

Future challenges explored at global highways showcase

'Connecting Cultures, Enabling Economies' was the theme of the 26th World Road Congress held in Abu Dhabi during October, which featured a strong presence from the United Kingdom. Highlights from the five day event are detailed in this eight page special.

One of the key countries to play a major part in the recent World Road Congress was the UK, which hosted a national pavilion at the event and contributed to a wide range of sessions and workshops.

A focus of the country's efforts was about how the UK is using world leading technology and innovation to ensure that roads provide an effective service for people.

The UK's First Delegate – appointed shortly before the Congress took place – is the Department for Transport's local transport director Stephen Fidler. He says the event was a great success.

"The Congress showed the UK at its best, demonstrating our world leading thought leadership, innovation, skills and commitment to inclusive transport and addressing climate change."

He added: "The number of visitors to the UK Pavilion who wanted to tap our expertise exceeded my expectations and looks set to create opportunities and cement existing relationships."

World Road Association UK national committee (PIARC UK) chair and Highways England asset management director Lila Tachtsi added: "The Congress provided an excellent opportunity for the UK's public and private sectors to demonstrate our



↑ Delegates visiting the UK's large pavilion at the event

ADAMBOWERY
PHOTOGRAPHY.COM

international leadership and forward thinking. We also proved that we are willing to share our experience and learn from others."

The event was organised by the World Road Association (PIARC) and the Abu Dhabi Department of Transportation and brought together 6000 participants from 144 countries.

It included 3700 delegates and more than 40 ministers and deputy ministers from around the world who shared their views, policies and best practices including the UK's accessibility and skills minister Nusrat Ghani. The Congress featured 62 sessions, 13 workshops and six technical visits.

At the opening ceremony, infrastructure development minister and chairman of the Federal Transport Authority (Land & Maritime), His Excellency Dr Abdullah Belhaif Al Nuami said: "Together we can take the necessary steps to promote the sustainable growth of road networks, transport and infrastructure worldwide, for the benefit of current and future generations."

The event saw 1200 specialists from around the world who worked in the Association's technical committees and taskforces during the 2016 – 2019 cycle

present the results and conclusions of their work at technical sessions and workshops, helping to inform decision makers and professionals.

Their findings were published in 40 technical reports and four online manuals, available to view free of charge at piarc.org

CIHT chief executive Sue Percy presented a session alongside the United Nations looking at ways to improve gender balance within the sector. Sue also presented on future skills and the role of 're-engineering the engineer'. She noted that in a world of increasing automation, artificial intelligence and machine learning, the skills of humans will still be in demand.

The opening ministerial session was focused on the themes of land use planning, artificial intelligence and future transport networks and the extent to which technology will monitor, manage and operate our networks in the future.

But the unique human skills and contribution of people to continue to support and build the transport networks will be just as vital – and the UK has a lot to offer in doing so.

Justin Ward



↑ CIHT's Sue Percy, PIARC UK Chair Lila Tachtsi from Highways England and (from left) PIARC President Claude Van Rooten and Roy Brannen and Graham Pendlebury – both former UK First Delegates to PIARC



↑ Speakers including Charlotte Vuyiswa McClain-Nhlapo (far left) and Daniela Bas (second left) at the Congress discuss the need to provide accessible services

Disability inclusive transport comes into focus at congress

For the first time in its long history, the World Road Congress directly addressed the issue of disability inclusive road transport.

Collaboration between the Department for Transport and the Department for International Development led to delivery of a ‘foresight’ session, which was voted by delegates as the best to be held at the Congress.

During the session a distinguished panel of international specialists discussed the economic and social benefits of disability inclusive road transport and ways to help harness these benefits, based on good practice and experience from around the world.

Panelists explained that accessible roads can help with social development and pointed out that the economic benefits gained from



“Inclusion is not just a legal obligation, but an economic imperative.”

Daniela Bas
UNITED NATIONS

inclusive roads exceeds the cost of building safer and inclusive roads.

United Nations’ director for inclusive social development Daniela Bas said: “Building accessible roads is a matter of justice and common sense, while investing in the future.

“Inclusion is not only a legal obligation, it is also an economic and social imperative for which we must work together. Transport is the vital link to access education, employment, healthcare and even social and community commitments.”

The World Bank’s global disability advisor Charlotte Vuyiswa McClain-Nhlapo added: “The onset of disability happens at many stages of life: some

people are born with disability and others acquire disabilities later in life. For us not to plan for that seems very limiting.”

