Dynamism and innovation – We are Transport

Transport is one of the most innovative and dynamic sectors in developing climate solutions - *Surprised?*

1. The transport sector is a hugely innovative and dynamic sector and the industry has responded to the call to shift to low carbon transport with a variety of options from completely new mobility models to significant improvements to vehicle technologies and powertrains, the use of a wide variety of alternative fuels, integrating the use of ITS (Intelligent Transport Systems) and smart technologies across all modes in all areas.

2. Innovations in mobility will help deliver efficiencies and drive economic growth and well-being. However it should also be recognized that developments from outside the sector such as the growth in internet shopping and ‘just in time’ or ‘last minute’ logistics will have a strong effect on the sector. However many are still struggling to achieve the even the most basic levels of mobility and across much of Africa and Asia walking long distances is often the only option.

3. New players are entering the market bringing new and sometimes disruptive ideas and technologies into the sector. This trend is likely to increase rather than decrease in the coming years as we start to rethink our transport networks and systems.

**Narrative**

It is difficult to predict the speed of change in today's world or to understand the full impacts of technologies. The widespread take up and use of the Internet has demonstrated this. An example might be that as yet it is unclear on the impact of 3 D
printing, but it is likely that in the next 50 years it may reduce considerably the need for transport.

Transport systems are changing fast and the legislative framework needs to be more flexible to encourage innovation and retain the dynamism of the sector. Traditional ways of doing things should not stand in the way of progress for the transport of tomorrow. Governments need to be able to embrace such changes and this may take the form of new energies, new vehicles and new players.

The private sector plays an important role in bringing new ideas to the market but decision makers also need to create the right environment for the private sector to enter the market and provide support for research and development. The growth of new disruptive solutions such as Uber has already started this change.

Encouraging new ‘ecosystems’ where innovative mobility and service solutions can flourish, be demonstrated and ultimately adopted as part of the transport system needs the support and attention of governments. Scaling up from projects has not become widespread enough globally to allow the sharing of best practices nor the transfer of knowledge to occur – this must accelerate if we are to shift to low carbon pathways in all modes of transport. Start-ups, small and medium sized enterprises are major sources of innovation – redesigning and creating new solutions and business models but this also needs to be able to function within the legal environment and have access to sustainable finance. These will also provide new jobs connected to low carbon transport.

The role of research and development as well as encouraging entrepreneurship is key to maximizing innovative low carbon solutions. There is also a growing trend for partnerships between public and private bodies and academia as well as within the private sector to improve efficiency and lower costs.

Door to door solutions as well as new vehicles and fuels will help shift us from fossil fuel based transport for both passenger and freight. For example electric mobility will play an increasingly important role in mobility in the future and there are already a wide variety of options from full battery, plug in and hybrids for tow, three and four wheel vehicles. As technologies improve there will be more connected travel where the vehicles are connected electronically (as is now seen with autonomous driving and freight platooning) as well as vehicle to infrastructure connectivity when the vehicle will also be controlled by the conditions of the infrastructure or access rights (such as managing speed due to congestion, weather or restricting access such as to low emission zones).

In addition ITS (intelligent transport systems) and mobile devices will play an increasingly important role in our mobility choices. This ‘push and pull’ effect has been seen by the numerous applications such as route or journey planners that can be uploaded onto smart phones and vehicle GPS systems to provide improved mobility solutions. But ITS can also be used to shift people and goods from one mode or route to another in order to maximize capacity and improve efficiency. ‘Big Data’ helps to extract value from information and in addition, ITS will also play an increasingly important role in collecting data and information to make better transport decisions, and to understand mobility behaviors and needs better
Evidence/data supporting those facts

Both passenger and freight across all modes can benefit from increased connectivity via ITS systems. According to Frost and Sullivan ‘last mile’ delivery services are the fastest growing area of the logistics sector and over 300 million urban deliveries are expected to be made daily by 2020. This is likely as the worlds urban populations are estimated to double in the next 20 years (UN-HABITAT). These deliveries also account for around 20% of miles (km) travelled in cities so it is an area that needs to be addressed if we are going to make an impact on reducing carbon. This can be done by using cleaner vehicles, alternative transport such as ultra light vehicles and optimizing deliveries with ITS and consolidation centres. There are a growing number of examples of the use of ITS from better traffic management and controls (helping to manage congestion and capacity of the infrastructure and to manage congestion charging and access to Low or Ultra low emission zones), route planners that may also calculate the CO2 impact of choices, improved long distance and urban freight deliveries and maximizing loads avoiding empty miles (or kms) and building loyalty

Examples and references

Making Electric Mobility a reality.

