WHITEHELM CAPITAL

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THOUGHT LEADERSHIP:

INFRASTRUCTURE INVESTING IN A DISRUPTED WORLD

Part 3: TRANSPORTATION

INFRASTRUCTURE INVESTING IN A DISRUPTED WORLD

TRANSPORTATION

In this series of articles on the effects of disruption on infrastructure investing, Whitehelm examines the transport sector. Globally the transport sector faces some significant challenges, not least of which is the environmental challenge. Transport represents at least 25% of global greenhouse gas emissions and is the main cause of air pollution in cities.

An estimated 95% of the world's transportation energy comes from petroleum-based fuels, largely gasoline and diesel. Increasing urbanisation also puts pressure on urban transport systems. Decarbonising transport is therefore instrumental in achieving the commitments set out by the Paris Agreement.

At the same time, technological developments are providing significant disruption, often in response to the environmental challenge. This article looks at the rise of ride-sharing, electric vehicles, autonomous vehicles, ultra-fast trains and drone delivery, and the impact these various new technologies are having on the infrastructure required to support them.

Electric Vehicles

The number of Electric Vehicles (EVs) has increased exponentially in recent years and is forecast to continue to increase from 2 million EVs in 2016 to 60 million by 2025 according to the International Energy Agency, as illustrated in Chart 1.

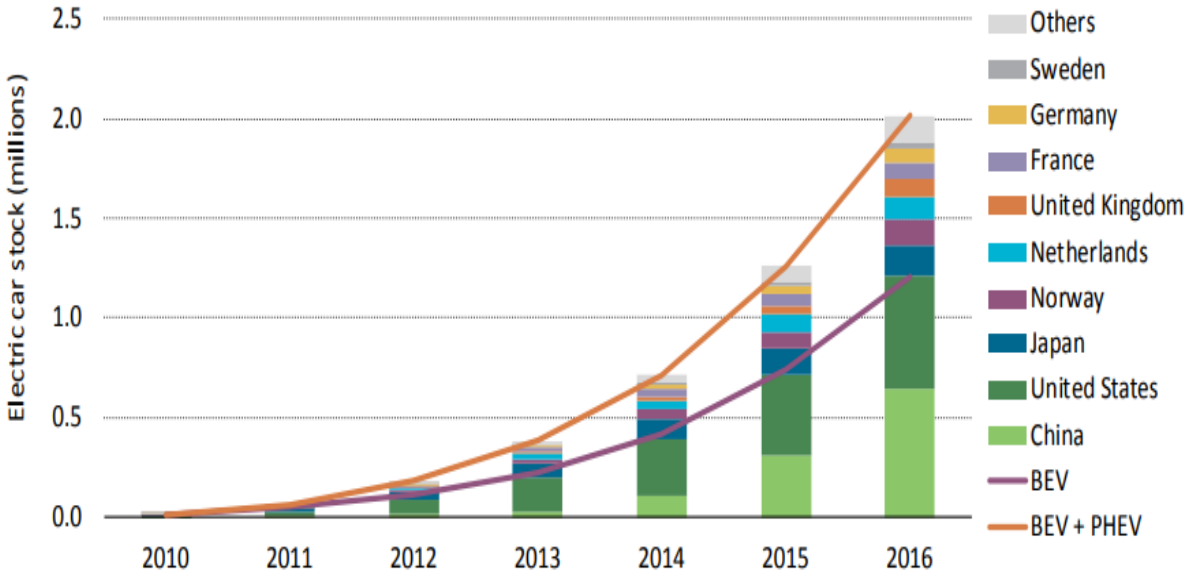
As EV battery costs decrease (they have been cut by a factor of four since 2008), and vehicle autonomy increases, it is expected that take-up will increase at a considerably faster rate. In addition to this, the charging time of batteries is decreasing, and the number of charging stations is increasing rapidly, allowing for the use of EVs across longer distances and therefore in replacement of vehicles using combustion engines.

Additionally, in many countries EVs are receiving significant government support or incentives (such as dedicated parking, ability to use bus lanes, etc.) to encourage the switch to more environmentally friendly transportation. According to UBS, the total cost of consumer ownership of an EV, will reach parity with combustion engines from 2018 and there is still great potential to make further savings in coming years.

Whitehelm Capital, through its realised investments in Moto and Welcome Break, leading motorway service area operators in the UK, led the installation of EV charging stations on UK motorways. Both were early adopters to deploy charging points throughout their networks and are now benefiting from higher traffic from customers driving EVs.

There are likely to be investment opportunities in the charging stations sub-sector. As the EV market share increases, infrastructure needs will continue to grow, throughout city centres, work places, commuter belts and homes. According to Nissan, the number of electric car charging locations is expected to overtake petrol stations by 2020, so investment opportunities may arise both from the infrastructure of the charging stations themselves and also from the increasing electricity demand. At the same time, the increasing number of charging stations in cities will place further stress on existing electricity grids.

Chart 1: Evolution of the Global Stock of Electric Cars, 2010-2016



Source: International Energy Agency

Autonomous Vehicles

Autonomous vehicles (AVs) are able to navigate to a pre-determined destination without the help of human guidance. Most large automotive companies are researching and investing in the technology required for self-driving, as it is expected to be the future of land transportation.

