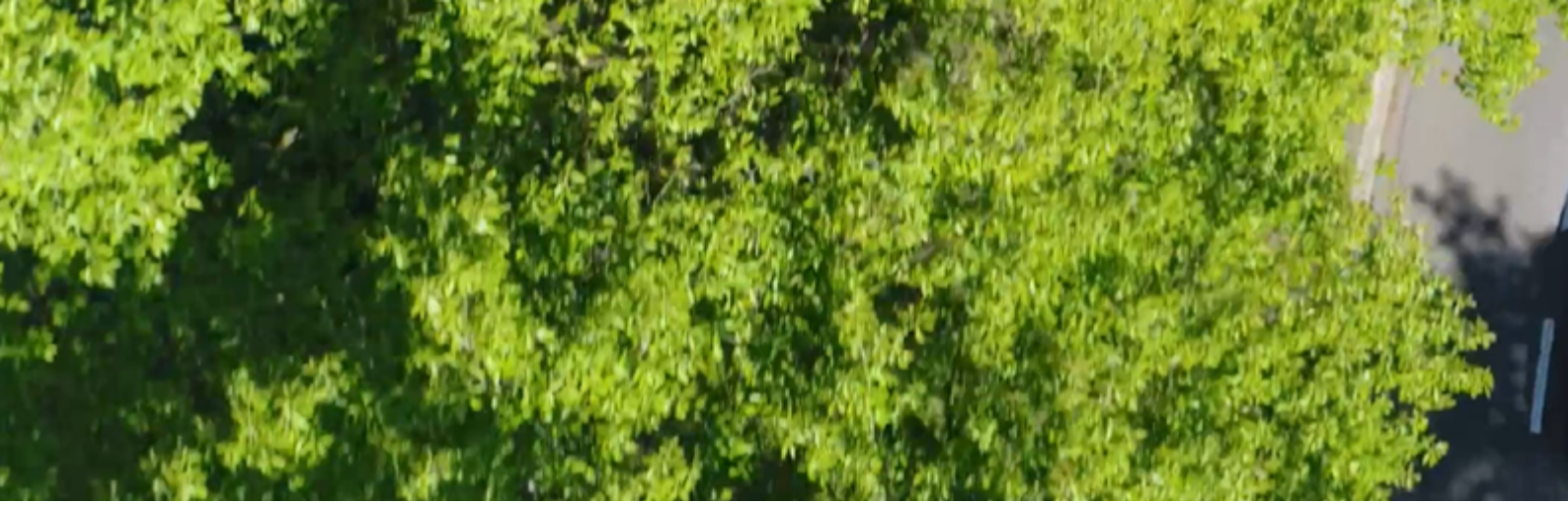
KPMG

Mobility 2030

Implications for Ireland



MOBILITY 2030:
IMPLICATIONS FOR IRELAND

Mobility around the world has entered its most transformational moment since the invention of the internal combustion engine (ICE) or mass production of the Model T. Emerging technologies, and the pressures of population growth, urbanisation, and environmental concern, are spawning a new generation of transport solutions, which promise to transform the way we move people and goods.

KPMG's global series 'Mobility 2030' has already furnished extensive insights into these trends around the world, looking in-depth at the challenges and opportunities presented by key mobility disruptors such as Electric Vehicles (EV), Mobility as a Service (MaaS), and Autonomous Vehicles (AV).

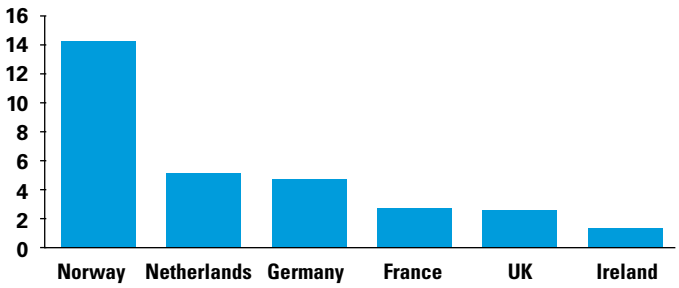
This paper looks at some of those same issues through a specifically Irish lens, considering Ireland's readiness and their implications for private sector players, semi-states and policy makers.