Electric vehicle use is expected to increase dramatically between now and 2050, however the low carbon credentials of this relies entirely on the production of the electricity used. The International Energy Agency\(^1\) states that to meet 2DS (2°C C target) CO2 emissions per unit of electricity must decrease by 90% by 2050. Yet even with aggressive electrification, transport’s share of electricity demand remains below 15%. public passenger transport and extends electrification of rail freight\(^2\)

The IEA Global EV Outlook represents the collective effort of seven years of primary data gathering and analysis from the Electric Vehicle Initiative’s 16 member governments. Overall, EV and charging infrastructure deployment has continued growing since the 2013 Battery costs have come down while energy density has climbed; vehicle electrification has gone multi-modal with 46,000 electric buses and 235 million electric two-wheelers deployed; and total EV spending by the 16 governments equal to 16 billion USD between 2008-2014.

The global fleet in 2014 is 665,000+ vehicles \(^3\)(which represents 0.8 per cent of passenger cars). The strongest market growth 2013-2014 has taken place in the US, China and Japan while Norway lead the way in market share with around 13 per cent, followed by the Netherlands, the USA and Sweden. The majority of public investment has been put into fiscal incentives (around USD 5 billion and research and development rather than infrastructure (under USD 3 billion). There are now 15,000 plus fast charging points and some 94,000 slow charging points world-wide. China has put bold measures in place to support clean transport as a means of improving urban air quality has led to some 150 million electric 2-wheelers on the road and greater deployment of electric buses. Some cities such as Shenzhen have shifted to electric for buses and taxis.

---

1 Energy Technology Perspectives 2014 https://www.iea.org/Textbase/npsum/ETP2014SUM.pdf

There are several major examples of electric buses, car sharing, taxis and urban delivery vehicles in Europe (e.g. Sweden Arlanga Airport, Netherlands Taxi Electric (a social enterprise, ZEUUS EU project and other examples can be found in the PPMC 80 Days Campaign)

However globally, sales of hybrid electric vehicles and electric vehicles (EVs) although set new records in 2013, are still fall short of the IEA 2DS trajectory.

Door to door Solutions that also reduce CO2
Carsharing services are now available in over a thousand cities in many nations. Some offer traditionally fuelled cars but some also offer electric cars. In addition car rental companies have introduced their own car sharing services, such as Hertz on Demand, Avis On Location by Avis, and car manufacturers have also introduced their own car sharing services, including Daimler's Car2Go, and BMW's DriveNow. Each car sharing vehicle takes 11 – 15 private cars off the road (source Zip car / Green wheels). According to Roland Berger consulting the number of people who were car sharers rose from 300,000 in 2006 to 2.7 million in 2013 and is set to hit 15 million by 2018. There are car-sharing schemes now in over 27 countries and the world's largest car sharing networks across North America and Europe are Zipcar (US) with 767,000 members and 11,000 vehicles and Car2Go with over 900,000 members and 12,000 cars and Mobility with 2,700 vehicles and 1,400 stations (November 2014).

Each car share member reduces their personal CO2 emissions by between 1,100 and 1,600 pounds (725 kg) per year. On average, car sharing members drive 40 percent fewer miles after joining a car share program (Zip car) and members of Zipcar and car sharing programs report a 46% increase in public transit trips, a 10% increase in bicycling trips and a 26% increase in walking trips. A Transportation Research Board/National Academy of Sciences study finds each shared car takes about 15 private cars off the road and reduces parking demand4.

References and key players
A collection of examples in all modes of transport can be found on http://ppmc-cop21.org/80dayscampaign/

All the UNFCCC NAMAs on transport and those INDCs that include transport can be found on the 365 Campaign www.365campaign.com and www.365campaign.com


Michelin Challenge Bibendum Green Paper
http://www.challengebibendum.com/publication/Green-Paper

International Energy Global Outlook on Electric Vehicles -

IEA technology roadmaps
https://www.iea.org/topics/transport/publications/technologyroadmapsandpolicypathways/

Reports on e-mobility India -