



# Re-energising Wales

Decarbonising  
Transport in Wales



MAKING  
WALES  
BETTER



GWNEUD  
CYMRU  
WELL

**MAKING  
WALES  
BETTER**



**GWNEUD  
CYMRU  
WELL**

### **About the IWA**

We are the Institute of Welsh Affairs, Wales' leading think tank. We challenge, inspire and drive change, making Wales a better place to live and work for everyone.

We are independent of government and political parties.

We bring together experience and expertise from all backgrounds to collaborate on the most important issues facing Wales.

We come up with ambitious but practical and informed ideas to improve the economy, education, governance, health and social care and the media.

Our vision is to create a Wales where everyone can thrive.

For more information about the IWA, its policy work, and how to join, as either an individual or corporate supporter, contact:

IWA - Institute of Welsh Affairs, 56 James Street, Cardiff Bay, CF10 5EZ  
tel: 029 2048 4387 | email: [wales@iwa.org.uk](mailto:wales@iwa.org.uk) | [www.iwa.wales](http://www.iwa.wales)

© IWA, June 2018

Design: [www.theundercard.co.uk](http://www.theundercard.co.uk)

# About Re-energising Wales

The Institute of Welsh Affairs' 'Re-energising Wales' project is a 3 year project (April 2016-April 2019) that will deliver a plan to enable Wales to meet its projected energy demands entirely from renewable sources by 2035.

This transport paper is the second of a series of short papers published as part of 'Re-energising Wales'. The first focused on '**Funding Renewable Energy Projects in Wales**'.

These two papers explore links between the six core workstreams of 'Re-energising Wales':

## 1 Energy Demand

We have **established a framework** to collect and report on operational energy demand data, in order to help collate temporal and geographical data and better understand what drives energy demand.

## 2 Developing a future energy systems vision

We have used the Swansea Bay City Region (SBCR) as a case study exemplar, **showcasing how the SBCR** can maximise the size and location of its renewable energy resources in order to meet its projected energy demands by 2035. Lessons from this will be applied across Wales.

## 3 Setting the economic parameters

We will assess the investment and economic impacts of developing a robust, fit-for-purpose and sustainable renewable energy supply.

## 4 Social and Community Issues

We will assess the values behind community engagement in energy saving and generation, and how to overcome the barriers to increasing local ownership of renewable energy assets.

## 5 Regulatory and political challenges

We will assess what powers are required for a new renewable energy regime to be implemented well.

## 6 A delivery plan

We will create a detailed, timed, and costed action plan for developing a credible renewable energy programme for Wales which brings together findings from the project.

The 'Re-energising Wales' project is supported by the Hodge Foundation, the Friends Provident Charitable Foundation and the Polden-Puckham Charitable Foundation.



## About the author

Chris Roberts has spent most of his working life in Welsh politics and government. He worked for Welsh Labour in both north Wales and the Valleys, and was General Secretary of the party from 2005 to 2010. In 2010 he became a Special Adviser to the Welsh Government working initially on public service reform, then on transport and latterly on natural resources. He was the Special Adviser for three key pieces of Welsh legislation: the Active Travel Act, the Planning Act and the Well-being of Future Generations Act as well as the initial stages of the Environment Act. He played a lead role in the establishment of the Public Policy Institute Wales and the development of the Tackling Poverty Action Plan.

Chris is passionate about sustainable transport. He worked for Sustrans Cymru as their Head of External Affairs from 2015 to 2016 and is currently Secretary of the National Assembly for Wales' Cross Party Group on the Active Travel Act.

