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Rialtas na hÉireann
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The SEAI RD&D Funding Programme supports Transport Research

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DRIFT-HDV: DecaRbonisation Irish HDV FleeT

Project Description

Heavy-Duty Vehicles (HDVs) are responsible for 14% of transport emissions in Ireland, but with a less established path to decarbonisation when compared to the passenger fleet.

DRIFT-HDV will review international and European best practices and benchmark the Irish HDV fleet in order to reach the goal of Net Zero Emissions by 2050 (NZE2050).

Funding Agency:

SEAI; DoT

Lead Organisation:

Trinity College Dublin

Year Funded

2021

Total Project Cost

€179k

Partner Organisation(s)

- **University College Cork**
- **ARUP**

Collaborators

- Transport Infrastructure Ireland
- Irish Road Haulage Association
- ESB

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EV Extender

Project Description

Novel load-bearing trailer solutions will increase the range and load carrying capacity of electric vehicles and enable lower costs per km compared to diesel.

Reducing vehicle emissions by extending the range and load capability of trailers for electric cars and vans through Energy Management, advanced aerodynamics, and weight reduction.

Funding Agency:

SEAI

Year Funded

2021

Total Project Cost

€737k

Lead Organisation

Eco-Mova Teo

Partner Organisation

University College Dublin

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Inclusive Sustainable Cycling (ISCycle): Inclusive E-bike Uptake and Sustainable Use

Project Description

An e-bike sharing scheme will be introduced in Limerick as an urban mobility option, informing policy in relation to behavioural change, reducing car usage and alleviating public transport.

By specifically targeting behaviour change interventions based on e-bike loans and ownership in University of Limerick campus, this project aims to elicit modal-shift away from private car.

Funding Agency:

SEAI; DoT

Year Funded

2021

Total Project Cost

€642k

Lead Organisation

University of Limerick

Collaborators

- **Green-Schools Ireland**
- **The Producer Register Ltd**

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Electric Vehicle Potential within Existing Technical Standards and Commuting Patterns

Project Description

- This project aims to map potential electric vehicle (EV) hotspots in Ireland, identifying predominant socio-demographic attributes of these areas, both to aid development of EV policy measures, and to support the design of targeted marketing campaigns
- The research also aims to provide scenarios on how the size and location of EV hotspots will evolve as EV battery technology improves.

Year Funded

2019

Total Project Cost

€32k

Funding Agency

SEAI

Lead Organisation

ESRI

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EV Charge

Project Description

- EV Charge investigates suitable non-residential charging infrastructure and charging strategies to support Electric Vehicle (EV) fleets in Ireland.
- It proposes the development and deployment of an EV Charging solution contained within a streetlight (“Charge and Light”).
- The overall project goal is to develop a commercial product (EV Charge and Light) that will deliver significant benefits to the market within 12 months.

Funding Agency:

SEAI

Year Funded

2019

Total Project Cost

€79k

Lead Organisation	**EC Charging**
Collaborators	**Dun Laoghaire Rathdown**

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Regional Energy Demand Analysis Portal (REDAP)

Project Description

- REDAP is a transnational energy system digitalisation project which will provide data insights to decision-makers on the characteristics of regional energy demand (building and transport sectors).

- Multidisciplinary partners from three countries will develop and standardise a digital monitoring and reporting system which can be used across distinct regions and aligned with existing decision-making processes.

Funding Agency:

European Commission; SEAI

Lead Organisation:

Spatial Outlook Ltd

Year Funded

2019

Total Project Cost

€209k

Partner Organisation(s)

- **Codema**
- **National University of Ireland Galway**

Collaborators

- Austrian Institute of Technology
- Chalmers University of Technology (Gothenburg)

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A Roadmap for the Deployment of Electrofuels for the Decarbonisation of Heat and Transport in Ireland

Project Description

- This roadmap will outline the financial costs and benefits of gaseous electrofuels (chemical fuels derived from electricity) in support of deep decarbonisation of the Irish and heat and transport sectors

- The project will provide a roadmap to policymakers in Ireland for gaseous electrofuels (chemical fuels derived from electricity) to reduce curtailment/constraint and drive deep decarbonisation in heating and transport through sector coupling.

