Solutions for innovation transfer between countries with different legislative, regulatory and funding regimes: case studies from rural passenger transport projects.

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SOLUTIONS FOR INNOVATION TRANSFER BETWEEN COUNTRIES WITH DIFFERENT LEGISLATIVE, REGULATORY AND FUNDING REGIMES: CASE STUDIES FROM RURAL PASSENGER TRANSPORT PROJECTS

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Rural transport policy from multiple European countries was mapped to inform case studies which illustrate solutions for innovation transfer between differing policy environments. Innovation transfer and rural transport policy implications are included.

1. INTRODUCTION

European programmes such as Interreg are predicated on the principles of demonstration and adoption of innovation, transfer of best practice between jurisdictions, and transnational cooperation to address shared challenges. However, governance, funding, planning and regulation regimes can vary substantially between partner countries within the EU, complicating and – potentially – acting as a barrier to the adoption, implementation, and scaling of best practices from another jurisdiction. These barriers contribute to an already challenging environment within which to transfer innovation and implement new or green transport initiatives (Ward 1984), especially as differing approaches are often required for rural and peripheral areas (Porru *et al* 2020) compared with more urban or populous areas (Shah *et al* 2021), given demographic shifts and evolving travel needs.

As part of the Interreg NSR G-PaTRA project, the partners grappled with how to compare and transfer their diverse transport innovations and this provided the catalyst for the four main pieces of project work summarised in this paper: 1. Development of an innovation scoring matrix to compare and rank the impacts and challenges of the green transport innovations; 2. Following identification of institutional barriers as the most prominent challenge, a mapping exercise examined the legislative, regulatory, and funding frameworks for passenger transport; 3. Development of two case studies (demand responsive bus and transport optimisation); 4. Finally, practical solutions for overcoming the barriers to innovation transfer were developed in a ‘key influencers’ event to work together on solutions with individuals who had the power to effect change in their organisations or regions.

The inclusion of key influencers aimed to achieve political buy-in, which is seen by participants as key to driving innovation and which can overcome the institutional and bureaucratic inertia. The findings will be of interest to practitioners working in this sector. The paper also contributes to the academic discussion around innovation transfer and rural green transport initiatives.

This paper draws on findings from the Interreg NSR G-PaTRA project (Green Passenger Transport in Rural Areas), which concluded in June 2023. The G-PaTRA project sought to promote green transport mobility by enhancing the capacity of authorities to reduce CO2 from personal transport in remote, rural, and island areas. The project aimed to embed more zero emission vehicles and a project extension allowed further work to understand the implications of the COVID pandemic for rural transport systems. G-PaTRA supported a variety of carbon reduction innovation demonstrator projects and case studies, ranging from business cases for hydrogen ferries and rail, using electric vehicles on rural routes, demand responsive transport and car sharing, and the use of smart data to optimise available transport resources and drivers.

2. METHODS

Within the project, an innovation scoring method was developed to identify and categorise the major barriers and facilitators of innovation transfer, sorting them into technical, institutional, operational, and social categories. While good practice was demonstrated, it was found that the transfer of innovation was particularly impacted by different transport governance regimes in terms of funding, subsidy ownership and planning of services and vehicles and the extent to which transport was regulated, and the local governance structures (and the roles and relationship between national, regional, and local bodies). These were termed ‘institutional’ barriers, and they by far presented as the most challenging barriers to innovation transfer within this rural passenger transport context.

The innovation scoring took inspiration from a number of sources and the development of the rubric is covered in a prior project report (Gray et al 2023).

Similarly, the mapping of legislative, regulatory, and funding frameworks has already been covered in a project output (Baxter, 2022).

The case studies align with Yin’s (2018) definition of case study research as ‘empirical inquiry that investigates a contemporary phenomenon (the ‘case’) in depth and within its real-work context’. Given space constraints for this conference paper, only an overview of the work is given.

The key influencer event saw twelve influencers from the project partner countries arrive in Scotland in May 2023 to workshop practical solutions alongside the project members.

