazil, steel demand rose from 21.2Mt in 2018 to 21.7Mt in 2019 and is estimated at 22.7Mt in 2020. Brazil's recovery this year was disappointing and things were looking bad for Turkey where steel demand figures went in the wrong direction, from 30.6Mt in 2018 to 26.1Mt in 2019 and an estimated minor increase to 27.7Mt in 2020.

Low growth gear

Worldsteel believes that global steel demand will stay in a low growth gear. Current installed capacities are sufficient to meet demand, and global steel demand will remain resilient. However, politically-driven uncertainties mean that there are significant downside risks going forward. That said, there is upside potential from government stimuli, the resolution of geo-political conflicts and an orderly Brexit. Trade tensions will have a lasting impact

and there are mounting challenges in the long term.

Economic growth and social equality

In an economic discussion panel chaired by Dr. Edwin Basson, the conference brought together Saeed Ghumran Al Remeithi, CEO of Emirates Steel; John Ferriola, chairman, CEO and president of Nucor Corporation, Guillermo Vogel, vice-chairman of the board at Tenaris, and Gustavo Werneck Da Cunha, CEO and president of Ternium.

Vogel said that Mexico was on the road towards economic growth and social equality, but claimed that there had always been a lot of inequality in the south of the country. The north, he said, was always in a better position than the south. He argued that NAFTA had generated more inequality because investments were mainly concentrated in the north and middle regions of the country and that the south was forgotten, leading to increased regional inequality.

Between 2013 and 2017 average GDP growth was 2.5%, dipping to 2% in 2018 and estimated at 0.5% for 2019 and beyond. Vogel cited mid-term public policy actions as fighting corruption, controlling government spending, sound fiscal and financial management, developing an infrastructure plan and an industrial policy designed to expand development, not to mention the implementation of a policy of well-being.

Where the Mexican steel industry was concerned, Vogel said that he was proud of its work in the field of corporate social responsibility, something that was later reinforced on a plant tour for delegates to Ternium's Roberto Rocca Technical School where this correspondent can vouch for how impressed he and other delegates were of the school's facilities where 50% of students go on to higher education after three years of study at the school. There are 372 students of which 40% are girls and the school takes on 128 students every year.

Vogel said that more than 14,000 people had benefited through programmes to care for the environment, social empowerment and entrepreneurship promotion. He said that important resources had been allocated to improve road infrastructure, rehabilitation of public spaces and educational sports and cultural centres, even clinics offering free consultations.

According to Vogel, more than

6,000 scholarships had been awarded to young Mexican students and that 20,000 children had benefited through the installation of schools and comprehensive development programmes. A further 16,000 people have been supported by self-employment programmes.

Mexico, said Vogel, is the 14th largest steel producer in the world and has a strong focus on the environment with CO₂ emissions below the world average. According to Vogel, 30% of water used in steel production is recycled. The Mexican steel industry, he said, was the first consumer of natural gas and the third consumer of electrical energy and employed 672,000 people directly and indirectly.

A difficult year

That said, it's been a difficult year for the Mexican steel industry. Construction was badly hit and is down 4-5% while automotive production is down 0.7% and remains stagnant. US exports to Mexico represent 13% of domestic consumption whereas Mexican exports to the USA represented 2% of US consumption in July 2019, 1% less than in May 2018.

Gustavo Werneck da Cunha, Ternium SA's CEO and president, said that the post 2010 period in Brazil was marked by a new economic matrix with negative implications for GDP growth in Brazil. In 2015 it was -3.55% and in 2016 -3.31%, rising to 1.07% in 2017, 1.12% in 2018 and 0.90% in 2019. In Q2 2019 it grew 1% and the estimated figure for 2020 is 1.80%.

Werneck said that steel consumption was directly correlated with economic growth and highlighted planned tax, pension, administrative and macroeconomic reforms in Brazil as well as trade openings and privatisations. He said that shipments of steel still lagged behind historical peaks, but claimed that activity was improving and there was strong potential for consumption growth despite the wide gap in apparent steel consumption when compared to the global average and the USA. "So there is still room to grow," he said, adding that emerging countries like Brazil use large volumes of steel to support

growth.