Inclusive road transport is an area where the UK is making good progress. In 2018 the Department for Transport published its first Inclusive Transport Strategy, setting out the Government’s aim for disabled people to have equal access to transport.

The strategy included commitments to invest in step free access at railway stations and fully accessible toilets at motorway service areas, and to launch an awareness campaign to change public attitudes.

Since the strategy’s launch 73 stations have been identified to receive funding for step free access, 22 motorway service areas have been successful in bidding for funding for



WORLD ROAD ASSOCIATION – PIARC

accessible 'Changing Places' toilets, and Blue Badge eligibility has been extended to those with non-physical disabilities.

Work in the UK to develop disability inclusive transport is also supported by Transport Scotland's 'Accessible Travel Framework – Going Further' and the Welsh Government's 'Accessible & Inclusive Public Transport Objectives'.

In Northern Ireland, the Department for Infrastructure is committed to an inclusive and accessible transport network.

At the World Road Congress, UK representatives from the Department for Transport and CIHT also shared their thoughts on the importance of gender considerations in transport.

This covered the need to actively think about whether transport is (or should be) gender neutral, and how to encourage diversity within the transport sector.

The benefits of a fully inclusive transport system are undeniable, for both developing economies and developed countries.

In the UK it is a legal obligation for



↑ Several motorway service areas in the UK have fully accessible 'Changing Places' facilities CHANGING PLACES

↓ Convenient parking provision is essential for those with disabilities ANDREY_POPOV - SHUTTERSTOCK



"Not to plan for the onset of disability would seem very limiting."

Charlotte Vuyiswa McClain-Nhlapo

public bodies (including national and local government) to consider the needs of all users when developing and delivering transport solutions.

One of the key conclusions from the Congress session on disability inclusive road transport was that all professional staff involved in the design and delivery of road transport should understand the basic principles and techniques of inclusive design.


UK academic institutions and professional associations alike can play a huge role in making this happen, and it will be important for the UK to continue engaging with professional delivery bodies in ensuring this understanding is taken forward.

More information on the Public Sector Equality Duty is available in a webinar discussion between Lord Holmes of Richmond and Sultan Mahmood, the equalities lead at the Department for Transport.

To view the video, visit [youtube.com/watch?v=oiUoRLI5610](https://www.youtube.com/watch?v=oiUoRLI5610)

Listen to CIHT podcasts featuring interviews with Charlotte and Daniela (and also one with Ann Frye, an international specialist on the mobility needs of people with disabilities) by visiting [ciht.org.uk/podcasts](https://www.ciht.org.uk/podcasts)

Alison Franks,
Department for Transport



UK, Japan and Canada take a lead on future mobility

↑ Automated and connected vehicles could revolutionise highway travel in the coming years METAMORWORKS – SHUTTERSTOCK

Integration of connected and automated vehicle technologies with the road network was a key focus in Abu Dhabi.

Self driving vehicles and the increased use of data and mobile applications to plan and execute journeys promise to make travel easier and cheaper. Across the world, countries are pushing ahead with many trials of automated driving.

During a strategic development session on innovative transport titled: 'Solutions to Optimise Access and Mobility', the UK shared a stage with several countries including Japan and Canada.

The Japanese government has a goal of achieving automated driving in limited areas this year and introducing fully automated driving on expressways by 2025. Such a goal will require collaboration between industry, government and academia.

Professionals in the UK will no doubt be interested to find out more from Japan, including its operational trials of self driving snowploughs conducted since 2017.

↓ Scotland's Cabinet Secretary for Transport, Infrastructure & Connectivity Michael Matheson aboard an autonomous bus, to be tested on the Forth Bridge

STAGECOACH



Many countries including the UK face an ageing population and automated driving offers a potential answer to this challenge. A UK study conducted by private hire operator Addison Lee and others found that the cost of running a self driving ride sharing service with an onboard steward could be 26% to 41% cheaper than current 'dial-a-ride' services, as well as offering a more integrated and open booking platform.

This potential decrease in price and increase in on-demand availability of such transport services could be particularly helpful both for older people and for those with disabilities.

In November 2018 the UK Government announced three projects to deliver six month pilots of self driving passenger services: a bus in Edinburgh and two on-demand taxis in London.

We are already seeing how such schemes are generating high quality useable data to accurately inform how these services could be best used.

As new mobility modes and services are introduced, it is vital that they help to reduce rather than exacerbate congestion. The Canadian city of Quebec, for example, established a sustainable mobility policy (SMP) in 2018 that seeks to create a low carbon transportation ecosystem.