3. FINDINGS

3.1 Innovation Scoring Rubric

Firstly, a summary of the categories of innovation agreed by the project partners is outlined below:

- Social involves the change/ disruption to people and their existing travel behaviours, habits, norms and expectations;
- Operational concerns disruption to how transport is administered in terms of number of drivers and vehicles required to operate a network, shift patterns, timetabling, range and refuelling frequency, maintenance, training etc.
- Technological – new technological kit, vehicles, software hard, bandwidth etc and the complexity, effectiveness and resilience of the new system;
- Institutional – the extent to which an innovation requires a transport authority and its stakeholders, partners and transport providers to change/adapt its bureaucracy, processes, procurement etc and the amount of work required to comply with or adapt regulations and legislation. Essentially – the extent to which an innovation requires people to things are not 'core business'.

As can be seen in the bar chart below from the innovation scoring report, the area which caused the most disruption was institutional, closely followed by operational, and then technological. The social category scored last overall. This result informed the next stage of the project and created a focus of the remaining project activities.

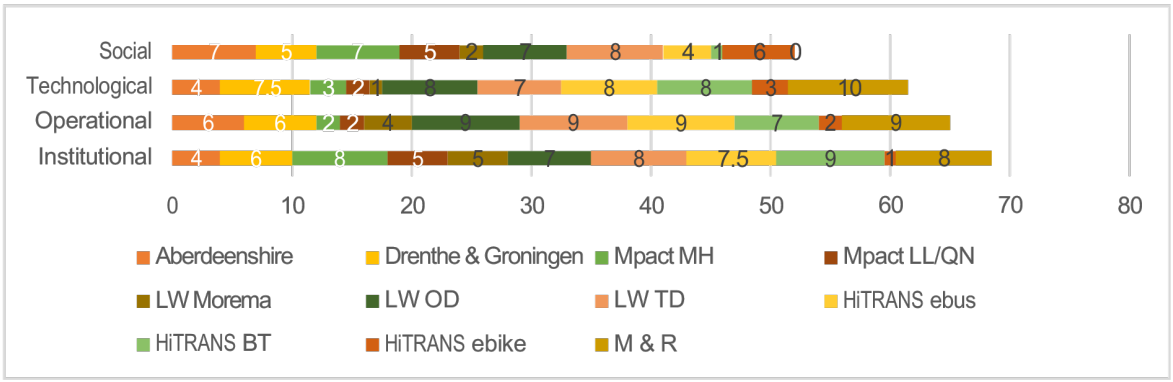

Figure 1. innovation scoring of G-PaTRA project lighthouse demonstration projects

The institutional dimension encompassed the following: disruption to the institutional practices and processes of more than one organisation; implications for a number of other public sector functions –land use planning, health and social care, education, etc.; new skills, knowledge, funding mechanisms and/or procurement regimes; institutional alignment within transport authority and across stakeholder organisations to progress; opposition from senior management, sceptical elected politicians and/or colleagues, for whom the innovation is not core business; legislative or regulatory change from regional or national Government.

Discussions around the various facets of the institutional barrier to innovation transfer revealed that there were few easy solutions, and it was a persistent challenge facing the project partners.

3.2 Mapping the legislative, regulatory, and funding frameworks

This work found that each of the six G-PaTRA partner countries (Belgium, Denmark, Germany, Netherlands, Norway, Scotland) has its own distinct and complex system of public transport regulation, administration, and operation. While there are some similarities between certain aspects of the countries' approaches, there are also some notable distinctions which impacts upon innovation transfer.

Key aspects of public transport policy and administration included: the presence or absence of a national integrated transport strategy, regional strategy, and/or local strategy; the presence of absence of regional transport bodies; differing contract types; differing subsidy levels; and the approach to concessionary fares.

Differing responsibilities for procurement and operation of various travel modes were also mapped, including local and regional bus services; metro; tram and light rail; express coaches; ferries; and national and regional rail. The report noted many similarities, and yet found that each are operating under a distinct framework and this adds to the complexity when adopting innovations in different regions.