# Contents

	Foreword
<b>1</b>	Executive Summary
<b>6</b>	Key Recommendations
<b>9</b>	The Transport Decarbonisation Plan
<b>12</b>	Introduction
<b>16</b>	Chapter 1: Context
<b>16</b>	Transport Decarbonisation in Wales
<b>17</b>	Transport in Wales
<b>21</b>	Transport Data
<b>22</b>	Rurality
<b>23</b>	Transport Policy in Wales
<b>23</b>	Wales' Powers over Transport
<b>25</b>	Transport Governance
<b>29</b>	Conclusions on Governance
<b>32</b>	Chapter 2: Transport Decarbonisation Measures
<b>32</b>	a. Reducing the Need to Travel
<b>38</b>	b. Active Travel
<b>47</b>	c. Public Transport
<b>61</b>	d. Cars
<b>75</b>	Conclusion
<b>77</b>	Appendix 1: Interviewees

# Foreword

Decarbonising transport will make a huge contribution to Wales' success in meeting its projected energy demands entirely from renewable sources by 2035. The transport sector has considerable potential to address pressing concerns relating to health, the economy, climate change and equality. Transport also has a massive impact on the way we plan our lives; more sustainable choices could be our route to a healthier and happier lifestyle.

Despite agreement on the important contribution transport makes to Wales' future prosperity and sustainability, there are divergent opinions on which interventions to pursue. We have used the IWA's convening power to bring together diverse opinions and expertise to develop an informed perspective on how the transport sector in Wales can be improved for future generations.

The Welsh Government is currently developing a new transport strategy, and we hope this paper will contribute to their consideration of these issues and to their plans for renewed action. We believe that this report sets out a number of compelling recommendations that, if implemented, will significantly and positively impact Wales' transport sector.

We would like to thank Chris Roberts for his work conducting this research and preparing a compelling, evidence-based vision for transport in Wales.

We would also like to extend our thanks to all those individuals and organisations who have participated in interviews that have helped develop this contribution to the debate.

**Shea Buckland-Jones**

Re-energising Wales Project Coordinator

## Executive Summary

Wales is required by its own Environment (Wales) Act 2016 to reduce carbon emissions by at least 80% by 2050. Transport accounts for 13% of Wales' emissions. In the 2008 Climate Change Strategy, Wales set out how it intended to cut transport emissions. That strategy has failed to achieve any significant reduction - emissions from transport are flatlining. Wales needs a radical new approach to transport if it is to achieve its target. Most emissions emanate from the private car. The car is also a key barrier to more people using the less polluting and more sustainable modes: active travel and public transport.

This paper argues that it is only by changing its relationship with the automobile that Wales can hope to meet its environmental targets. The paper sets out why and how that change should be achieved and does so in accord with another key Welsh law, the Well-being of Future Generations (Wales) Act 2015. The Act requires public bodies, when taking action to decarbonise, to use interventions that also help to achieve the national goals set out in the Act. Consequently the paper examines how actions that reduce emissions also impact on areas such as health, the economy and equalities and makes recommendations based on achieving the maximum benefit for all of the national goals.

Transport in Wales is dominated by the car, more than in any other region or nation in the UK. Bus services in Wales are in serious long-term decline. Rail serves only a very small part of the country and, whilst growing, has less than a fifth of the passenger journeys of buses. Despite the Active Travel (Wales) Act 2013, walking and cycling levels are generally static or declining. Given that the sale of new petrol and diesel cars is to be banned from 2040, there is a clear need for managed change in Wales' transport system.

## Transport Decarbonisation Plan

At the heart of the paper is a call for a 'Transport Decarbonisation Plan' to be co-produced by key public bodies and the transport sector. It should set out a comprehensive route map to wean our transport system away from its over-reliance on the car and towards much greater use of active travel and public transport.

## Transport Governance

The paper examines the governance of transport in Wales and argues that much of the reason for the failure to achieve its long-standing sustainable transport ambitions lies in the incoherence of the governance structure. Welsh Government sets policies, but it is left to local authorities in the greater part as to whether they are implemented. The funding structure in particular provides little leverage to ensure national priorities are realised at a local level.

With 22 generally small local authorities, effective transport planning requires a regional structure. However, the regional structure that had developed was dismantled by Welsh Government in 2014 and is only now being recreated. Welsh Government has also recently created a new delivery vehicle for transport in 'Transport for Wales'. Transport for Wales has successfully managed the process of granting the first fully devolved rail franchise for Wales, including the new South Wales Metro.

