



What is the potential for active modes to reduce Ireland's transport emissions? Presenter : Vera O'Riordan Role : PhD Student Institution : Energy Policy and Modelling Group,









Policy makers

- Policy documents
- Needs of the public
- Emissions targets
- Modelling blind spots





Modellers

- Modelling Tools
- Analytical capacity
- Policy blind spots

Ireland's commitments to Climate Action in Passenger Transport









[2] Environmental Protection Agency, 2020



[3] O'Riordan et al., 2022

Emissions per passenger kilometre for transport modes in Ireland



[3] O'Riordan et al., 2022





[3] O'Riordan et al., 2022



Scenario	Assumptions	Source
Reference	 Assumes no change in share of transport modes from 2019 levels, growth rates as modelled in the Irish Car Stock Model 	Irish Passenger Transport Emissions and Mobility Model [3], Irish Car Stock Model [4]
Additional 500k public transport and active trips	 There is an additional 500,000 trips by public transport and active travel, the number of trips are increased in proportion to the current number of trips for each of the modes: walking, cycling, bus and rail. 	Climate Action Plan 2021 [5]
School Sustainable Transport	 Increase bussing, walking and cycling rates to peak census values previously had by school children as per census values (1996 and 1984 are chosen as reference years) 	Central Statistics Office [6]
Cycling and walking 450k trips per day	 450,000 trips by walking and cycling, increased proportionally based on the typical distances of walking and cycling journeys. 	Smarter Travel Policy Document [7] & Climate Action Plan 2019 [8]
Public transport rate and cycling rates NL	 Cycling rate increases for work and education related travel until 10% of passenger kilometres for work and education is by cycling 	International comparison with leading country in sustainable transport [9]





Total reduction in Passenger Transport Emissions by 2030



Highlights



- In 2019, 1.7% of trips were made by bike, far below the 2009 "Smarter Travel" 10% target for 2020 [7]
- Private car is t most commune transport mode in Ireland 40% of emissions com from journely's less the 8 kilometres
 3.35 2.00
- Active modes could deliver between 0.2 and 1.2 MTCO2 missions reduction in 2030 individually
- Passenger transport Could contribute ~4.65 MTCO2 reduction from range of Avoid-Shift-Improve measures, this can help meet 6 -7 MTCO2 reduction transport target from freight + passenger transport

Future Work





- E-bikes and their role in the low carbon transition, the studies we base our modelling on need to be more location/technology specific
- Policy levers towards urbanization away from suburban development, we model remote work uptake – but we don't go further than that
- Satellite and small towns, rural areas near to towns – 41.6% of Irish population live in these places



Questions & suggestions welcome! Thanks for listening!



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[1] Environmental Protection Agency, 2021 accessible at https://www.epa.ie/ghg/transport/

[2] Environmental Protection Agency, 2020. Ireland's Environment - An Integrated Assessment 2020. [online] Available at: https://www.epa.ie/media/EPA-Ireland's-Environment-2020-Chapter11.pdf> [Accessed 26 March 2021].

[3] V. O'Riordan, F. Rogan, B. Ó Gallachóir, T. Mac Uidhir, H. Daly, How and why we travel – Mobility demand and emissions from passenger transport, Transp. Res. Part D Transp. Environ. 104 (2022). https://doi.org/10.1016/j.trd.2022.103195.

[4] Daly, H., Ó Gallachóir, B.P., 2011. Modelling private car energy demand using a technological car stock model. Transp. Res. Part D Transp. Environ. https://doi.org/10.1016/j.trd.2010.08.009

[5] Government of Ireland, Climate Action Plan 2021, 2021. https://assets.gov.ie/203558/f06a924b-4773-4829-ba59-b0feec978e40.pdf.

[6] Central Statistics Office, Census of Population 2016 - Profile 6 Commuting in Ireland, Student Travel Patterns, (2016). https://www.cso.ie/en/releasesandpublications/ep/p-cp6ci/p6cii/p6stp/ (accessed September 17, 2021).

[7] Department of Transport, "Smarter Travel: A Sustainable Transport Future," 2009. [Online]. Available: http://www.smartertravel.ie/sites/default/files/uploads/2012_12_27_Smarter_Travel_english_PN_WEB%5B1%5D_0.pdf.

[8] Department of Communications Climate Action and Environment, Climate Action Plan to Tackle Climate Breakdown, Dep. Commun. Clim. Action Environ. (2019) 150. https://doi.org/10.5860/choice.46-0890.

[9] L. Harms, M. Kansen, Cycling Facts Netherlands Institute for Transport Policy Analysis | KiM, Inst. Transp. Policy Anal. KiM, Minist. Infrastruct. Water Manag. (2018).

Our impact



Emissions Reduction in Transport:

Submission to Oireachtas Committee on Climate Action

April 6th 2021

Brian Ó Gallachóir, Paul Deane, Tomás MacLidhir, Vera O'Riordan, Shane McDonagh, Vahid Aryanpur and Fionn Rogan



How the pandemic led to a cycling renaissance



Updated / Wednesday, 7 Oct 2020 16:03



"People cycle because it keeps them fi enjoy

> Analysis: cycling wa lockdown, but more long-term difference

By Hannah Daly, Ver

Here's how more walking and cycling will reduce carbon emissions

Updated / Wednesday, 15 Jul 2020 09:29

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"Relatively short journeys are a good opportunity to switch from carbon intensive modes (such as driving) to zero carbon modes (such as walking and cycling)"

More from UCC

Analysis: if half of all car journeys under 6km switched to cycling or walking, we'd see a fall of 0.12 million tonnes of emissions in a year

By Vera O'Riordan, Fionn Rogan, James Fitton and Brian Ó Gallachóir, UCC



Proportion of passenger travel demand by overall journey distance, 2019





- Scenario analysis uses a simulation tool to compare a new target, which is quantified in a new scenario against the 'Business as Usual' or 'no target' scenario which is called the "Reference" scenario
- By comparing the relative difference in emissions, we can get an insight into the effectiveness of the policy target in reducing carbon dioxide emissions <u>if it is</u> <u>achieved by a given date.</u>
- More details about the LEAP Ireland 2050 model can be found <u>here</u> [9].

[6] Mac Uidhir, T., Rogan, F., Gallachóir, B.Ó., 2020. Develop a LEAP GHG Ireland Analytical Tool for 2050 Report No. 349. Available at: <u>https://www.epa.ie/pubs/reports/research/climate/Research_Report_349.pdf</u> (Date Accessed: 16th December 2020)

COVID-19 & Passenger Transport Demand





 [3] Daly, H., Ó Gallachóir, B.P., 2011. Modelling private car energy demand using a technological car stock model. Transp. Res. Part D Transp. Environ. https://doi.org/10.1016/j.trd.2010.08.009
 [6] Mac Uidhir, T., Rogan, F., Gallachóir, B.Ó., 2020. Develop a LEAP GHG Ireland Analytical Tool for 2050 Report No. 349. Available at: <u>https://www.epa.ie/pubs/reports/research/climate/Research_Report_349.pdf</u> (Date Accessed: 16th December 2020)