Note also that the circumstances outlined in the mapping report were correct as of early 2022, yet the overall legislative, regulatory, and funding situation country-by-country is a fluid one, subject to (relatively sudden) change on the arrival of new governments or new policy directions. This fluidity impacts upon the ability to implement innovations within the public transport network.

3.3 Case study summaries

<u>Demand responsive transport (bus)</u>

This case study examined the challenges of rolling out demand responsive bus services (DRT) in the partner countries. Challenges most relevant to this conference paper were noted where there was presence of: a deregulated bus market, financial benefits influencing choice of area; competition clauses; influential commercial operators; poor cost per passenger as a result of large rural service areas. It was felt that while developing and maintaining the technology had been a challenge and community resistance was initially high, there were ready solutions for these problems (better software, and involving the community in planning, respectively), but these 'institutional' i.e. related to the specific legislative, regulatory or funding regime challenges were particularly tricky to overcome if they were present. It is suggested that revising passenger transport strategy, learning from different DRT delivery scenarios, and running smaller pilots would help to overcome these issues.

<u>Transport optimisation software</u>

This second case study considered the how transport optimisation software innovations may encounter challenges through the differing legislative, regulatory and funding regimes in the project partner countries. Difficulties around insurance and

contracts; integrating into the regional transport strategy; political buy-in to the concept; the cost of data and smaller regions power to access this data were noted. However, transnational cooperation was regarded as an effective solution – particularly around getting political buy-in by proving the concept. Additionally, working outside silos in neighbouring regions increased capacity to invest in data to power transport optimisation innovations.

3.4 Practical solutions from the key influencers summit

The aim of the summit was to invite project team representatives and key influencers from the regions participating in projects to reflect on lessons learned from the programme of activity and explore future development opportunities for rural public transport.

To give examples of the types of key attendees, or 'influencers', who attended the event, the influencers invited were individuals who work on transport related issues in their roles in departments of transport, local authorities, county councils, third sector transport organisations, funding bodies, transport partnerships, and similar bodies and organisations and their equivalents in the partner countries. These individuals were selected by the project partners in their respective countries as it was felt that partners would have local knowledge of the regulatory, legislative and funding landscape in their regions and could identify the best individuals or positions to target to effect influence.

The summit, which took place in Orkney on 8th & 9th May 2023, saw workshop participants discuss four key questions:

- What are the significant impacts across G-PaTRA projects to date?
- How could impact be scaled across G-PaTRA projects by 2030?
- What barriers to scaling are shared across projects?
- How can we overcome these barriers?

Significant impacts from G-PaTRA's efforts were identified and an overview of the main points from the workshop discussions relevant to the institutional focus of this paper are given in the tables below.

Table 1. Significant impacts of G-PaTRA work (institutional focus)

Awareness of…	Behaviour and mindset change…	Progress	Engagement with…
the importance of data	in project participants better using data for planning and making decisions	'baby steps' to combining travel journeys	Hard to reach partners and players
the complex challenges associated with tackling climate change	Through sharing information and working across silos	Development of Business cases	Governments and other players who show support for public transport but affordability is a major challenge
Understanding the place context and identifying gaps in provision		Sown the seeds for future impact	

The significant issues of health and aging population and its effects on transport needs		Lessons learned	
a wider world of impacts (COVID, cost of living, energy prices, larger polluters) which limit the extent to which projects like G-PaTRA can make a difference.		incremental small-scale change through lighthouses	

The identification of these impacts led to discussions about the potential to scale, the barriers to impact, alongside some recommendations for overcoming these impediments to greener public transport.