The UK will continue to observe other countries' experiences, strategies and policies such as Quebec's SMP to further supplement its own initiatives.

In the 'Future of Mobility: Urban Strategy', the UK Government stated that mobility innovation must help to reduce congestion through more efficient use of limited road space.

This could be done through sharing rides, increasing occupancy or consolidating freight. Many countries including the UK are running trials of truck platooning as a potential option to consolidate freight vehicles on the highway. This also enables freight operators to potentially save money and emissions output through more efficient use of fuel.

The recently announced Future Mobility Zones, on the other hand, are looking to create environments to test new mobility technologies and services and how all users respond to them. This will help to prove the commercial case for investors, identify and respond to any regulatory or other challenges and enable the roll out of successful projects on a larger scale.

There was one underlying principle agreed by countries taking part at the Congress on the subject of delivering solutions for optimising transport and mobility. It was that a genuinely accessible transport network is one that makes it much easier for all people regardless of location, age or ability, to get to work, see family, and be part of their community, both now and in the future.

Matthew Eglinton,
Department for Transport

Tackling the climate challenge on the road network

Impacts of climate change are being dealt with head on, using evidence based approaches.

Glasgow is set to host the international climate change conference COP26 later in 2020 and the impact of road transport on the environment is likely to be a major talking point.

Climate change is not a new agenda item, having been discussed previously at the World Road Congress in South Korea in 2015 ahead of COP21 in Paris, and is still a pressing topic firmly in the mindset of members globally.

It may seem gradual, but the underlying result is that the weather is becoming more extreme and unpredictable. More than a dozen countries have so far declared a climate emergency in response to this emerging threat.

Transport accounted for a third of the UK's greenhouse gas (GHG) emissions in 2017, a known contributor to climate change. As a result, the UK has set a legally binding target to achieve net zero emissions by 2050.

Within the PIARC session on climate change mitigation and adaptation at the Congress, delegates heard several countries describe their focus on emissions and air quality. For instance Mexico has taken great effort to set out a comprehensive funding model to offset carbon emissions.



↑ Norway can offer lessons in dealing with heavy snow

FOTOS593 - SHUTTERSTOCK

Both Germany and Norway have introduced a multilateral approach to dealing with environmental challenges on their respective road networks, especially with the latter's approach to extreme winter snowfall and flooding resilience. If the UK sees a return of consistently harsher, colder winters, there may be some valuable lessons to take from our Scandinavian colleagues.

Mitigation strategies discussed were geared towards vehicle technology, which will have to comply with more stringent regulations regarding GHG emissions, as well as the incorporation of hybrid and electric vehicles, which will lead to a near future of zero emissions in road transport.

Adapting to climate change to increase the resilience of road networks and road assets is increasingly a

priority for countries. The planning of adaptation to climate change impacts as a proactive and not as a reactive measure is the best way to ensure the resilience of road networks and infrastructure.

The hard work being undertaken by other countries underscores the importance of finding real solutions to addressing and mitigating the effects of climate change. The UK may have to look towards countries far more used to dealing with extreme climate, such as Norway, if we are to ensure the most effective strategies are put into place.

The UK is looking forward to hosting the 26th Conference of the COP26 summit, in partnership with Italy who will be hosting preparatory events.

Matthew Eglinton, DfT

Bridge inspection technique championed by the UK



↑ BridgeCat travelled to Abu Dhabi, showcasing UK innovation

Severe weather caused extreme flooding over the winter of 2015 and 2016, leading to the closure of critically important bridges for long periods of time within Cumbria.

Over 40 bridges were closed, imposing a high cost to the local economy. This led to communities being cut off and road users having to take long diversions. Water depths were too high and flows were too fast which prevented inspections to check for scour damage on the river bed and under the structures.

In response to addressing the challenge of

future events, transport specialist Gaist developed a solution for undertaking rapid assessments of bridges and other structures during flooding. It has also designed one that could be used in day to day inspection operations to ensure efficiency and ultimately cost savings to highway organisations.

The company's team has developed a vehicle deployed system termed the 'BridgeCat' that uses sonar and above and below water cameras to provide real value to local authorities for helping manage and protect some of their most critical assets.

Winning papers revealed at Parliamentary event

Roads Minister Baroness Vere of Norbiton presented certificates to winners of a UK papers competition at the Palace of Westminster, ahead of the World Road Congress. The papers were judged by the UK First Delegate and the UK National Committee. Justin Ward reports.