The paper argues that there is an urgent need to strengthen transport governance by formalizing the new Regional Transport Authorities and clarifying the relationship between them, local authorities and Transport for Wales. The paper also recommends that the governance and role of Transport for Wales be strengthened under a more diverse, independent board. To bring about that change and manage the major transport projects that Wales needs to undertake, we recommend that, for the first time in its history, Wales should have a separate Minister for Transport, bringing it in line with the other devolved administrations.

## The Figures

Any attempt to change the way Wales travels is severely hampered by the lack of statistics on how and why people travel. The UK Department for Transport's National Travel Survey, which interviews a large sample of the population about their travel habits, withdrew from Wales in 2013 and Welsh Government have not filled the gap. The paper calls for Wales to introduce a new travel survey urgently and also to ensure that transport features in the National Indicators drawn up to monitor progress on the well-being goals as part of the Well-being of Future Generations (Wales) Act 2015. Transport gets no mention in the current 46 indicators.



## Decarbonisation Measures

In setting out the measures Wales needs to adopt, the paper utilises the sustainable transport hierarchy, working down through: measures that reduce the need to travel; active travel; public transport and finally alternatively fuelled cars.

### a. Reducing the Need to Travel

The planning system in Wales needs to embrace the sustainable transport hierarchy, seeking to design communities that minimise the need to travel and that prioritise public transport and active travel. However, the paper finds that in practice the central policies set out in Planning Policy Wales (Edition 9) often fail to be implemented on the ground. The paper proposes a strengthening of the planning system and financial measures to allow sustainable transport infrastructure to be installed in new developments at an early stage.

Commuting is a major contributor to transport emissions; allowing more people to work from home has the potential to make a significant contribution to carbon reduction. Similarly, allowing greater flexibility in working hours will make it easier for workers to travel by active travel and public transport, particularly if they have to combine work with caring responsibilities. The paper recommends that public sector employers should take the lead in developing more flexible working patterns.

### b. Active Travel

The paper examines the potential for the development of active travel as an alternative to the car and the barriers to its growth, concluding that the principal deterrent to walking and cycling is fear of conflict with motor traffic. It makes recommendations for strengthening implementation of active travel measures, greater levels of investment and improved integration with public transport. Active travel makes a significant contribution to a number of the well-being goals, most notably health. Wales has the lowest levels of physical activity in the UK.

### c. Public Transport

#### Buses

Bus services in Wales have suffered a period of steady decline. The paper examines the reasons for that decline, from cuts in public funding, to congestion caused by rising numbers of cars and the impact of car ownership itself. It proposes a new form of funding bus services and advocates greater investment in bus priority measures. Buses could make a more substantial contribution to decarbonisation if the vehicles were powered by more sustainable energy forms. Wales has been significantly behind the rest of the UK both in establishing its own green bus fund to aid the purchase of more environmentally friendly buses and in accessing the new funding made available by the UK Government through the Office of Low Emission Vehicles.

In the 2016 Government of Wales Act, Wales acquired the power to regulate bus services in Wales and end the free market in bus travel. The paper strongly supports the adoption of a regulated, franchised system for buses in Wales, arguing that the free market in buses works against decarbonisation since it relies on two or more partly empty buses running on the same route emitting twice as much carbon as one full bus.

Despite the problems of the bus industry, buses continue to play a vital social and economic role and make a particularly important contribution to the equalities goal, providing vitally important transport for the one third of households who do not have access to a car.

## **Rail and the Metro**

The announcement of the new franchise came during the drafting of this paper. The initial plans have been warmly welcomed. However, the plans for development of services beyond the current heavy rail lines remain quite vague. It is clear that full electrification is no longer part of the plans with the use of combined diesel and battery powered trains being preferred for some lines.

The deal with the UK Government has resulted in Welsh Government taking responsibility for rail infrastructure in Wales for the first time. This will allow greater flexibility than had it been controlled by Network Rail, permitting a more imaginative mix of light and heavy rail and trams. The Metro will only function effectively if it employs buses as well as rail. At the moment it is unclear how those bus services will be provided or what impact the new services might have on existing bus operators such as Cardiff Bus. Early indications of plans for carrying bikes on trains do not show great ambition.

