Keeping people cycling with the private e-cargo bike: Policy recommendations from a mixed-methods study

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Background

A major stated climate policy goal is to encourage and facilitate members of the population to use sustainable transport modes instead of the private car [1], which was estimated to account for 69% of all journeys in 2022 [2]. In light of revised climate action policy targets to reduce total car kilometres travelled by 20% and increase daily active travel journeys by 50% in Ireland by 2030, the promotion and proliferation of e-bikes and e-cargo bikes as a feasible alternative the private car has been highlighted [3]. At present, the uptake of private e-cargo bikes is supported by the Cycle to Work Scheme, which offers up to €3,000 for a new e-cargo cycle [4]. Data gathered by the SEAI Behavioural Economics Unit shows that 15% of car trips in Ireland were undertaken to transport children to school or activities (versus 17% for commuting) in 2023. Of these child-transport trips, 55% were 5km or under. E-cargo bikes are ideal vehicle substitutes for child-transport trips of this range. **The recommendations in this policy brief are derived from an SEAI-funded mixed-methods research fellowship project about private e-cargo bikes and everyday mobility in Ireland.**[a]

Summary of Recommended Policy Actions

The following actions could unlock future demand for e-cargo bikes for everyday mobility in Ireland:

Ownership

1. Develop broader grant schemes for e-cargo bike purchase
2. Support and promote local e-cargo bike trials

Parking

3. Increase the availability of e-cargo bike accessible on-street parking zones and stands
4. Increase the availability of secure off-street public cycle parking compounds
5. Enable secure and convenient residential e-cargo bike storage by relaxing planning regulations for cycle storage sheds and providing on-street, enclosed e-cargo bike accessible parking

Mobility

6. Expand the provision of e-cargo bike accessible protected cycle networks
7. Retrofit existing cycle networks so they are e-cargo bike accessible
8. Improve standards of cycle network maintenance to improve e-cargo bike accessibility

[a] This document builds on a previous policy brief developed earlier in this project, "Extending the Practice of Cycling: Policy Recommendations to Increase E-Bike Use Based on a Review of International Literature".

This study

The aim of this study was to explore how private e-cargo cycling is experienced and integrated as a mode of everyday mobility in Ireland among existing e-cargo bike (ECB) owners. Throughout the study, we drew on social science perspectives on sustainable mobility practices [5,6], systems [7-9], and trajectories over the life course [10,11]. We used both qualitative and quantitative methods.

For the qualitative phase, we undertook 23 in-depth semi-structured interviews with 25 private ECB owners[a] based on the island of Ireland. We used grounded theory methods [12] to identify core problems faced by ECB owners, and to conceptualise the various ways in which these problems were resolved in everyday practice. To explore how e-cargo cycling might change the experience of cycle and road networks in Ireland, we used existing scholarship on the conditions of cycling in Ireland to structure our analysis [13].

For the quantitative phase, we ran an online survey informed by the findings of the qualitative phase with 203 private ECB owners based on the island of Ireland. We gathered data on respondent socio-demographics, vehicle ownership/acquisition, travel behaviour, ECB mobility, and ECB parking.

Two academic articles have been published [14,15], one has been accepted [16], and one is under review [17]. Working papers and a slide deck of the quantitative findings referenced in this policy brief are available on request.

Policy recommendations

We provide further detail on the eight recommendations below. These are grouped under three areas of policy and planning that could help to develop Ireland's future private e-cargo bike (ECB) system: ownership, parking, and mobility. Tackling the "systemic sticking points" [9, p.124] in these spheres of action could help to unlock future demand for private ECBs for everyday mobility, by reconfiguring the financial viability, parking security, and everyday comfort and convenience of an ECB relative to the private car.

[a] Two interviews were conducted with couples.

Ownership

ECBs are used as a primary mode of family mobility, often replacing the private car.[a] ECB ownership can therefore contribute to modal shift by maintaining cycling practices in the face of changing mobility demands that could increase car use [11,18]. We make two recommendations to directly support ECB ownership.

1. **Develop broader grant schemes for e-cargo bike purchase**

Most (78%) survey respondents used the Cycle to Work Scheme to purchase their ECB. This grant overlooks individuals who are self-employed or out of formal employment, who would hypothetically be eligible for an electric vehicle grant. Such individuals could greatly benefit from ECB ownership to provide mobility for their children and reduce car reliance. On these grounds, an ECB-specific grant scheme could be developed to better support the growth of care-centred cycling trips [19,20], which often involve more complex trip patterns relative to commuter cycling and can be challenging to engage in with conventional bicycles or e-bikes. Such grant extensions could also tackle potential transport poverty experienced by parents with no car option who reside in sprawled areas that are poorly served by public transport.