Asked what he thought should happen to get the US economy to grow faster, Nucor's John Ferriola commented: "It's a very complicated question and a very complicated situation today. In the US there's a lot of uncertainty which isn't good for the markets. There's a lot of doom and gloom, but frankly what we see is that pricing has been challenged, but demand is relatively strong.

"We see relatively strong demand in the construction markets, certainly residential is down, but infrastructure is up and non-residential is up, but automotive is down and was not as good as 2018."

Ferriola felt pretty good 'about where we are today' and that, going forward, it was challenging to predict what would happen in 2020, an election year. It would be very interesting as there was so much political strife. "The US economy is good and we have the lowest unemployment rate for some time," he added.

US infrastructure – in a bad way

Ferriola said that infrastructure in the US was in an horrific condition. "We need a huge infrastructure bill to rebuild our crumbling infrastructure," he said, highlighting the poor state of some of the USA's 550,000 bridges. "After the election you'll see a major infrastructure bill. What happens with the USMCA will be a key factor," he added, prompting speculation that it might be signed before the year-end.

Vogel commented: "This year construction is below 5% [in Mexico] and a lot of public sector investment has been virtually frozen," he said, but there is going to be a lot of infrastructure derived from energy. Vogel said that pipeline investment was needed and argued that drilling was a positive element for steel consumption in Mexico. He predicted there would be strong activity in pipelines.

In Brazil, the biggest problem was infrastructure and the question of funding. That's why privatisation was important, said Werneck da Cunha.

"You hear about consumers struggling and the economy slowing from 2.9% to 2.3%. I look at consumers and consumption and the fact that Q2 spending is up 5% annualised, so despite the negativity I'm fairly optimistic," said Ferriola.

He said that growth in China was domestically-driven so the effect on the rest of the world would be negligible. ■



Climate change and competition

1. Delegates enjoy the conference
2. Brian Aranha, ArcelorMittal
3. David Hone, Shell International
4. Peter Levi, IEA



How does the steel industry remain competitive in a world challenged by climate change? Now there's a big question, even if steel is the ideal material for a low carbon economy.

ANOTHER big topic tackled by the conference was the environment and technology. The big question was how does the steel industry remain competitive in a world challenged by climate change? It was argued that steel is the ideal material for a low carbon economy, that it was flexible, durable, recyclable and reusable. In other words, it has a future in society in terms of its carbon footprint.

For Brian Aranha, vice president, head of strategy and chief technology officer at ArcelorMittal, the problem is the iron ore element of the steel production process. He said that the Paris Accord was calling for carbon neutrality by 2050, but that the amount of scrap generation was insufficient to support the demand. "If we do nothing, carbon emissions will go up," he said, adding that 'those things we can do incrementally won't get us there'.

"They might get us to 10-15%, but that's all. A breakthrough technology is needed," he said.

Low-emission steelmaking

Aranha believes that low emission steelmaking is possible and he said that

ArcelorMittal is committed to the Paris Accord, but that there was no silver bullet for low emission steelmaking. He highlighted three possible sources of energy:-

1. Circular carbon including bio-based/plastic wastes from municipal and industrial sources and agricultural and forestry residues.
2. Fossil fuels with carbon capture and storage (CCS) to transform existing iron and steelmaking processes into low emissions pathways.
3. Clean power to fuel hydrogen-based ironmaking, direct electrolysis ironmaking and to contribute to other low emissions technologies.

ArcelorMittal is working on all three, but claims that they are all much more expensive than existing methods and will require some form of public support.