ELECTRIC VEHICLES

As of today, official aspirations for EV rollout in Ireland this decade look ambitious. The Irish government wants EV ownership to rise from under 30,000 today to almost one million vehicles by 2030, equivalent to a third of all vehicles currently on the road. Performance so far suggests this will require radical action to speed up adoption. Various policy frameworks therefore seek to address this. The Climate Action Plan 2019, Project Ireland 2040, and the National Development Plan, for example, each set private EV targets, with the latter seeking no new ICE sales post-2030. Meanwhile in the public transport domain, the NTA seeks to set the example with the roll-out of hundreds of electric buses over the next 5 years.

Figure 1:

Electric vehicle and plug-in hybrid vehicle sales per 1,000 population, 2020



Source: CSO, Statista

Laying the foundations

A number of factors are currently acting as drags on Ireland's EV rollout, including the perception of insufficient charging infrastructure and inadequate financial incentives compared to other countries, combined with range anxiety and uncertainty about the true environmental credentials of EVs on the part of the public.

EV numbers are growing in Ireland, if from a very low base, but the deployment of charging infrastructure is slower, and arguably already dated. Ireland saw a 43% increase in EV registrations from 2019 to 2021, yet only a 1% increase in public charging infrastructure over the same period. Sustainable Energy Authority of Ireland (SEAI) grants seek to encourage local authority installations, for example, but even with a 75% rebate available, local authorities have arguably struggled to justify 25% of associated capital costs.

Figure 2:

Charging footprint, 2019

Charging Mode	EV Registrations	Charging Points	Vehicles per Charging Point
Standard Type 2	10,477	964	10.87
CHAdeMO	5,503	85	64.74
CSS	1,620	71	22.82
Fact AC	480	71	6.76

Source: World Electric Vehicle Journal, A Framework for Analysis and Expansion of Public Charging Infrastructure under Fast Penetration of Electric Vehicles, Pallonetto et al., 2020.

This highlights the pitfalls of investing where technology can be rapidly overtaken. For example, while the vehicle per charging point stats are respectable in general, there are over 60 vehicles per charging point when it comes to CHAdeMO charging (the only technology capable of vehicle to grid (V2G), able to deliver an 80% charge in 30 minutes, and widely compatible with various EV registrations). Even allowing for the fact that ~80% of EV charging takes place at home, as well as expected increases in battery range which will reduce reliance on the public charging network, this disparity threatens to limit the pace of Ireland's EV rollout.

Ireland's announced intention to decongest Irish cities via the 'Our Rural Future' strategy will move people further from existing charging infrastructure, which today is heavily concentrated in Dublin.

"EV tariffs, with favourable off-peak rates, will soon be the norm for domestic customers. The price difference vs peak will need to be sufficient to encourage a charge-on-timer approach, as casual day charging will impact the distribution network.

What we've seen internationally is that where the charger installation is outsourced it results in poorer customer experience and a lost opportunity for energy suppliers to maintain and build that relationship. Over time, I'd expect many players will want to bring that in-house."