2. **Support and promote local e-cargo bike trials**

Most respondents to our survey first became interested in purchasing an ECB having encountered other people using them (in their local area or abroad), while 58% reported formally trialling, testing, or renting an ECB before buying one. By increasing the local visibility of ECBs and offering opportunities for people to try one first-hand, local and national ECB trials [21-23] and ECB-themed events could help to promote greater ownership of this mode as a means of everyday mobility.

Parking

Theft or damage to the ECB is a major concern for owners, whose ECBs are often much more expensive than conventional or non-cargo electric bicycles and are relied upon for everyday transport, and lack of secure parking is a real impediment to ECB use.[b] We make three recommendations on ECB parking provision.

3. **Increase the availability of e-cargo bike accessible on-street parking zones and stands**

Official bicycle stands are nearly always experienced as slower, more physically demanding, and less convenient than alternatives by ECB owners.[c] The varying widths and lengths of different styles of ECBs made parking inside a row of conventional "Sheffield stands" challenging and sometimes impossible. Many study participants reported being forced to use embedded on-street objects (e.g. lampposts, signposts, railings, trolley bays) to secure their ECB instead. Study participants also regularly parked their ECB freestanding on the street using the integrated stand and wheel-lock.

On-street parking for ECB owners could be improved in two ways. First, the provision of official and informal spaces or 'zones' to park the ECB freestanding on-street (similar to motorbike parking) could enable more convenient short-duration parking (e.g. when picking up or dropping off children or "popping in" to the shops). Security could be enhanced by ensuring good visibility from nearby destinations (e.g., outside the school gate, inside the shop), and by providing segregation from the road, to protect the ECB from motor-vehicle-assisted theft. Second, increasing the provision of ECB-accessible on-street cycle parking stands could enable convenient and secure anchored parking for ECB owners [24, p.173], reducing the need to use street furniture or park their ECB freestanding.

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[a] 15% of survey respondents reported selling a car/van since purchasing their ECB and 90% reported less car use. 71% of respondents used the ECB for child-related trips at least 3-4 times a week, with 45% reporting the private car as having been the main mode used for these journeys prior to owning the ECB.

[b] 55% of survey respondents indicated that they limit the places that they cycle with the ECB due to parking security concerns.

[c] 71% of survey respondents indicated that cycle parking provision is rarely suited to the shape and size of their e-cargo bike.

4. **Increase the availability of secure off-street public cycle parking compounds**

Many ECB owners seek to park their ECB "away" from the street in a locked, professionally supervised, or publicly concealed enclosure when parking away from their home, particularly for longer durations. Regulated and monitored workplace parking is commonly used, including for personal trips.[a] Where available (e.g. Dublin City [25]), public off-street cycle parking facilities were found to be both secure and convenient for ECB parking, even if they were not always immediately proximate to user destinations.

The provision of more publicly available off-street cycle parking compounds in areas of high demand, complete with ample cargo bike-accessible anchors, could enable greater proximity for private ECB users to a variety of destinations without the insecurity of parking on-street for long periods. Guarded facilities where cycles are checked-in and checked-out with on-site staff could be particularly effective and secure.[b]

5. **Enable secure and convenient residential e-cargo bike storage by relaxing planning regulations for cycle storage sheds and providing on-street, enclosed e-cargo bike accessible parking**

Nearly all ECB owners in the study lived in houses with private space where they could park their ECB. The main spaces used by participants included private sheds (25%) or garages (22%), front gardens (15%), back gardens (13%) and side passages (11%). While interior spaces were used by some participants (12%), this was raised as an impracticality in interviews (and in other research [27,28]). Overall, conveniently located private enclosures (i.e., a garage or shed) were considered ideal for home ECB parking.[c]

The relaxation of local planning regulations for front-of-house cycle storage sheds could help to improve ECB ownership and use by enabling more secure and convenient parking for people living in houses without rear or side access,[d] while potentially improving access to insurance cover by improving compliance with home insurance terms and conditions. Measures to provide on-street, enclosed cycle parking that is ECB-accessible could further enable people living in apartments or terraced houses to purchase and use an ECB, while the incorporation of ECB-accessible cycle parking minimums could support ECB ownership for people moving into new developments.[e]

Mobility

ECB owners can be excluded from protected cycle networks due to design practices that do not accommodate cargo cycles and maintenance practices that threaten ECB users with discomfort, instability, and/or wheel punctures. We make three recommendations to improve the protection of current and future ECB owners from motor traffic and increase the accessibility of existing cycle networks.