Road design and construction winner:

Opportunities and challenges associated with automation in both road building and condition monitoring in England

The winning paper explored the potential benefits of using new technologies in terms of improving safety, quality and efficiency and focused on results of full scale trials from selected local and national road construction schemes. The project was delivered by AECOM on behalf of Highways England, the Mineral Products Association and Eurobitume UK.

The authors were I Widyatmoko, G D'Angelo, Y Xu, A Khojinian, R Hudson-Griffiths, M Simms, and D Giles.

Young Professionals winner:

Frameworks for decision making in the field of adaptation of road infrastructure focus mainly on national or regional road network systems

Fewer, easily accessible examples can be found for urban road networks. With this in mind, this paper presented a conceptual framework called the 'Expanded Adaptation Action Cycles', demonstrating the practical utility of this framework in an urban setting through a case study in Bogotá, Colombia.

Its authors were JS Cañavera Herrera, S Haigh, K MacAskill and A Moncaster.

Safety of road users and workers category winner:

Work by Transport for London with partner agencies on emerging vehicle propulsion systems and their impact in road tunnels

By anticipating changes in associated hazards, a pragmatic management of risks will be enabled, thereby supporting an effective response and recovery from incidents, supporting the responsible development of the infrastructure that underpins this evolution, while at the same time keeping customers, employees and first responders safe.

The author was J Nicholas.



Innovation category winner:

Highways England's collaboration with heritage stakeholders and the local communities using immersive technology for a consultation around the A303 improvement project

The £1.6Bn scheme will provide a dual carriageway between Amesbury and Berwick Down and includes a tunnel within part of the Stonehenge World Heritage Site. Through use of innovative technology during public engagement, Highways England helped people gain an in depth understanding of the technical challenges of designing and building the scheme to enable them to provide informed responses to the consultation.

The paper was written by S Finnie.

Roads and intermodality category winner:

Expansion of three wheeler transport services: the case for Qingqis in Pakistan

Pakistan has two million motorcycle rickshaws, often known as 'Qingqis' which have been criticised for non compliance with regulations. Research showed that rural women depend on them, as the only low cost transport services connecting villages to markets and health facilities.

The paper was written by P Starkey, Z Batoool and W Younis.

↑ Baroness Vere (furthest right) with Marwan Al Naqbi from the UAE Embassy; Mansoor Abulhoul the UAE Ambassador to the UK and Captain Aysha Al Hamili UAE Permanent Representative

Road maintenance and operation winner:

Emergency communications at the Forth Bridges

In December 2015 Scotland's Forth Road Bridge was closed indefinitely following the discovery of fractured steelwork. The project to repair the bridge demonstrated great innovation and creativity in management, communication and engineering, completed under extreme scrutiny. This paper looked at how the use of web media and social networks to communicate with road users evolved to respond to their needs.

Its authors were C Waite and H Gillies.

Sustainable development category winner:

Raising the profile of the Rural Access Index as a vital Sustainable Development Goal indicator for measuring rural development and connectivity

Previous measurement attempts have been inconsistent, so a refined geospatial process has been developed to measure the Rural Access Index in an accurate, consistent and sustainable way. This minimises the resources needed to report the Index, so the burden on poorest countries is not excessive and it can be measured more widely.

The author was R Workman.

Congress observations from Scottish and English clients

Sharing best practices and experiences with colleagues overseas were of great benefit, say two UK client representatives.



Hugh Gillies
MCIHT,
Roads director,
Transport
Scotland

Scotland has a long association with PIARC UK

and so it was only natural that we were able to lend our support to our collective efforts to the 26th World Road Congress in Abu Dhabi.

Personally, one of the big take aways from Congress was how well our private and public sectors come together to successfully project to the rest of the world what we are good at.

Be that the traditional areas of roads management, meeting the challenges of responding to resilience events or promoting the accessibility for all agenda. An important area of focus going forward will be how we tackle climate change requirements as the transport sector transitions into a low carbon economy.

Attending such a prestigious international event presents an excellent opportunity to learn from others, of course. Particularly from those countries who have faced challenges or been presented with opportunities that differ from what we have faced in recent years.



↑ How countries have dealt with wildfires is a topic of discussion

VANDERWOL IMAGES – SHUTTERSTOCK

Two examples are Australia and the USA and how they have dealt with huge wildfires, with all the disruption and devastation they cause.

In a similar vein the 26th World Road Congress provided an excellent opportunity for old acquaintances to be renewed and new contacts to be made.

We in Scotland have drawn on our wider networks in the past to help our international awareness and gain new knowledge of transport challenges, such as best practice on winter maintenance.