Year Funded

2019

Total Project Cost

€130k

Funding Agency

- **SEAI**
- **Gas Networks Ireland (GNI)**

Lead Organisation

National University of Ireland, Galway (NUIG)

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Fundamental Information for Technology Commercialisation of Lignocellulosic Waste to Liquid Transportation Fuels by Acid Hydrolysis

Project Description

- Liquid transportation fuels can be produced from non-food waste lignocellulosic biomass

- The work will gather essential chemical engineering data on aspects critical to the commercial viability of the process:
  - production of oxygenated hydrocarbons from waste lignocellulose (biomass, paper) by acid-hydrolysis to produce a variety of drop-in fuel components.

Funding Agency:

SEAI

Year Funded

2018

Total Project Cost

€90k

Lead Organisation

Trinity College Dublin

Collaborators(s)

University of Limerick

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Mitigation of Air Pollution Impacts of Irish Heavy-Duty Vehicles (MAP-HDV)

Project Description

- Among all transport modes, Heavy-Duty Vehicles (HDVs) contribute 17% of all road transport related GHG emissions in Ireland.

- The goal of the MAP-HDV project is to explore and establish environmental, economic and health impact of the vehicular emission generated from the Irish HDV fleet along with developing an appropriate tool-kit to monitor and calculate future energy consumption and related vehicular emission from the fleet using most advanced simulation tools.

Funding Agency:

DoT; SEAI

Year Funded

2018

Total Project Cost

€103k

Lead Organisation

Trinity College Dublin

Collaborators(s)

Irish Road Haulage Association

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Growing Energy Efficiency in the Car Market (GREENCAR)

Project Description

- The GREENCAR project will explore consumer decision-making when buying vehicles and will trial new initiatives aimed at increasing the purchase of electric vehicles.
- This project will work by conducting a national labelling randomised controlled trial of vehicles in conjunction with Hyundai Ireland.
- It will explore whether energy cost information leads to a higher uptake of more fuel-efficient vehicles.
- This project also incorporates a discrete choice experiment with randomised treatments to identify solutions to other possible barriers to consumer adoption of more fuel-efficient vehicles, such as policy measures

Funding Agency:

SEAI

Year Funded

2019

Total Project Cost

€347k

Lead Organisation

Trinity College Dublin

Partner Organisations:

- Hyundai Ireland
- Competition & Consumer Protection Commission
- CICERO (Norway)
- Behavioural Insights Team (UK),
- BC3 (Spain)
- RFF CMCC (Italy),
- University of St Gallen (Switzerland)

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DiSTRaCT: moDal ShifT Reduce Carbon in Transport

Project Description

- Emissions from transport make up to 20% of total CO2 emissions in Ireland per-annum.
- DiSTRaCT aims to examine this in Ireland and cast a wide net to look for low-cost behavioural change projects that have been successful internationally and determine if they could be successful in Ireland.
- A key element of the DiSTRaCT project will be to produce new methods to evaluate the potential success of behavioural change projects and supplement the work being conducted on the economic evaluation of transport projects.

Year Funded

2018

Total Project Cost

€191k

Funding Agency

- **DoT**
- **SEAI**

Lead Organisation

Trinity College Dublin

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Desktop Study to Assess Potential Mitigation Measures that would Reduce CO2 and/or Air Pollutant Emissions from the existing Irish Heavy-Duty Vehicle Fleet

Project Description

- Transportation stands as one of the highest consuming energy-related sectors.
- The project will review international best practice and benchmark the Irish HDV fleet against other comparator countries, followed by a quantitative assessment of select policies and measures.
- The model-based assessment and consultation will inform the process of identifying options for decarbonisation of and reduction of pollutant emissions from heavy goods vehicles sector in Ireland at least cost.

Year Funded

2018

Total Project Cost

€93k

Funding Agency

- **DoT**
- **SEAI**

Lead Organisation

University College Cork

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Smart Electric Buses

Project Description

- Applying data analytics and artificial intelligence techniques for optimal design and operation for electrification of the public bus transportation system.
- This research team plan to use multiple AI technologies to optimise critical components for the electrification of the public bus transportation system.
- In this context, they plan to design and implement new algorithms to optimise critical components for the electrification of the public bus transportation system.

