Aug 10, 2017 17:51 +08

Cracking the global transportation challenge for future generations

Date	10 August 2017
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With over US$14 trillion expected to be invested in global transport infrastructure projects by 2025, a new report from Strategy&, PwC's strategy consulting business, lays bare the need for a collaborative and tech-savvy approach to developing sustainable and inclusive transport systems. It also outlines the inherent risks for developing and developed nations alike if they fail to do so.

According to the report, *Building sustainable inclusive transportation systems*, significant shifts in mobility, multi-transport connectivity, sustainability and safety across major cities, urban and rural areas can only be achieved with rapid evolution in transportation planning and policy techniques.

The adoption of new technology that can capture and make use of the very rich emerging sources of user data – from freight movement to crowdsourced navigation systems in cities – will also be crucial in building a connected framework for the future.

There are clear financial, environmental and human repercussions from unsustainable transportation planning based on simple benefit-cost ratios (BCRs): traffic accidents currently claim 1.2m lives globally each year (predicted to become the fifth leading cause of deaths by 2030); transportation accounts for c.14% of greenhouse gas emissions in the world's cities; and megaship impacts – from port channel dredging to increased yard development and container activity – increase landside costs by as much as US$400m a year.

The Strategy& report outlines a 'Total Appraisal' method that will help policymakers and transportation planners understand the complex welfare, fiscal and economic impacts and trade-offs that come into play and evaluate the options. And, crucially, this could help deliver the best outcomes for all stakeholders.

Daniel Hanson, director with PwC's Strategy& in the UK, explains:

"Transportation needs are increasing all over the world and while the focus of developed and developing nations may differ, it's clear that if these growing demands are to be met in a sustainable and connected way, a new future-focused and integrated approach is needed.

“Using a Total Appraisal approach that captures all of the various direct and indirect impacts of a project and views a project clearly and consistently through the complementary lenses of welfare (or BCRs) and GDP impacts can reflect the true value and impact of projects, ultimately improving decision making and outcomes for all.”

The report shows how the use of ‘Total Appraisal’ rather than a simple BCR approach could make the difference when deciding whether or not to proceed with major projects which are forecast to have substantial impacts throughout the economy, on GDP and jobs, and that could be partially self-financed through the present value of higher tax revenues. Taking advantage of big data techniques, this process allows for more rigorous approaches to demand and cost forecasting.

Consequences of growth

Transport investments need to be appraised in a way that takes account of various economic, social and environmental impacts, as well as reflecting how cities will manage these issues as they grow and how they continue to interact and connect to urban and rural areas.

This includes diseconomies of scale - consolidation of container volumes into fewer large vessels means that ship size has become one of the most challenging issues for maritime transport while large airports, in developed and developing nations, face huge expansion costs, resulting in shortages of slots as capacity expansion becomes unaffordable. This in turn means that regional airports lose connections to major hubs, disconnecting poorer regions from economic growth.

Challenges in transport planning

As transportation planners in both developing and developed nations grapple with the consequences of growth and new technologies, they must take into account a wide range of new and emerging issues.

In response, the Strategy& report encourages greater collaboration between public and private sectors across areas such as risk sharing to accelerate

innovation and development, operation and maintenance funding throughout life-cycle of a project. New techniques such as machine learning must be unleashed to radically enhance the quality of route, network and infrastructure planning and provide advice to users as they travel.

As connectivity and data sharing increases, it also highlights the need for robust data infrastructures so that users, freight consignments and vehicles are adequately protected against the rising risk of cyber-attacks.

With the shift to an increasingly electrified and digital world, there may be a need to redesign the electrical grid to ensure power is available in the right place at the right time to charge and operate a wide variety of vehicles and systems and take advantage of their ability to store and generate electricity themselves.

Oliver Redrup, Director (Transport), PwC Singapore, says:

“Singapore has already been investing heavily in technologies to improve infrastructure and skillsets to develop transport for the future. Its compact size coupled with progressive approach to regulations makes Singapore a good location to testbed new technologies through partnerships between the public and private sectors, for example the autonomous vehicle testing in one-north.”

Edward Clayton, senior executive director with PwC’s Strategy&, based in Kuala Lumpur, concludes:

“Over the next few years, we’ll see a technological revolution in transportation that will not only affect individual and commercial users, but will inevitably drive new approaches by regulators, funders and policymakers.

“Decisions made now will lock in the future shape of transport so it is vital that cities and nations get it right. Closer collaboration between governments, academics, systems developers, investors and users, will go a long way towards this goal.”

“Ultimately, however, the most important ingredient will be a clear vision of what a user-centred transport system will look like, what’s needed to build and maintain it, and how to appraise it in a way that takes into account the

total impact of the investments and policies under consideration."

Ends.

Notes to editors:

The full report can be accessed here from the 10th August 2017: https://www.strategyand.pwc.com/reports/building-sustainable-transport-systems

About Strategy&

Strategy& is a global team of practical strategists committed to helping you seize essential advantage. We do that by working alongside you to solve your toughest problems and helping you capture your greatest opportunities. We bring 100 years of strategy consulting experience and the unrivaled industry and functional capabilities of the PwC network to the task. We are part of the PwC network of firms in 157 countries, with more than 223,000 people committed to delivering quality in assurance, tax, and advisory services.

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At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 157 countries with more than 223,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com.

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