Table 2. Scaling impact of G-PaTRA work by 2030 (institutional focus)		
Opportunities for more impact	Threats to public transport interventions	Change
Interactions with the social inclusion agenda	Funding is inconsistent or short term	Walking, cycling and public transport must become a fundamental baseline in all regions
Interactions with the health agenda	Rural area budgets are vulnerable due to low demand for services therefore cost should be at the forefront of solutions	Maintaining and enabling rural areas to be quality, liveable, places with services valued by society
Bottom-up challenge and top-down targets identification that focuses on getting buy-in at all levels	Green is often not the only or biggest challenge – health, age, finances are huge issues	More focus on learning by doing and trying things at a local level.
		Integrated planning
		Place-specific impacts and interventions

As can be seen from the two previous tables, the key influencers summit members collectively felt that there had been impacts from the G-PaTRA project work and there were opportunities for further impacts. However, a number of barriers or 'threats' to this work were also identified and time was taken to workshop potential solutions for these. The three main institutional threats were: inconsistent and short-term funding/finance; the wider scope of issues at hand (i.e 'green' is not the only issue); and place or local barriers.

<u>Solutions for financial barriers to transport innovations</u>
Discussion around this barrier highlighted that there is an opportunity to learn from the private sector through partnership relationships which are less risk averse. In addition to this, they (the private sector) are better at convincing the public and policy makers of the need for change and perhaps the public sector could learn from this approach.

Additionally, influencing existing resources in new ways was also discussed and it was acknowledged that there is a need for long term initiatives to effect real change. Most tellingly, it was agreed that projects are 'probably not the solution'. This is perhaps a shocking outcome given the venue for this discussion: a workshop hosted by one such project. However, there was widespread agreement at the event that there is a need to find ways to work out how long-term planning fits into a democracy where governments are 'rewarded with votes based on short term deliverables'. A potential

solution to this was put forward through being mindful of new 'buzz words' (and the concept that lie behind them). It was suggested that this could unlock further funding and pique the interest of governmental and other crucial bodies. However, in generating 'buzz' there is a danger of falling prey to the political obsession with 'cutting the ribbon followed by little interest', and therefore genuine, lasting engagement with key political individuals (or their position) was required.

While longer-term thinking and planning was deemed to be key, demonstration of a concept on a small scale (at a small cost) was acknowledged to be beneficial in persuading key individuals (and communities) of the benefits of an innovation. As such, the G-PaTRA approach (which focussed on 'lighthouse demonstrations' of pilot projects and business cases) would perhaps prove to have merit.

Addressing that green transport is not the only or biggest challenge, it was discussed that there is a need to combine multiple benefits of any innovations. For example, the focus may be on CO2, but innovations may also help to achieve Health and Social targets. The group felt that, overall, it's not the money that is important but the type of funding, and new models of green financing are needed to address the inter-connected nature of the challenges society is facing.

Solutions for policy barriers

Group discussion highlighted the need to accept that a new tipping point is required – if we want to shift policy at all levels and this could be framed around the ageing population (a time bomb for all areas in which community resilience with good public transport for communities and care workers is needed). Again, acknowledgement amongst the group that this a health and care issue with significant financial implications if not addressed right and transport has a big role to play. Encouraging thinking through a wider lens or through grappling with the larger issue of the day would lead to joined-up thinking, and vertical policy alignment with a clear policy and finance framework.

Solutions for place/local barriers

Discussion for this barrier highlighted the need to not impose solutions locally but to engage and empower communities to develop their own 'Carrots and Sticks'. However, there is also a need to balance this with joined-up policy. This would appear to be contradictory, but it was suggested that guidance could be provided for local communities and assurance put in place so that local communities can create what that specific community needs. There is little that can be done about the differences between areas, and it is important to understand the opportunities of a particular local area and balance them with needs and wishes. Key to this understanding is data and engaging with the local community.

Aligned with this idea is the need for not only financial resource, but knowledge resource, particularly knowledge around delivering and maintaining services, to ensure service success. It was also suggested that aspects of the circular economy mindset is needed to stop 'financial and project inefficiencies' and focus on the larger

picture. Finally, cost should be foremost in the considerations when considering roll-out of passenger transport innovations, as rural budgets are particularly vulnerable due to the low demand for services.

4. SUMMARY AND CONCLUSION

This paper has summarised several years' work by the G-PaTRA partnership, focussing on the institutional impacts on innovation transfer – particularly the issues which arise when negotiating different legislative, regulatory, and funding regimes. It summarised four main pieces of project work: 1. An innovation scoring exercise; 2. A context mapping which looked at the differing regimes in the partner countries; 3. Case studies focusing on two types of passenger transport innovation; 4. Workshop-generated solutions for these challenges.