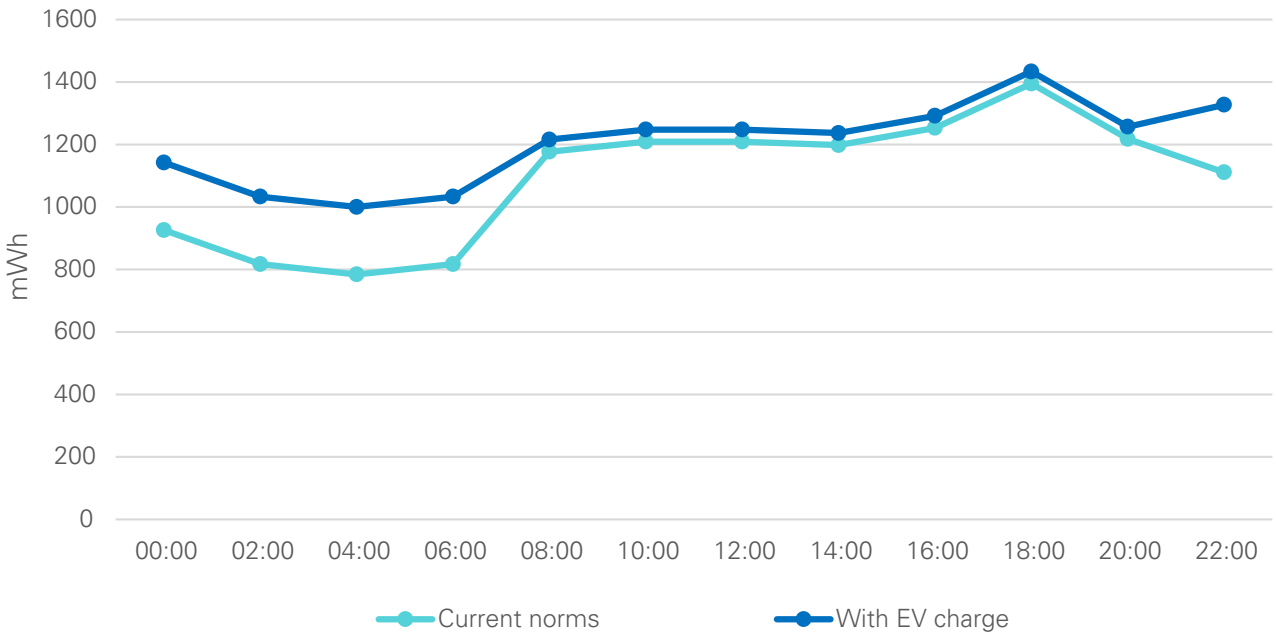
Mark Wiggins
Commercial Product Innovation Lead, PowerNI (part of Energia Group)

Taking the strain

The good news is that grid infrastructure may not be the choke on EV uptake that some fear. While local property installations will be required along with some local housing estate distribution upgrades, our modelling on Eirgrid scenarios suggests that the impact of 'smart' or coordinated EV charging should be manageable for the Irish grid – at least in comparison to the larger demand on the grid of Ireland's booming data centre sector. A manageable outcome requires clear incentives for the vast majority of charging to take place at night, substantially reducing grid strain at peak times, as well as smart meters and efficient wholesale energy and network pricing. SEAI grants also seek to reduce the cost of residential chargers, while V2G technology, if widely facilitated, may have the potential to let EV owners release spare energy to the grid, further reducing the overall EV burden at peak times.

It is important to remember that the development of alternatives to ICE do not begin and end with today's generation of EV technology. Whilst the promise of EV is not in doubt, the next decade is likely to see major advances in other fossil fuel alternatives especially hydrogen or liquid electrolytes. Policymakers will need to be alive to the potential of these, supporting EV without stifling successor technologies.

Figure 3:
Modelled EV impact on residential electricity demand through a winter day



Note: Assumes government EV roll-out scenario, average winter day electricity usage, average mileage remains constant with 2019, 80% of charging occurs in the home, and 80% of that home demand can occur during lull periods.

Source: Eirgrid, UCD, KPMG analysis

"In the next 5 or so years, fleet charging will become more prominent – especially commercial vans where routes and mileage are somewhat predictable. Some companies are looking to minimise central charging and instead reimburse employees to charge at home overnight. But for high intensity usage with several drivers per vehicle that's not feasible. If you look further out, into the 2030s, it's feasible that MaaS and AV combine to reduce the overall need for personal vehicles – with AV taxis charging opportunistically by day and in distributed hubs overnight. These variables all add to the complexity when modelling long-term demand for domestic vs fleet charging."