## **d. Cars**

### **Reducing car use**

The large numbers of cars on Wales' roads, both moving and stationary, are major barriers to increased use of active travel and public transport. The paper examines options for reducing car use and mitigating its negative effects. It recommends much greater application of 20mph speed limits, a review of parking policy and consideration of ways of increasing the costs of car use to bring it closer in line with public transport which has seen considerable price increases over recent years.

Key to securing a more rational approach to choice of transport mode is changing the relationship with the car, stripping away its role as a status symbol. Crucial to this would be a move away from private ownership to a pay per use model. Removing the major upfront cost of the initial purchase of a car and incorporating it into the cost per mile of each journey would facilitate greater use of public transport, particularly in urban areas.

Finally, the significant health impact of the car is examined, particularly the tide of obesity and associated diseases arising from the sedentary lifestyle the car encourages, the increasing concerns over air quality and the toll of deaths and injuries arising from collisions with motor vehicles.

### **Electric Vehicles**

The paper recognises the important contribution that electric vehicles (EVs) could make to decarbonisation but does not accept that they are a panacea. When analysed in the light of the Well-being of Future Generations Act it is clear that the more sustainable transport modes make a greater contribution to more of the national goals.

How low emissions are for EVs can be significantly impacted by how the electricity is generated. The paper considers some of the obstacles to EVs in Wales including the higher cost of the vehicles, the capacity of the grid and the sparsity of charging points.

The paper argues for the prioritisation of investment in EVs in rural areas, where the absence of effective alternatives makes the use of the car essential. But even here there are opportunities to move to shared or community ownership, reducing the number of vehicles on the roads. It warns of the danger of Wales falling behind if there is not an effective plan to provide EV charging infrastructure.

The advent of the EV poses a major challenge to the Welsh economy which has a significant automotive sector currently devoted to petrol and diesel vehicles with no certainty of a role in the production of the new vehicles. The paper calls for a strategy to help Welsh industry meet the challenge of the new technology.

## Conclusion

The paper concludes that only by having a comprehensive Transport Decarbonisation Plan can Welsh Government lead the transformation in Wales' transport system that is required if we are to meet the multiple challenges that the Well-being of Future Generations Act sets for us.

Ultimately, the plan must be radical both in its origination - co-production is essential - and in the thoroughness of its implementation. It must go far beyond the scope of past Welsh Transport Strategies, working across the public sector to encompass the full impact of transport on the economic, social, environmental and cultural life of Wales.

# Key Recommendations

In order to significantly improve and decarbonise the transport sector in Wales, the IWA recommends that:

## Transport Decarbonisation Plan

---

1. Welsh Government needs a long term comprehensive Transport Decarbonisation Plan to wean our transport system away from its over reliance on the car and towards much greater use of active travel and public transport. The plan should be co-produced with local authorities, regional transport authorities and organisations representing the planning profession, pedestrians, cyclists, the bus and rail industries, power distribution companies and the automotive industry. The plan should be in place by the end of 2019, in line with Welsh Government's 'Low Carbon Delivery Plan' which is being developed as part of the carbon budgeting process as required by the Environment (Wales) Act 2016.

## Transport Governance

---

2. Welsh Government should accelerate the development of Regional Transport Authorities, clearly setting out their purpose, governance and financial arrangements as well as their relationship with Transport for Wales, local authorities and Welsh Government. The new structure should be fully functional before the next local authority elections in 2022.
3. Welsh Government should clearly set out its long term plans for Transport for Wales, working with local authorities to allocate future transport roles. It should also ensure that by the end of this Assembly term, Transport for Wales has a new governance structure providing clear accountability to the Minister through an independently appointed, diverse board. Transport for Wales should become the delivery vehicle for all but minor transport projects in Wales, working with local authorities through strengthened Regional Transport Authorities to ensure that Wales-wide policy priorities are delivered effectively and in accord with local needs.
4. Wales should have a Minister for Transport, to consolidate governance of the transport system, develop the role of Transport for Wales and provide leadership. This is in recognition that the role of the transport department in Welsh Government has to move from being an administrator of systems to an initiator of change. This should happen following the appointment of Wales' new First Minister.
5. Welsh Government should commission a national transport survey with a sufficiently large sample to collect high quality transport data which would allow accurate analysis down to local authority level. The first survey should be undertaken as quickly as accuracy permits to establish a baseline for the Transport Decarbonisation Plan. Any forthcoming review of Wales' National Indicators should incorporate indicators on public transport provision.