The landscape is complex, and fast-moving, and it can often seem like the easier route is to resist change and keep the status quo. Yet, this bureaucratic inertia can lead to poor service delivery, and innovations which address current and future challenges could hold the key to reducing Co2 and other green targets, reducing cost, and meeting wider societal needs such as health or social care outcomes and responding to the difficulties of an aging population.

The key challenge around innovation transfer of green passenger solutions was identified as institutionally based – it is mired in the complexity of the different legislative, regulatory and funding regimes across countries in Europe and the UK. While there are similarities which can assist in transfer, usually the differences mean an innovation would not succeed in another area.

Within the institutional domain, there were three main considerations identified: inconsistent and short-term funding or buy-in, the wider scope of issues at hand (i.e 'green' is not the only issue), and place-based issues. Firstly, as alluded to in an earlier paragraph, there are larger societal challenges than just 'green' and 'green transport', including: aging populations, the recent pandemic, the more recent energy crisis, and the current cost-of-living crisis among others. Interventions aiming to reduce CO2 or make a passenger service more 'green' in other ways must be mindful of their limited scope and have to work within this challenging environment. Second, short term funding can lead to short term impact and gaining momentum or traction is exceedingly difficult in this environment. Third, often, a local solution is necessary, and this must consider local needs, constraints, regimes, and additional context. Particular care should be given around vulnerable rural services and budgets, as low demand means these budgets can be threatened when there are pressures on local and national budgets.

The solutions suggested for these were interconnected and often solved more than one element of the institutional barriers. Firstly, data is key and developing localised place-based services based on community need is crucial. Additionally, while engaging with the community, involving them in service planning, and finding out their

needs (hopefully leading to bottom-up support), top-down buy-in is vital. Trying to appeal to people with influence could be beneficial, but also broadening focus beyond CO2 reduction or other green passenger goals and acknowledge the cross-agency benefits of some of the innovations, health and social care for example. Positioning innovations in this way should encourage vertical policy alignment.

While short-term projects and funding can lead to short-term impacts, incremental progression is still progress and they can be used as a 'stepping-stone' to bigger projects with bigger budgets, and also lead to lasting change in policy and strategy. Showing proof of concept, whether that is an example of a pilot operating elsewhere or a business case example, can get the right people in the same room talking – even if there are vast differences between the regimes or approaches.

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Solutions for innovation transfer between countries with different legislative, regulatory and funding regimes:

Case studies from rural passenger transport projects

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ETC conference, Italy, September 2023

Presentation overview

- Introduce the project and background to the work undertaken
- Outline the approach and methods of the four main pieces of work:
  1. *Innovation scoring;*
  2. *Mapping of legislative, regulatory and funding frameworks;*
  3. *Case studies;*
  4. *Practical solutions.*
- Discuss the results
- Summarise and conclude

Interreg North Sea Region G-PaTRA
European Regional Development Fund
EUROPEAN UNION

Priority 4: Promoting Green Transport and Mobility

G-PaTRA – Green Passenger Transport in Rural Areas – will promote green transport and mobility by enhancing the capacity of authorities to reduce CO2 from personal transport in remote, rural and island areas. It will embed more zero emission vehicles in rural transport systems and improve available passenger transport resources.

Total budget received from European Regional Development Fund: **€1.82 million**

Total project budget: **€3.9 million**

@GPaTRA_Interreg @gpatrainterreg @gpatrainterreg

northsearegion.eu/g-patra

Interreg North Sea Region G-PaTRA
European Regional Development Fund
EUROPEAN UNION

What is G-PaTRA?