Year Funded

2019

Total Project Cost

€202k

Funding Agency

SEAI

Lead Organisation

University College Cork (UCC)

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Charging strategies and infrastructure design for transition to electrified fleets

Project Description

- This project investigates what type of non-residential charging infrastructure and charging strategies are required to support Electric Vehicle (EV) fleets in Ireland.
- The project seeks to discover ways to maintain a fully integrated charging system from renewable energy sources.

Year Funded

2019

Total Project Cost

€117k

Funding Agency

SEAI

Lead Organisation

University College Cork (UCC)

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EV-CHIP - Electric Vehicles Charging Platform for Community Demand Response Aggregators

Project Description

- EV-CHIP investigates the potential for controllable electric vehicle charging, integrated with building energy management, for enhanced system flexibility.
- The project will explore the potential for an aggregated electric vehicle (EV) charging optimisation in a campus/shared facility leveraging a rich set of data resources for building energy consumption, vehicle operation and parking and wholesale electricity pricing.

Funding Agency:

SEAI

Year Funded

2019

Total Project Cost

€193k

Lead Organisation

University College Dublin (UCD)

Collaborators(s)

Institute of the National Research Council of Italy CNR

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TRACT: TRAnsport Behaviour Change Trials

Project Description

- The TRACT project will use the clear economies of scale to deliver a holistic project that will use technology paired with motivation and nudging techniques to change transport behaviour and ultimately reduce emissions.

- TRACT has two distinctive trials, one which will focus on the transition to electric vehicles (EVs) and the second using the mobility hub concept to encourage modal shift.

Funding Agency:

DoT; SEAI

Year Funded

2021

Total Project Cost

€611k

Lead Organisation

Trinity College Dublin

Collaborators(s)

- **Bleeper**
- **Transpoco**
- **Yuko/Toyota Ireland**
- **Smart Dublin (Dublin City Council)**
- **FREE NOW**
- **easygo.ie**
- **Nissan Ireland**

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On Street EV Charging - Analysis of Household Parking to Determine Public EV Charge Point Requirements using AI and Geospatial Analysis

Project Description

- Developing geospatial datasets to identify potential public EV charger demand in Ireland.
- This project will estimate how many homes across the country have the capability for home EV charging, so that the potential demand for public charging stations can be understood, including their spatial distribution.
- Remote sensing and artificial intelligence models will be used to create geospatial datasets describing potential public EV charger demand across the country.

Year Funded

2022

Total Project Cost

€178k

Funding Agency

SEAI

Lead Organisation

- Irish Centre for High-End
- Computing, Galway University

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Developing Pathways for a Sustainable Shipping and Maritime Fuel Value Chain in Ireland (ShipFuel-IE)

Project Description

- The project aims to develop a comprehensive framework to address all aspects of the transition to low-carbon shipping in Ireland while engaging with stakeholders from across the Irish maritime sector.
- A multi-criteria decision analysis will be employed to highlight promising pathways for the development of a low-carbon shipping sector in Ireland.

Funding Agency:

DoT; SEAI

Lead Organisation:

University College Cork

Year Funded

2022

Total Project Cost

€744k

Partner Organisation(s)

GDGeo

Collaborators

- EI-H2
- Port of Cork Company
- Ardmore Shipping

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Development and Testing of a Novel Technology to Facilitate Faster, Cleaner, Cheaper shipping (FASTSHIP)

Project Description

- The project aims to develop a comprehensive framework to address all aspects of the transition to low-carbon shipping in Ireland while engaging with stakeholders from across the Irish maritime sector.
- A multi-criteria decision analysis will be employed to highlight promising pathways for the development of a low-carbon shipping sector in Ireland.

Funding Agency:

SEAI, Marine Institute

Year Funded

2022

Total Project Cost

€704k

Lead Organisation

ÉireComposites Teo

Partner Organisation

University of Galway

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Electric shaRed mOBility hUbS Trial (ROBUST)

Project Description

- This project will deliver four shared electric mobility hubs in Dublin, Galway, Sligo and Donegal with each hub providing charging infrastructure, electric cars, e-bikes and e-cargo bikes for shared use.

- The project will assess community adoption and hub usage patterns over a three-year trial period, testing the potential of shared e-mobility to decarbonise transport in Ireland.