6. **Expand the provision of e-cargo bike accessible protected cycle networks**

Similar to conventional cyclists [13,31-33], ECB owners in Ireland experience vulnerability cycling on roads and unprotected junctions, where cycle lanes are either not present or constructed in a piecemeal configuration, leaving users routinely exposed to motor traffic [15].

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[a] 36% of survey respondents who had access to workplace cycle parking used it "often" or "always" for parking their ECB in public.

[b] 42% of respondents voted "Off-street public cycle parking where bicycles are registered and guarded" as their ideal form of public parking for durations greater than 30 minutes, while 39% voted for "Off-street public cycle parking with cargo bike-specific stands". For examples of registered and guarded public cycle parking, please consult [26].

[c] Two thirds of survey respondents reported a private shed or garage as their ideal long-term home parking arrangement.

[d] For more on front-of-home cycle parking planning restrictions in Ireland, please consult [29].

[e] For example, see [30, p.253].

ECBs are primarily used as a vehicle to transport children.[a] As such, ECB owners may feel particularly vulnerable when cycling with children on board and modify their behaviour accordingly. Many participants confined their e-cargo cycling with child passengers to routes with less motor traffic and/or more segregated cycling spaces, which could increase journey distances.[b] In addition, the sudden movement of child passengers can destabilise the ECB, leading some participants to refrain from filtering through static motor traffic, thereby slowing down their journeys.[c] On these grounds, greater provision of (ECB-accessible) protected cycle networks [24,34,35] could enable ECB owners to engage in shorter, safer, and faster child-carrying journeys. This could in turn improve wider public perceptions of ECBs as a safe and convenient vehicle for providing child-related mobility relative to the private car [36].

Further, the ECB was found to be a temporary means of family mobility for ECB owners with children, generally suitable for providing mobility for children up to early adolescence. For some ECB owners, the growing size of their children and their increasing reluctance to be transported by ECB could force parents to eventually switch to a private car [16]. Expanding the provision of high-quality protected cycle networks could enable early adolescents to transition to independent cycle mobility, enabling the "passing on" of cycling from parent to child and the reduction of familial car use.

7. **Retrofit existing cycle networks so they are e-cargo bike accessible**

Local cycling networks encountered by ECB owners in this study overlooked the infrastructural needs of ECB or trike users,[d] indicating a policy disconnect between ECB purchase grants and cycle infrastructure rollout. Exclusionary design features include narrow cycleways, tight cycleway turning radii, narrow filtered permeability arrangements (e.g. kissing gates [35]), and kerbs, steps, and ramps impeding access to, or egress from, cycleways or cycle parking [15]. The design widths of some protected cycle infrastructures were experienced as inaccessible or risky for e-cargo cycling, forcing ECB owners to enter spaces shared with motor traffic.[e] Other participants described how narrow protected cycle infrastructure could impede overtaking [24, p. 24]. To fully open these networks to ECB riders and their passengers, cycle networks should be retrofitted to ensure universal accessibility [1,35,24, p. 14].

8. **Improve standards of cycle network maintenance to improve e-cargo bike accessibility**

ECB riders appear to be particularly sensitive to the surface quality and clearance of cycle (and road) networks relative to non-cargo cyclists [15]. Wet leaves, puddles, potholes, and broken glass were all considered detrimental to using transport networks on an ECB. The heavy weight of a loaded ECB could contribute to discomfort for rider and passenger(s), perceived "wear and tear" and destabilisation. In addition, sustaining a puncture was considered a more severe risk compared to a non-cargo cycle, as wheeling the ECB to a cycle shop for repair or attempting to fix the puncture independently could present major logistical challenges. As a result, puncturing the wheel of one's ECB could leave the rider (and passengers) "stranded". With these sensitivities in mind, improving standards of routine cycle network maintenance is required to ensure that existing cycle networks can be safely and comfortably accessed by ECB riders year-round [37, 24, p.160].

[a] 83% of survey respondents "often" or "always" cycled their ECB with child passengers.
[b] 68% of respondents took the most direct route to their destination "often" to "always" when cycling the ECB without children compared to 38% when cycling with children.
[c] 60% of respondents filtered through motor traffic in congested conditions "often" to "always" when cycling the ECB without children compared to 44% when cycling with children.
[d] 43% of respondents disagreed with the statement "Segregated cycling facilities are easy to enter and exit" when using their ECB.
[e] Nearly all cases of exclusive design relating to cycle mobility infrastructure were raised by ECB owners living and cycling in Dublin. This may be explained by the proliferation of segregated cycling spaces in highly-trafficked locations across the county.

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