Mark Wiggins
Commercial Product Innovation Lead, PowerNI (part of Energia Group)

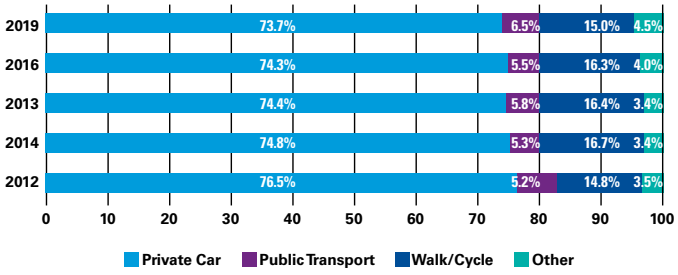
MOBILITY AS A SERVICE

Like the rest of the world, Ireland faces pressures to reduce congestion and emissions, while sitting with ~450 vehicles per 1,000 people that, for the most part and like in any country, sit idle the majority of hours in the week. In addition to Ireland's adoption of public transport solutions like the Travel Pass, Park and Ride and bike schemes, it is realistic to assume that around urban centres at least, Ireland will follow the international trend away from personally-owned vehicles and towards mobility provided as a service.

COVID-19 social distancing impacts aside, the percentage of journeys made by private car is on a long-term downwards trend, albeit from a high base.

Figure 4:

Percent of journeys in Ireland by mode of transport, 2012-19



Source: Department of Transport: Transport trends 2020

At the same time, nascent global MaaS brands such as Uber have largely failed to penetrate the Irish market, foundering on organised opposition and a preference for regulated solutions from the NTA. A preference for digitalising the existing licensed taxi interaction, for example, could act as a brake on the creation of a genuine, scaled MaaS platform in Ireland. Nonetheless, private ownership of cars per capita is likely to decline in the long term, much as we anticipate across most developed markets. Future-oriented mobility providers of all stripes will need to anticipate this trend and spot where they can participate in an interconnected mobility ecosystem built increasingly around service provided, not units sold.

AUTONOMOUS VEHICLES

AVs are potentially the most transformational aspect of mobility in the 2030s, facilitating revolutionary changes in productivity, efficiency, and safety. But their rollout is perhaps the most complex, dependent as it is on a broad range of regulatory and infrastructural foundations.

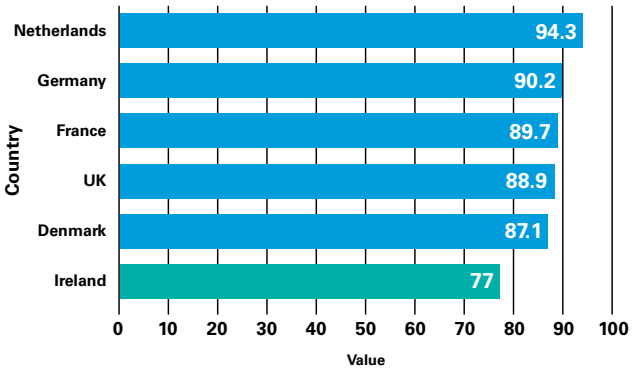
Are we ready?

The Irish public appears ready for AV deployment, with recent statistics indicating that over 40% would be willing to own an AV themselves, a figure higher than in many European peers. There are also a number of global players researching AV in Ireland, including Jaguar-Land Rover, Lero-Valeo, CONNECT and Cubic Telecom.

However, both the regulatory and infrastructural frameworks are lagging comparator countries, with both road quality and 4G/5G availability falling well below European neighbours.

Figure 5:

World Economic Forum composite view on quality of infrastructure



Source: World Economic Forum, 2019. The infrastructure score is calculated based on a number of factors including road connectivity, quality of roads, electrification rate, electric power transmission and distribution losses.

"There are large advantages for society, infrastructure and therefore the state in terms of future MaaS rollout. But this requires partnership approaches, between operators, OEMs, insurance players and electricity suppliers. In cities, these can be private sector driven, but outside of our largest 3 or 4 urban centres, it realistically needs government leadership to drive charging infrastructure accessible at domestic rates. Without this, we estimate close to 10% of today's taxi journeys can't be electrified – i.e. demand for longer city-rural and intercity journeys won't be catered for. That puts a bottleneck on the longer-term potential for MaaS to displace car ownership."