## Reducing the Need to Travel

---

6. The new edition of Planning Policy Wales should ensure that provision of sustainable transport infrastructure is a fundamental requirement of new developments, not just a desirable outcome.

---

7. Welsh Government should actively consider how it could introduce expiry or review dates for large scale planning permissions where the construction of the development was subsequently so delayed that the planning conditions under which permission was granted no longer comply with Planning Policy Wales.

---

8. Welsh Government should review the capacity of local planning authorities to enforce planning policies effectively. This should be undertaken within this current Assembly term.

---

9. Given Welsh Government's declaration that tackling loneliness is a national priority and the strong evidence linking heavy traffic flows in residential areas with reduced social contact amongst the people living there, the new edition of Planning Policy Wales should take account of the impact of traffic flow on social isolation and loneliness.

---

10. Working through Welsh Government's Workforce Partnership Council, public sector employers in Wales should consider how they could grant greater flexibility in working hours to their employees. The journey to work should be an important consideration in their approach to achieving public sector decarbonisation targets.

---

11. Transport for Wales should ensure that new ticketing arrangements for public transport also cater for flexible and part-time working in multi-journey discounts. For example, carers - most of whom are women - who have more flexible work patterns will often find it difficult to benefit from multi-journey discounts on public transport, such as season tickets which are generally designed around a five day working week.

## Active Travel

---

12. Welsh Government should co-produce with local authorities, Regional Transport Authorities, representatives from national and local walking and cycling groups and Public Health Wales, a new long-term Active Travel Action Plan, which is fully integrated with the Transport Decarbonisation Plan. The Active Travel Action Plan should extend over two carbon budgeting cycles with evidence based targets and milestones in place for each five year cycle. The targets should at least match the ambition shown by Scotland. The plan should be in place for the start of the next cycle in 2020. The plan should also consider the potential for promoting electric bikes in Wales.

---

13. Welsh Government should accept and implement the Economy, Infrastructure and Skills Committee's recommendation that funding for active travel, capital and resource combined, should be set at £17-£20 per head per annum. This should form a part of the draft budget developed by Welsh Government in 2018.

---

14. As part of the Transport Decarbonisation Plan, Welsh Government should target a significant proportion of its active travel investment into creating active travel communities. These are areas where concentrated investment in infrastructure and behaviour change programmes can demonstrate the achievability of modal shift from the car to walking and cycling to provide an example for other areas of Wales of the effectiveness of well-designed active travel infrastructure.

- 
15. Transport for Wales should ensure sufficient space is allocated to bikes on all new rolling stock as it is procured to enable train and bike commutes to become a practical option within the South Wales Metro area.

## Public Transport

---

16. Welsh Government should bring all bus, taxi and coach commissioning together under a single administration, utilising the new Regional Transport Authorities and pooling the budgets for school transport, the Bus Services Support Grant and concessionary fares. This would facilitate greater coordination of services, give greater financial leverage in negotiating contracts and enable the concentration of the skilled personnel needed to manage complex negotiations.
17. Welsh Government should commit to establishing a dedicated capital fund for bus priority measures within a Transport Decarbonisation Plan.
18. Welsh Government, Transport for Wales and local authorities (or the Regional Transport Authorities where they exist), in partnership with the bus industry, should agree steps to decarbonise the bus fleet with the utmost urgency, with a view to maximizing funding for Welsh buses from the current Office for Low Emission Vehicles funding round.
19. Welsh Government should introduce the legislation required to allow a system of bus franchising to be developed in Wales. The legislation should complete its passage during the current Assembly term. Transport for Wales should give priority to ensuring they and/or the Regional Transport Authorities have the necessary expertise in place to manage a franchise system.
20. If the South Wales Metro is to achieve its full potential it must reach beyond rail-based services. Transport for Wales should prioritise the development and integration of bus services into the South Wales Metro network, working with existing bus operators to minimise negative impacts on current services.