- Green Passenger Transport in Rural Areas (G-PaTRA)
- Aimed to reduce CO2 and embed more zero emission vehicles.
- Project extension allowed further work to understand implications of COVID-19 pandemic

Project partners

- Robert Gordon University (UK)
- Rijksuniversiteit Groningen (Netherlands)
- Aalborg Universitet (Denmark)
- Amt fur regionale Landesentwicklung Leine-Weser (Germany)
- The Highlands and Islands Regional Transport Partnership (UK)
- Urban Foresight Limited (UK)
- Mpact (formerly Taxistop) (Belgium)
- Aberdeenshire Council (UK)
- Provincie Drenthe (Netherlands)
- Provincie Groningen (Netherlands)
- Møre og Romsdal fylkeskommune (Norway)
- Nasjonalt Vindenergisenter AS (Norway)
- Smøla Nærings- og Kultursenter KF (Norway)

Background

- European programmes involve demonstration and adoption of innovation, transfer of best practice between jurisdictions, and transnational cooperation to address shared challenges.
- However, governance, funding, planning and regulation regimes can vary between partner countries.
- This complicates and – potentially – acts as a barrier to the adoption, implementation, and scaling of best practices from another jurisdiction.
- The project grappled with how to compare and transfer diverse passenger transport innovations.
- The project partners likened this to:

'trying to compare apples and oranges'.

Approach and methods

1. Innovation scoring matrix:

   Gray, D. et al (2023) Report on scoring innovations in green passenger transport. Available from: bit.ly/43IwX80

2. Mapping the context:

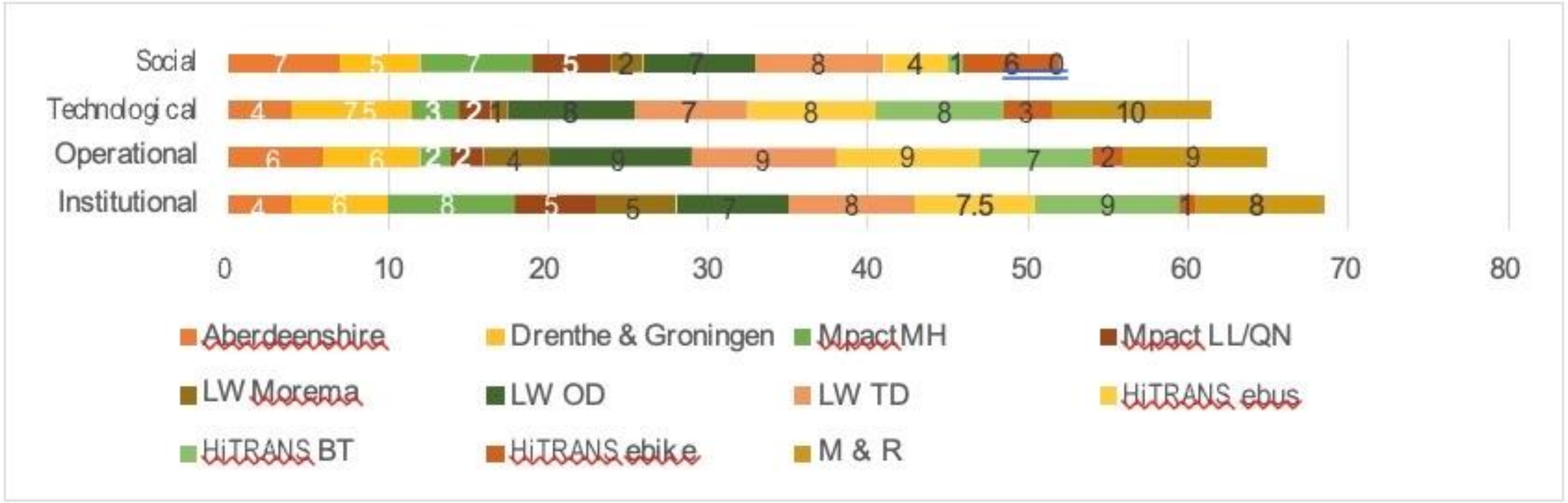
   Baxter, G. 2022. Mapping the Legislative, Regulatory and Funding Frameworks for Passenger Transport in the Six Partner Countries. Available from: bit.ly/459iEuc

3. Case studies (demand responsive transport and transport optimisation)

4. Practical solutions (workshop with key influencers' - individuals who had the power to effect change in their organisations or regions).