Noel Ebbs
CEO, Lynk Taxis

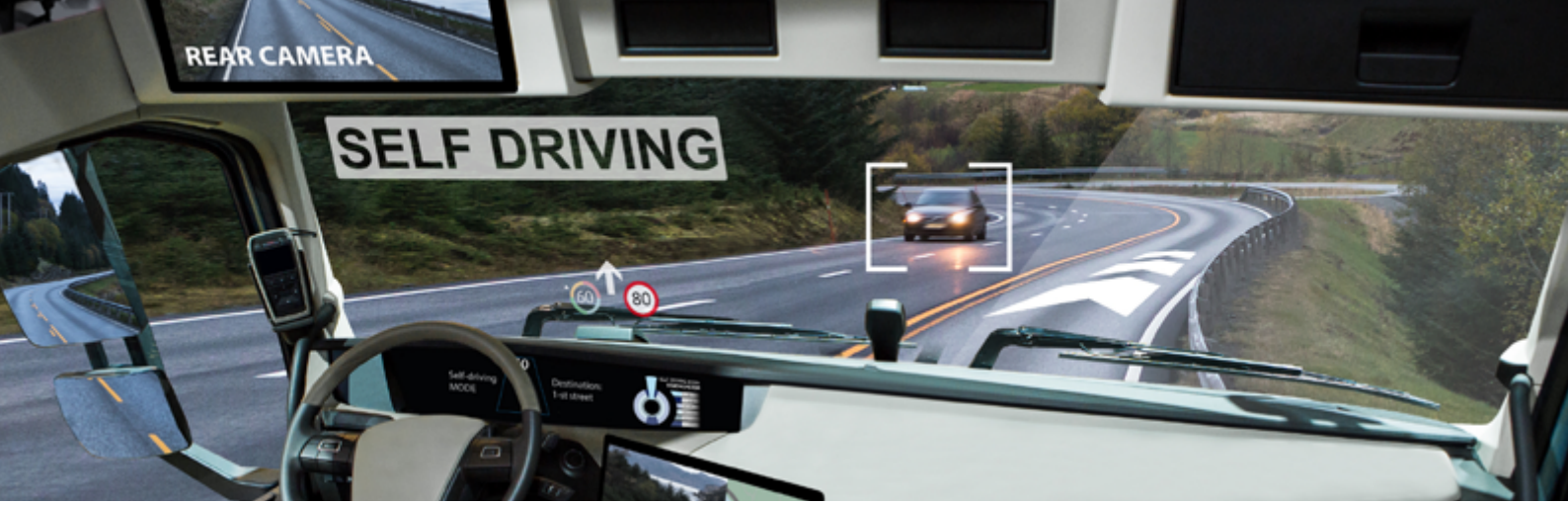


Figure 6:

5G readiness index: Ireland ranking among top 15 European countries by select theme

Rank	Regulation & Policy	Infrastructure & Technology
1	Finland	Spain
2	Switzerland	Italy
3	Luxembourg	Germany
4	Netherlands	Finland
5	Denmark	UK
6	Germany	Switzerland
7	Norway	Norway
8	UK	Latvia
9	Sweden	Austria
10	Iceland	Portugal
11	Azerbaijan	Estonia
12	Estonia	France
13	Austria	Sweden
14	France	**Ireland**
15	**Ireland**	Poland

Source: Incites, Europe 5G Readiness Index

This is likely to act as a brake on AV testing and deployment. Urgent focus is needed on expansion of reliable 4G and 5G connectivity outside major urban areas in order to make widespread AV deployment viable. Ireland's regulatory environment will also need to be revised, a process which is currently more advanced in neighbouring countries such as the United Kingdom and the Netherlands.