## Cars

---

21. Welsh Government should impose a default 20mph limit in urban areas, allowing local authorities discretion in exempting routes where justified.
22. Welsh Government, working with the automotive industry and the trade unions, should put in place an 'Automotive Industry Task Force' to ensure that Welsh manufacturing is able to respond effectively to the threats and opportunities of the transition to electric vehicles. The work of this task force should be integrated with the Transport Decarbonisation Plan.

# The Transport Decarbonisation Plan

The Transport Decarbonisation Plan should be

## **Sustainable**

In accordance with the principles of the Well-being of Future Generations Act, aiming to contribute to the achievement of all the national goals.

---

## **Co-produced**

Led by Welsh Government and local authorities/regional transport authorities, the partners engaged in the co-production of the plan should include organisations representing the planning profession, pedestrians, cyclists, the bus and rail industries, power distribution companies and the motor industry.

---

## **Based on the sustainable transport hierarchy**

The plan should work down through the sustainable transport hierarchy assessing the contribution that each level can realistically be expected to contribute and the timescale and resources required, setting localised SMART targets for each level.

---

## **Local**

To be credible, the plan will need to recognise fully the different needs of different types of communities in Wales and the active involvement of local authorities will be crucial.

---

## **Measurable**

Clear targets and timeframes, aligned with the carbon budgeting periods, should be embedded in the plan. However, much of the measurement required will only be possible if Wales reinstates some type of National Travel Survey. The plan should be in place by the end of 2019, in line with Welsh Government's Low Carbon Delivery Plan. A key theme of the plan will be meeting the challenges and opportunities posed by the UK Government's forthcoming ban on the sale of new diesel and petrol engine cars. Although the date of that ban, 2040, has been set at a UK level, Wales should emulate Scotland and determine its own time frame, recognising that people will soon be seeking an alternative type of transport as lower resale values make ownership of traditionally powered vehicles increasingly unattractive.

---

## **Integrated**

Given the cross-cutting nature of this project it is essential that the Transport Decarbonisation Plan is integrated with other work streams, such as the Active Travel Action Plan.

---

### Resourced

The central resource for the drafting of the plan will need to come from the Welsh Government but a key aim should be to maximise resourcing from the UK Government and the private sector.

---

### Intelligent

Given the uncertainties over the exact future direction of alternative fuel technologies and the infrastructure required, the plan will require a high degree of flexibility for this sector. Nevertheless, it is essential that Wales demonstrates it is preparing for the changes ahead. A positive decision to delay a particular course of action because of a need to have a greater understanding of how the technology and the market will develop can be good governance; leaving a policy vacuum is not.

---

### Comprehensive

Achieving modal shift will require thousands of changes in the way Wales deals with transport, from the major, such as changing the regulation of the bus industry, to the detailed, such as altering the timings on pelican crossings to favour pedestrians over cars.

---

Drawing from the findings in this paper, we believe that within this plan Welsh Government should:

- Investigate the potential for an Invest to Save type fund to allow sustainable transport infrastructure to be put in place before newly built homes are occupied.
- Put in place a cross government communications strategy to promote modal shift away from the private motor car.
- Undertake a review of parking policy and how it contributes to the development of a sustainable transport system. The review should pay particular attention to the issue of parking in out-of-town retail centres.
- Evaluate options for reducing the financial advantage enjoyed by the private motor car through measures including congestion and clean air zones and road charging.
- Prioritise electric vehicle development in rural areas where more sustainable transport options are not available.
- Encourage new forms of vehicle ownership which should be an integral part of Welsh Government's approach to the development of electric vehicles with the aim of having fewer, more intensely used vehicles.
- Amend the guidelines for Public Service Boards to require that they give consideration to sustainable transport provision in their area.