The number of AVs today remains very limited, as the technology is still raw and there are certain regulatory hurdles to clear, particularly relating to safety. However, McKinsey predicts that around 15% of new cars sold by 2030 will be fully autonomous. Other estimates expect the number to be even higher, for example 80% of Peugeot's vehicles are to be self-driving under limited conditions by 2030.

The increase in AVs is expected to help reduce the number of road accidents due to human driving errors. As Smart Cities develop, it is likely that AVs will be connected to a city's infrastructure, reducing traffic congestion and parking problems, and maximising transportation efficiency. A fleet of efficient interconnected AVs in a city could dramatically decrease the cost of transport.

Additionally, AVs will not need parking close to their destination, but rather could drive away after dropping their passengers to either pick up another passenger, or park in a non-central location. This could dramatically reduce the quantity of car parking required in city centres. New types of much higher density car parking outside of city centres, that could both store AVs and charge them, could create new investment opportunities in the longer term.

The lack of an efficient regulatory framework for the advent of self-driving vehicles on a commercial basis is expected to hinder overall market growth. Given the need for self-driving cars to communicate with their surroundings, and also the high level of safety concerns, regulators will play a crucial role in the development of the sector. Nonetheless, given the efficiency gains possible, governments can be expected to incentivise it. For example, the Dubai Government has announced a strategy of converting 25% of public transport services to driverless means by 2030.

Looking outside cities, traffic may increase as commuting by AV would be easier and cheaper than many other alternatives. AVs may become the preferred choice over planes for short haul flights, as the door-to-door possibility may be more attractive to consumers. This could have a significant impact on airports, particularly those reliant on short haul travel.

Ride-Sharing Businesses

The transport sector has been one of the early adopters of the sharing economy. We are already seeing the impact on infrastructure assets from ride-sharing companies displacing traditional short to medium distance travel. For example, by 2015, French long-distance carpooling platform BlaBlaCar (owned by Ardian) was arranging 12% of the passenger kilometres managed by French rail operator SNCF in domestic long-distance passenger services, a once-thought indisputable infrastructure giant.

Ultra-Fast Trains

The development of ultra-fast trains also has the potential for disruption of existing transportation networks. Large aerospace and automotive companies are researching the technology forecasted to dominate medium to long distance transportation in years to come, due to the extraordinary speeds it can achieve. The 'hyperloop' which is Tesla and Space X's project, based on a long tube that has air removed to create a vacuum, is expected to achieve speeds above 1,000 km/h. The China Aerospace Science and Industry Corporation believes that speeds of up to 4,000 km/h could be possible.

This would completely transform the sector and could be a material threat to airports and existing railroads. However, it would require vast investments to deploy the new infrastructure, which may limit its development.

Drone Delivery

Drone delivery is already a reality and could have an impact on the transportation industry. We have already seen companies like Amazon developing drones to deliver its goods, which could dramatically reduce delivery truck traffic.

As e-commerce further develops and grows, we can expect this to be a key area of R&D in the coming years. The impact on infrastructure is expected from a significant reduction in local delivery vehicles on roads, particularly the 'white-van' sector. In the longer term this may also change longer distance freight methods, effecting container shipping, rail and long-distance road freight markets, including commercial use of toll roads.

Regulation

Regulation can also be expected to be a disruptive area in itself. Regulatory bodies and their efforts to reduce carbon emissions can be expected to continue to impact transport infrastructure. For instance, in 2016, the International Maritime Organization decided that from 2020 the sulphur emission limits imposed on marine fuel would be decreased from 3.5% to 0.5%.

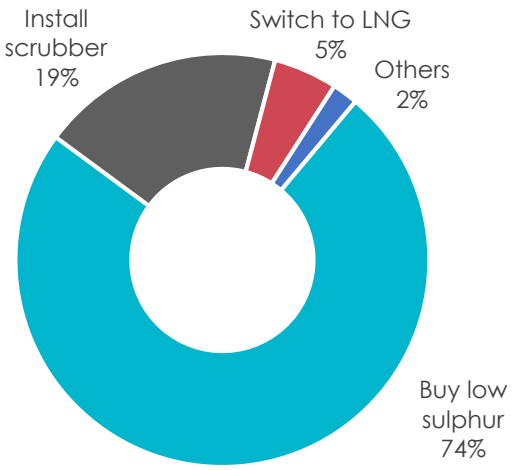
UBS estimates that shipping costs will subsequently increase by up to 85% (diesel, gasoil and LNG are the alternatives nowadays) once this regulation is effective and will have several major consequences on the infrastructure industry. For example, increased marine freight rates, midstream storage uncertainty for existing high-emission fuels and potential demand for new fuels, air and road freight preference, port infrastructure would need to be adapted (for example investment to switch capacity of tanks), etc.

3D Printing

While 3D printing is not a transportation sector, it has the potential to transform supply chains and therefore transportation over the long term. Instead of manufacturing taking place in bespoke factories, finished goods could be printed at home or at the office and hence eliminate the need for delivery of final goods, which would have an impact on the transportation sector, from manufacturing facilities to logistics centres to inner-city deliveries.

There are obvious limitations, as not everything can be printed (i.e. fresh produce) and development of the technology to the point that it is this pervasive may still be some time away. Nonetheless, the products and parts that can be produced by 3D printers today offer clear evidence that this technology will be a disruptive force.

Chart 2: Shipowners' Intentions Post Regulatory Changes



Source: UBS