Drive safe

Security is the other major factor that will need to be addressed before widespread adoption of AV can happen, as both governments and consumers need to be assured that individual AVs as well as the complex and data-rich network on which they will run are not vulnerable to compromise. Any failures in cyber security, particularly in the early stage of deployment, would do huge damage to consumer confidence and uptake. It is underwhelming that Ireland ranks 23 in Europe and 38 in the Global Cybersecurity Index (GCI); the government and providers will need to prioritise the development of principles to ensure cyber security specifically for the AV ecosystem.

Any successful roll-out of AV and its anticipated improvement in safety standards, however, has interesting implications for auto insurance, an area where Ireland is priced towards the high end. Like elsewhere, we foresee disruption to product mix and how they are distributed (e.g. several coverage options to select from before an AV MaaS journey), with eventually automated underwriting and claims. Reinsurance will also need to consider how to mitigate the risk of total outages.

"When AV meets MaaS it can really start to impact total vehicle numbers – with personal cars maybe down 50% in Dublin. Within 20 years of when AV is commercialised, we think they will be the default MaaS vehicle on high frequency arterial routes, but it might take longer on roll out of more complex point to point, door to door, routes."

Noel Ebbs
CEO, Lynk Taxis

Conclusion

The coming decade promises to be the most transformative for mobility since the introduction of mass produced ICE vehicles a century ago, with our experience of travel transformed across the globe. Ireland will certainly play its part in that revolution, but the ambition and pace of its participation has yet to be determined. To summarise the implications we see by player type:

Policy makers

- Provide greater clarity on AV environment for private operators, with support for initiatives like Future Mobility Campus Ireland
- Before ramping up tax incentives or regulation to push ICE to EV, consider technology-neutral incentives that allow for hydrogen and other future technologies.
- Consider incentives for smart home EV charging, particularly in urban areas

Energy companies

- Develop the technical capability to actively manage customer charging requirements
- Understand the specific products and services that can unlock additional value for consumers
- Review network charging models and work with regulators to innovate

Semi-states and corporate fleets

- If serving the EV infrastructure need (from electricity distribution to point of charge), be sure to model EV vs other powertrain technologies into the 2030s
- Consider whether the asset-light approach of MaaS / pay per use can be adapted for cost-conscious semi-states in terms of their own operations

Forecourts & adjacent convenience retail

- Model the impact of EV charging, not least in how the shift to home and destination charging impacts the need for forecourt trips and the location of the convenience purchase
- Follow the progress of liquid electrolyte and hydrogen technologies for future forecourts, raising policy-level awareness of their advantages, where required

Auto retail

- Model the likely evolution of units sold with wider MaaS and then AV adoption
- As a smaller left-hand drive country, Ireland has had a relatively illiquid secondary auto market. Once full AV removes this barrier, expect greater integration into a pan-European secondary market and a resulting suppression of prices
- Scope potential of PCP/lease/pay-per-use type models to replace lost revenue, and consider other revenue diversification options that leverage your existing strengths around location, relationships and sales

Mobility providers

- Consider implications of the relative failure of global MaaS brands in Ireland to date, and whether Ireland's scale will support multiple local platforms
- Seek to collaborate in an integrated approach with the National Transport Authority and/or local governments

Insurers

- Consider how to adapt your product mix for the evolution in journey types and asset owners
- Observe how collaboration proceeds internationally between insurance, AV coders, cyber security and telecom infrastructure

Manufacturers

- Ireland's geographical position at the edge of Europe has hindered its attractiveness in the past as a multinational automotive manufacturing base. If your business model is shifting from selling units to selling a service, however, Ireland's track record and tax structures for tech and lessors serving international markets becomes more relevant

Contact us

Chris Brown
National Lead
Global Strategy Group
E. christopher.brown@kpmg.ie
T. +353 1 700 4453

William Taylor
Director
Strategy
E. william.taylor@kpmg.ie
T. +44 289 089 3024

Michal Reut-Gelbart
Manager,
Strategy
E. michal.reut-gelbart@kpmg.ie
T. +353 1 410 1000

kpmg.ie/strategy

Produced by: KPMG's Creative Services. Publication Date: December 2021. (7192)