So it is now on into the next PIARC four year cycle. In many ways the old adage applies: 'You get out of it as much as you put in'.



Lila Tachtsi
MCIHT, Asset
management
director,
Highways England

England had a strong presence at the World Road Congress in Abu Dhabi and Highways England presented on the work we do on safety, customer, asset management and operations. We also won an award for road design and construction.

The main message we took away from the Congress is this: the conversation on road transport has shifted. At the Congress there was a lot to learn on the traditional areas of

what PIARC covers, such as pavement materials, tunnel operations, road safety, and bridge design.

However, what was different in Abu Dhabi was the emphasis on new areas to explore. Of course there was a lot of new technologies and autonomous vehicles.

But most interestingly, there were many exciting presentations and workshops on the role of road transport in society, the provision of road transport for people with disabilities, road construction as a tool for improving social mobility, diversity and inclusion. The linking parameter in all of these is the customer.

The wider road sector has recognised that we need to think about the customer in everything we do when designing, building, maintaining and operating our road networks.

We have done a lot of work in this area and we have much more to do. It is reassuring to know that many road authorities around the world are going through similar journeys.

The World Congress offered us the platform to meet colleagues from around the globe. We had many discussions on the challenges and opportunities we all face.

We shared ideas openly and learnt what other countries do. And that is the biggest value we took from Abu Dhabi. We now look forward to following up on the connections we made.

↓ Customer views are very important on major schemes

HIGHWAYS ENGLAND



UK exhibitors show their support

One major strength for the UK is the manner in which its public and private sectors work together.

UK's presence at the 2019 World Road Congress was supported by Arup and Atkins (gold members); Amey, Gaist, and Mott MacDonald (silver members); and Smog Stop/GRAMM Barrier Systems, Grid Smarter Cities and Highway Care (bronze members). What follows is a summary of the activities of gold and silver members at the event:

- Arup was pleased to host accessibility and skills minister Nusrat Ghani MP at a local project site: the Qasr Al Hosn Fort. The fort is the oldest stone building in Abu Dhabi and Arup was the lead consultant for the restoration of the historic site.

The company also profiled some recent projects and innovation through talks on the UK Pavilion, including demonstrating how it is using technology to better engage with stakeholders and the public, and using data to support better transport planning decisions.

- Atkins hosted Nusrat Ghani on a tour of Masdar 'eco-city' in Abu Dhabi, for which the company has provided consultancy support.

Jonathan Spear FCIHT also moderated a session on connected and autonomous vehicles which heard that while technology issues would ultimately be overcome, the policy, ethical and governance decisions of



↑ Team UK's delegation with Nusrat Ghani MP (front row, seventh from left) and Scotland's Cabinet Secretary for Transport, Infrastructure & Connectivity Michael Matheson (sitting next to her)

CAVs would prove more intractable, complex and subject to sharply diverging points of view.

John Paterson MCIHT shared recent guidance and tools developed on behalf of the UK Roads Liaison Group, bringing asset management best practice in the UK to a global audience.

- Amey provided a live demonstration of its virtual reality inspection system, developed to help its inspectors and engineers support Transport Scotland with managing the condition of the Forth Road Bridge.

This demonstration proved popular with attendees who experienced what it is like to inspect the iconic structure.

- Gaist gained interest from across the world for its work developing machine learning applications and artificial intelligence for managing assets. The company also transported its 'BridgeCat' vehicle from the UK to Abu Dhabi and this proved to be a major attraction for delegates at the Congress.

- Mott MacDonald engaged with visitors to the UK stand and took the opportunity to visit its local office in Abu Dhabi to learn about current projects. These include the provision of construction supervision services to the Abu Dhabi General Services Company (Musnada) for the infrastructure of 'Lot 3' at South Shamkha, a mega housing development 50km from the city.

UK representatives have now been appointed to contribute to PIARC activities culminating at the World Road Congress in Prague in 2023.

Later this year the 'Dubai 2020' event will include a significant UK presence as will the PIARC International Winter Road Congress, hosted in Calgary in 2022.

For a list of representatives from the UK visit piarc.co.uk and to view future events go to piarc.org

PIARC UK will hold its 2020 Congress later this year.

Justin Ward



↑ Virtual reality demonstrations were on show



↑ Jonathan Spear (left) and Nusrat Ghani visit Masdar 'eco city' in an autonomous vehicle. Jonathan has since helped to establish the CIHT Dubai Region



↑ Delegates hear an Arup presentation on the Queensferry Crossing ADAM BOWERY