Findings 1

1. Innovation scoring



Findings 2

2. Mapping the legislative, regulatory, and funding frameworks

- Each of the six G-PaTRA partner countries (Belgium, Denmark, Germany, Netherlands, Norway, Scotland) has its own distinct and complex system of public transport regulation, administration, and operation.
- Key aspects of public transport policy and administration included: the presence or absence of a national integrated transport strategy, regional strategy, and/or local strategy; the presence of absence of regional transport bodies; differing contract types; differing subsidy levels; and the approach to concessionary fares.
- Differing responsibilities for procurement and operation of various travel modes were also mapped, including local and regional bus services; metro; tram and light rail; express coaches; ferries; and national and regional rail. The report found many similarities, but each operates under a distinct framework and becomes complex when transferring innovations.
- Fluid situation

Findings 3

3. Case studies

Demand responsive transport – bus

- Challenges: deregulated bus market; financial benefits or limitations influencing area of operation; competition clauses; influential commercial operators; poor cost per passenger as a result of large rural service areas.
- Technology used was often inhibiting, but there were solutions including better fit software, training staff and increase personnel support for manual elements.
- Overcoming barriers would involve: revising passenger transport strategy; learning from different DRT delivery scenarios; and smaller pilots which don't exacerbate the financial constraints.

Transport optimisation – software

- Challenges: insurance and contracts, integrating into the regional transport strategy; political buy-in; cost of data and buying power of smaller regions.
- Solutions include: transnational cooperation helps particularly proof of concept and political buy-in; and working outside silos with neighbouring regions to increase capacity to invest in costly data to power the optimisation software.

Findings 4

4. Practical solutions from the key influencers summit - overview

The summit, which took place in Orkney on 8th & 9th May 2023, saw workshop participants discuss four key questions:

- What are the significant impacts across G-PaTRA projects to date?
- How could impact be scaled across G-PaTRA projects by 2030?
- What barriers to scaling are shared across projects?
- How can we overcome these barriers?

The three main institutional threats were:

- Inconsistent and short-term funding/finance;
- The wider scope of issues at hand (i.e ‘green’ is not the only issue);
- and ‘place’ (or local barriers).

Findings 5

4. Practical solutions from the key influencers summit - solutions

<u>Solutions for financial barriers to transport innovations</u>

- Learn from private sector (less risk averse and better at convincing public and policy makers)
- Long term initiatives
- Buzz words for funding
- Small scale demonstrations
- Combining benefits – cross-agency solutions
- New models of green financing

<u>Solutions for policy barriers to transport innovations</u>

- New framing considering the ‘bigger picture’ and joined-up thinking, vertical policy alignment

<u>Solutions for place/local barriers to transport innovations</u>

- Local solutions for local communities
- Data and engaging with local community
- Empowering communities to develop own ‘carrots and sticks’ for green transport.
- Build knowledge resource in communities
- Cost at forefront
- Consider the circular economy.

Summary

- This paper has summarised several years' work by the G-PaTRA partnership, focussing on the institutional impacts on innovation transfer – particularly the issues which arise when negotiating different legislative, regulatory, and funding regimes.
- It covered four main pieces of project work:

1. An innovation scoring exercise;
2. A context mapping which looked at the differing regimes in the partner countries;
3. Case studies focusing on two types of passenger transport innovation;
4. Workshop-generated solutions for these challenges.

Further information can be found in project outputs.

Concluding remarks

- Regulatory, legislative and funding regimes are complex, varied across countries and change frequently.
- Innovation and innovation transfer within this context is difficult.
- Key challenges – in the institutional area which is the focus of this paper – are inconsistent and short-term funding or buy-in; wider scope of issues; and place-based issues.
- Solutions are interconnected and solved more than one element of the institutional barriers:
    - data is key
    - local focus and bottom-up support
    - joined-up thinking and top-down buy-in
    - cross-agency and bigger picture focus
    - small pilots but longer-term planning, moving away from ‘projects’

Many thanks for listening!

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