Funding Agency:

SEAI

Year Funded

2022

Total Project Cost

€1.3 million

Lead Organisation

Trinity College Dublin

Partner Organisations

- **Atlantic Technological Uuniversity (ATU)**
- **ESB**
- **Enterprise Holdings**

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FET-EV: 3C-SiC FET Revolution For Highly Efficient and Extreme Fast EV Charging Solutions

Project Description

- Developing technical advances that enable quicker, more efficient and more effective methods of charging EVs.
- This project will enable the realisation of high-efficiency/low inductance switching circuits and reduced system form factors.
- It seeks to overcome the cost and fast-charging barriers and bring about technical advancements, allowing quicker, more efficient, and more effective methods of charging an EV.

Year Funded

2022

Total Project Cost

€617k

Funding Agency

SEAI

Lead Organisation

Tyndall National Institute

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Irish Car Stock Model (RATE)

Project Description

- Improving the modelling and assessment of car stock and future scenario analysis in Ireland.
- The RATE project aims to develop a state-of-the-art national car stock model by incorporating both purchasing preferences and historical data in the transport sector.
- The project will provide realistic estimates of the potential growth of EVs in the Irish market, estimate the associated emissions reductions, model the changes in air quality indicators and build upon existing SEAI funded research.

Year Funded
2023

Total Project Cost
€459k

Funding Agency
SEAI

Lead Organisation
Trinity College Dublin

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Inclusive Sustainable Cycling 2: Widening Equity in E-bike Use (ISCycle2)

Project Description

- Improving active travel opportunities for under-resourced communities.

- The ISCycle2 project aims to increase the inclusion of under-resourced communities in active travel through the development, implementation, and evaluation of an e-bike loan programme, enabling estimates of cost and emission savings, health and social benefits of e-bikes, using both conventional bikes and existing transport use.

Funding Agency:

SEAI

Year Funded

2023

Total Project Cost

€979k

Lead Organisation

University of Limerick

Collaborators

- Green Schools/Safe Routes to School
- Limerick Cycling Campaign

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MXene-Based High Energy Density Batteries - Accelerating the Transition to a Sustainable Electric Vehicle Fleet (MXEnergy)

Project Description

- Development of lithium sulphur batteries for electric vehicles.
- The MXEnergy project proposes a technical solution that will overcome energy density concerns existing in conventional battery technologies.
- The project proposes a next-generation cell chemistry specifically tailored to meet EV requirements.

Funding Agency:

SEAI

Year Funded

2023

Total Project Cost

€672k

Lead Organisation

University of Limerick

Collaborator

Glantreo

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A Trusted and Interoperable Mobility as a Service Ecosystem For Ireland (MaaS4IRL)

Project Description

- This project aims to review the existing Mobility as a Service (MaaS) ecosystem implemented worldwide and develop recommendations on an optimal Maas for Ireland (MaaS4IRL).
- The outcome of this project is expected to bring a positive impact on the on both public and private transportation Ireland.

Funding Agency:

DoT; SEAI

Year Funded

2023

Total Project Cost

€100k

Lead Organisation

University of Galway

Partner Organisation

Future Mobility Campus Ireland

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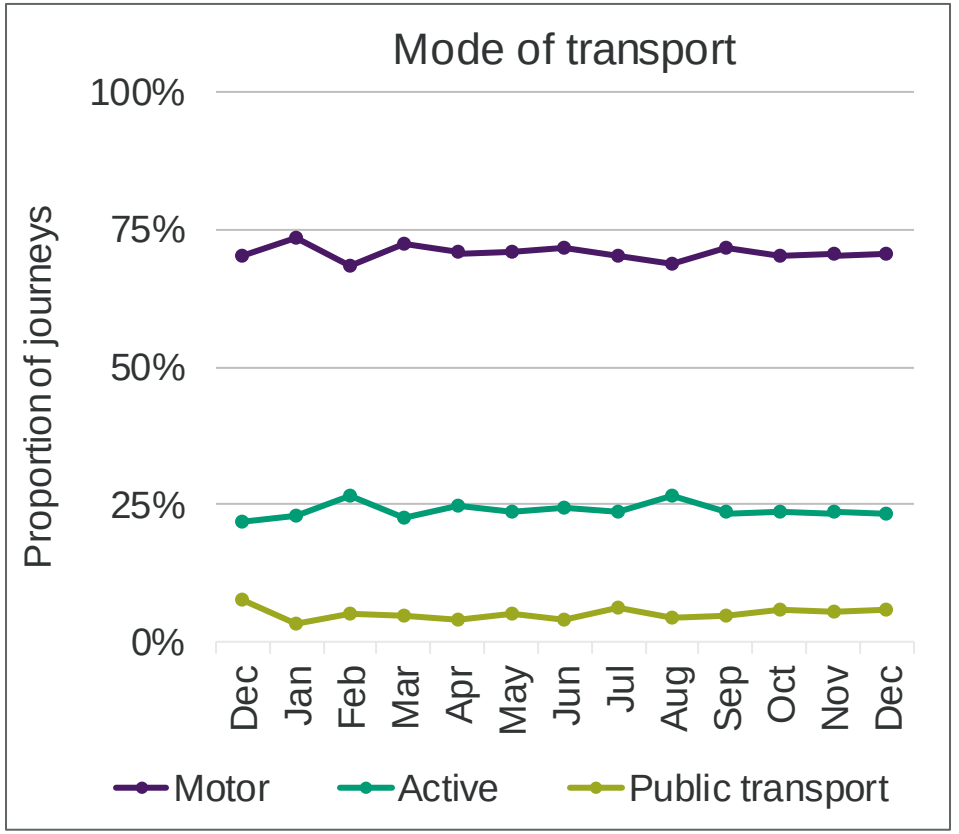
Data and Insights

Behavioural Energy and Travel Tracker

- Online survey with national representative sample of 1,000 adults
- Ran monthly in 2023, running quarterly in 2024
- Uses “Day Reconstruction Method” (Kahneman et al. (2004)) to capture granular and accurate data on everyday energy behaviours over time as well as sociodemographic and psychological measures.

Record detailed data on journeys participant took the previous day:

- **Mode(s) of transport**
- **Purpose**
- **Distance**
- **Duration**
- **Time of day**
- **Whether travelled with others**
- **Whether other mode available (for car journeys)**



Contact beu@seai.ie for further info

Private E-Cargo Bikes and Everyday Mobility in Ireland

PI: Dr. Robert Egan
Co-PI: Prof. Brian Caulfield
SEAI Supervisor: Dr. Hannah Julienne

Aim: To explore what various combination of elements (i.e., materials, competences, and meanings) are needed to make e-cargo bikes possible and attractive as a car substitute.

Methodology: Qualitative interviews followed by survey research with private e-cargo bike users across Ireland.

Significance: It will provide comprehensive insights into intersectoral policies needed to expand the substitution of private car journeys with e-cargo bikes (e.g. grants, training, infrastructure, marketing, land-use/development).

Contact robert.egan@seai.ie for further info.

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Data and Insights Publications related to Transport

Publication	Authors
National Energy Projections 2023 Report (Chapter 5)	SEAI Modelling Team
Energy in Ireland 2023 Report (Sections 5.2.2, 6.3, 8.2.4, and 10.3)	SEAI Statistics Team
Driving Purchases of Electric Vehicles in Ireland: A Behavioural Economics Perspective (2020)	SEAI Behavioural Economics Unit
Behavioural Energy and Travel Tracker: Results Report 1 – Heating Season 2022/2023 (Section 3.2.1)	SEAI Behavioural Economics Unit

Transport Initiatives

Transport Initiatives

Initiatives	Links
Electric Vehicle Purchase Grant	Electric Car Rebates & Grant Amounts | EV Grants | SEAI
Electric Vehicle Home Charging Grant	Electric Vehicle Home Charger Grant | SEAI
Electric Vehicle Apartment Charging Grant	Apartment Charging Grant | EV Grants | SEAI
Electric Vehicle Smart Charger Register	EV Smart Chargers Register | SEAI

Transport Initiatives

Initiatives	Links
Trusted Independent EV hub – educating the public	www.drivingelectric.ie
EV Commercial Fleet Trial	Fleet Trials | SEAI
EV Dealership of the Year Award	National winner of the 2024 ZEVI Electric Vehicle Dealership of the Year Awards | News and Media | SEAI
EV Total Cost of Ownership Calculator and Comparator	Compare Electric Car Running Costs | Electric Vehicles | SEAI