First, a mechanism is needed to create a level playing field in order to prevent competitive advantage for steelmakers not paying for the higher structural costs of a low-emission transition. A level playing field will also prevent higher emissions

steel imports into a market with a price on carbon. Aranha believes that a level playing field is a prerequisite for global CO₂ emissions reduction from steelmaking. He also believes that access must be given to sufficient and affordable clean energy; and that means large quantities of renewable electricity for low emissions steelmaking and sustainable sources of biomass for iron ore reduction. Furthermore, without sufficient funding, it will be impossible to gain access to sufficient and affordable clean energy. Likewise, without policy support, progress won't be made. "If there is some policy support, but the field is not level, it's not going to be implemented either," he said, adding that global co-ordination means it will take off at a higher speed. Without a global framework, it will be impossible to achieve the goals of the Paris Accord.

Aranha said that momentum on climate change has been growing since 2015 and that customers will demand detailed information on where their suppliers are sourcing raw materials and how they are producing their products.

"Customers of the steel industry, all

kinds of consumers of steel, including big names like Toyota, "are getting smarter with the questions they're asking us," Aranha said, adding that different questions make it complicated for the steel industry. "The mining industry has come up with standards customers respect, similarly aluminium, and now it's up to us in the steel industry to do something similar," he said.

Aranha said that one standard was needed and was currently under development. The new standard would be ready by the year-end. He said that steel made from iron ore will exist into the future and that low emissions steelmaking was both desirable and possible.

David Hone, chief climate change advisor for Shell International, highlighted the company's Sky scenario, which illustrates 'a technically possible but challenging pathway for society to achieve the goals of the Paris Agreement'.

He said that Sky relies upon use scenarios to look at how the energy system might evolve. "We were challenged to look at how the energy system might respond. The Paris Agreement sets out a very ambitious pathway for the world and significant momentum is building behind it," he said.

The central aim of the Paris Agreement is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels; and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

According to Hone, the energy system as it is today is 80% fossil fuel-based and that's been the case for more than the last 30 years. "If you transfer that into final energy then steel is one of the energy services, not the largest, but still significant," he said.

Hone argued that in terms of energy demand 'we don't see a plateau'. He believes that coal remains an imperative

and is used in almost every country as the fuel behind electricity generation. There are, however, lots of technologies sitting on the table and waiting to be applied. One is carbon capture and storage (CCS) which is not progressing at the rate today to see a change. Time, said Hone, is not our friend.

How to reach net zero

To reach net zero, said Hone, we have to remove an equivalent amount from the atmosphere.

The Sky scenario outlines six big steps forward from now until 2070, illustrating the interplay of technical innovation, public policy, market forces and human behaviour. Here are those six steps:-

1. Efficiency improves continuously.
2. Product substitution plays a role.
3. From 2020 onwards there is a continuous electrification of light and then heavy industry.
4. From 2030 CCS first appears in heavy industry and then scales rapidly.
5. After 2050 hydrogen scales rapidly in heavy industry, eventually backing out some CCS.
6. Remote sinks, such as BECCS (Bio Energy with Carbon Capture and Storage), play some role for industry in the second half of the century.

For further information, visit www.shell.com/skyscenario

A flying visit

International Energy Authority (IEA) analyst Peter Levi quite literally paid a flying visit to the conference having flown in from Paris on the day of his presentation (14 October) and then flying back the following day.

Levi was in town – blink and you would definitely have missed him – to discuss a road map analysing sustainable transition pathways for steelmaking. The IEA intends to publish details early next year.

According to Levi, the IEA looks at big energy and emissions trends. He said that

2018 was a stand-out year. Global energy demand grew by 2.3%, the fastest pace this decade, and was driven by a robust global economy, unseasonal weather and moderate energy prices.

Levi said that fossil fuel-based growth had significant consequences for emissions, and that a worrying trend of emissions growth, if continued, means that 2050 targets won't be reached. He said that the sustainable development scenario trajectory will mean a peak in emissions as soon as possible and a trajectory towards net zero emissions from the energy system in the second half of the century.

Vital to the global economy

Steel, Levi said, remains vital to the global economy, but strong declines in the emissions intensity of steel production are needed to meet climate goals. Despite rising steel demand, emissions intensity remains flat, which, he said, was encouraging. "We anticipate that between 70-90% is needed relative to today. To achieve these kinds of goals by mid-century, a lot of research and development is required and is underway.

Here's five more things we learned from Peter Levi's presentation:

1. The hydrogen based DRI-EAF route is between 10-90% more costly than its natural gas-based counterpart and is highly sensitive to the cost of electricity.
2. The declining costs of solar PV and wind power could make them a low-cost source for hydrogen production in regions with favourable resource conditions.
3. Not every region has access to low-cost renewable electricity.
4. Electrolysis projects have expanded in Europe, but have much less potential to produce clean hydrogen than two CCUS projects.
5. By 2030 the hydrogen requirement for the DRI-EAF route could more than double. By 2050 the use of this method for all primary production could lead to a 15-fold increase in hydrogen demand. ■

CONCLUSIONS

1. *Material and energy efficiency are critical to get the ball rolling, but in the medium to long term, innovative low CO₂ steelmaking technologies will be required.*
2. *Breakthrough technologies, however, are no silver bullet. Multiple companies are looking at multiple options.*
3. *Cross sectoral collaboration is important.*
4. *Stable policy support to unlock investment in research and development and technology diffusion are a pre-requisite to accelerating the transition.*
5. *The IEA is looking at all of these things and developing a Global Iron and Steel Roadmap to analyse sustainable transition pathways for steelmaking. Planned release is Q1 2020.*

The rise of smart cities



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We've all heard of smart phones, but what about smart cities and smart cars? There's a lot to discuss...



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- 1. AK Steel's Roger Newport chairs the session on smart cities
- 2. Carla Bailo of CA
- 3. Chris Choa of AECOM
- 4. Pascal Eveillard of Saint Gobain

DAY one of the conference closed with an interesting session on so-called 'smart cities', chaired by Roger Newport, CEO of AK Steel.

Carla Bailo of the Centre for Automotive Research (CAR), a non-profit automotive think tank, spoke of electric vehicles (EVs) and 'connected' autonomous vehicles and the need to consider global harmonisation. She discussed fuel economy standards and how automakers in the USA want one standard across all 50 states. And while big changes are afoot in the world of automotive, issues such as lightweighting won't go away with the introduction of EVs or AVs because the batteries in EVs are extremely heavy. With autonomous vehicles, the need for long range radar, ultrasonic sensors, radar sensors, interior and exterior cameras, and LIDAR (Light Detecting and Ranging) will spearhead major changes in the materials used to manufacture cars.

Steel, said Bailo, has huge advantages over other materials because of its strength and durability and the fact that steel is not only very strong, durable and sustainable, but also a trusted material available in

a wide variety of different grades. She said that steel will remain the dominant structure between 2020 and 2040, but after that might decrease by around 20%. She said that aluminium represented the biggest challenge for steel as it pushed full recyclability and was developing new and improved grades, extrusion and casting applications.

Smart mobility

Looking ahead, Bailo said 'smart mobility' will result in the safe movement of people and reduce day-to-day stress. "Everybody has to feel safe," she said, explaining how 'we're morphing into a world of mobility services' characterised by new services, new vehicle concepts, new functionalities, new ownership models and new business partnerships. The future of mobility, she said, was automated, connected, electric and shared.

From smart cars to smart cities and a presentation from Christopher Choa of AECOM. He described himself as an architect and urban planner and claimed that cities were becoming more important

than nations. Choa argued that with more and more people living in cities we have to care about those cities. "We tend to measure everything at the national level, but we'll start measuring at the city/regional level in future," he said, adding that a lot of people assume that 'smart cities' have a lot to do with technologies. "I would say smart cities are more about an idea and how to achieve an outcome," he said, adding that every city is looking to find an edge and that 'smart government' is using open source technology to guide their own management.

Pascal Eveillard, director of sustainable construction for Saint-Gobain, added that 70% of the population will live in cities in the future, bringing to the fore the importance of 'livability' and social inclusion. He said that buildings have a huge impact on the environment accounting for 33% of energy consumption and 39% of greenhouse gases. "Buildings are impacting people too and they must

adapt to changing climate conditions," he said.

Eveillard said there were great opportunities for the steel industry in terms of the provision of light weight constructions and extensions, produced off-site and creating a 'city over the city'.

"But do not underestimate concrete and wood," he said, posing a big question for delegates: will wood replace concrete and steel? "The world is never black and white, it's a question of nuances," he added.

After an excellent Annual Dinner and Steelie Awards at the Escuela Superior de Musica y Danza, delegates returned to the Quinta Real for the last session of the conference, which again focused on the automotive sector with presentations from Alexander W Wehr, president and CEO of BMW Latin America and John Catterall, executive director of the Auto/Steel Partnership, Centre for Automotive Research (CAR).

A brief word about the Steelie Awards: Tata Steel won three out of six, for excellence in communications, life cycle assessment and communications programmes. POSCO won Innovation of the Year for development of inkjet-printed steel and its manufacturing technology, and ArcelorMittal excelled in sustainability with its Climate Action Report. Ternium walked away with the Excellence in Education and Training award for the Roberto Rocca Technical School in Pesqueria and Journalist of the Year went to Paul Lim of Fastmarkets. A good time was had by all.

Getting back to the final session of the conference, Alexander W Wehr said that worldwide revenues for BMW hovered around 100 billion Euros and that in Latin America the company employed 5,000 people. He outlined the company's business units of automotive, motorcycles, financial and mobility services and listed the trends and megatrends of the moment as being the environment, sustainability, urbanisation, economics, digitalisation and mega cities.

According to Wehr, 70% of the population will live in cities by 2050 and that, currently 30% of the city's total CO₂ emissions were primarily caused by traffic and that 1.25 million deaths globally were the result of road traffic accidents.

Climate challenges ahead

He told delegates that there were a lot of climate challenges ahead and that

Welcome to Shanghai 2020!

Dr. Yu Yong, chairman of HBIS Group closed the conference by welcoming delegates to Shanghai for the World Steel Association General Assembly 2020.

Speaking through a translator, Dr. Yong said that 'economic entities developing quickly always have a fast-growing steel industry'.

"I want to thank worldsteel and all colleagues in the industry as the rapid growth of China is part and parcel of us opening up. Japan, POSCO and some steel companies in Europe have provided great support to the growth of China's steel industry. As the biggest producer and consumer of steel in the world, what can China do for the world? How can we pay back the steel industry of the world for the help it's given us? We are currently going through changes, a rapid growth phase moving from quantity to quality, trying to shrink capacity. The Chinese government and steel industry are paying a lot of attention to the environment. We must think about the people of the planet when we think of our own development, we'll focus more and more on green production and recycling and if I were to say what can the steel industry in China do for the world it would be green production, intelligent production and clean energy because as the biggest steel producing country in the world we



should be reducing emissions, we have subsidiaries that meet environmental standards. I believe in terms of future carbon emissions we will continue to have new innovations, but to look forward I should say that my company and China's steel industry are going to take the right course to make this planet a greener place; we will assume the greatest responsibility."

autonomous driving will open up new opportunities for all concerned. He said that 8-10% of car sales in Mexico City were electric or hybrid and that there were more charging points in the city than in Munich.

John Catterall said that autonomous vehicles were 'coming but coming slowly' and spoke of a requirement for higher durability levels due to the multi-purpose nature of the vehicles and a utilisation rate of 85-90%. "Steel can be of help here," he said, claiming that steel's recyclability and the fact that it comes off well in a total life-cycle analysis was a 'big benefit'.

Steel's problem, said Catterall, was that it doesn't have a natural cheerleader. "You've got to get out there and tell them what you

can do for them. Go to the OEMS," he said because 25% of electric vehicles are likely to use aluminium as a core material, not steel. "If you don't want that 25% figure to rise higher you need to get out and tell them the benefits of steel."

Catterall said that the doubling of aluminium usage in automotive will be mostly due to closures switching to the so-called 'miracle metal' between 2020 and 2040. He said that steel will remain the dominant structural material. "However, the grades of steel will shift to high strength and high formability such as Gen-3," he said. Some hot-stamped steels might be replaced by cold-stamped Gen-3 steels," he added. ■