A named committee of the National Assembly for Wales should take on the task of reviewing progress at regular intervals.

The plan must be drawn up on the basis that it will be delivered. Unfortunately in Wales that is not the truism it may appear. It cannot be delivered by offering funding streams that public bodies may bid for, but only if they have the resource and inclination so to do. Its resourced implementation must be an obligation on the delivery bodies, with effective monitoring of SMART targets. Those bodies should be given their say through their involvement in the design of the plan, not through the option to abstain from its implementation. That is why the co-production of the plan is so important. However, the plan will only be delivered if we radically improve governance in transport, providing a clear role for local, regional and national bodies and much greater political leadership, ideally by a separate Minister for Transport.

Wales has shown that it can bring about behaviour change, leading the UK in measures against smoking for example. The granting of the new rail and metro franchise indicates that the new transport body, Transport for Wales, can manage major transport projects effectively. With its unique legislative framework and a reformed governance structure, Wales ought to be able to shape its transport system into an effective vehicle for delivering its national goals.

Changing our approach to the car will not be easy. But if we cannot master a machine in such a way that we minimise its negative impacts on our society, how will we cope with Artificial Intelligence?

# Introduction

Travelling in Wales can be challenging. The country's topography, history and economic development have not been conducive to the development of a cohesive network that links people and communities. Much of the transport network is the legacy of infrastructure designed to transport raw materials and manufactured goods out of the country. The rail network in particular saw a significant decline as the industries it served diminished and the resultant high levels of economic inactivity also impacted on bus services. Wales is peculiarly dependent on the private motor car (according to the 2011 census, 84% of the distance covered in personal travel journeys is by car, either as driver or passenger).

That dependency, at least in its current form, has to change. Two of the most significant pieces of Welsh legislation require a significant reduction in carbon emissions. The Environment (Wales) Act 2016 requires at least an 80% reduction in emissions by 2050 and the Well-being of Future Generations (Wales) Act 2015 commits the country to a low carbon future in two of the seven national goals. Transport is responsible for 13%<sup>1</sup> of Wales' emissions and cars and taxis account for 58%<sup>2</sup> of that figure, rising to 78.26% once light vans are included.

The car is also under attack for another reason: the impact of its emissions not only on climate change but on air quality and its subsequent effect on health. Air quality is a serious problem in several parts of Wales. Welsh Government's relative inaction on the issue led to the environmental body ClientEarth taking legal action against them and in January 2018, the Welsh Government admitted in the High Court<sup>3</sup> that the lack of a plan to tackle illegal levels of air pollution in Wales is unlawful and agreed to take action. Crumlin, in Caerphilly, has the worst air quality in the UK outside London. Public Health Wales estimate that each year an equivalent of around 1,600 avoidable deaths in Wales are due to particulate matter (PM2.5 and PM10), and 1,100 due to nitrogen dioxide (NO<sub>2</sub>) exposure. The primary source of both NO<sub>2</sub>, and particulate matter pollutants is vehicle emissions<sup>4</sup>, especially those from diesel powered vehicles.

1 Committee on Climate Change, *Advice on the design of Welsh carbon targets*, April 2017, p16

2 Department for Transport, *Transport Statistics Great Britain: 2017*, November 2017 (figures for CO<sub>2</sub> emissions by mode of transport are only available on a UK level).

3 Client Earth, *Welsh Government admits in High Court: No plan on air pollution was "unlawful"*, 25 January 2018

4 Cardiff City Council, *Cardiff's Transport & Clean Air Green Paper: Changing how we move around a growing city*, March 2018,

Increasing concern about the levels of NOx (NOx refers to both nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>)) in the atmosphere across the UK has led to the UK Government, also following legal action by ClientEarth, announcing a ban on the sale of new diesel and petrol cars from 2040. Inevitably, the impact of that ban will be felt long before 2040 once the resale value of traditional cars falls as we approach the commencement of the ban. The 2040 date has no special significance beyond a decision of the current UK Government. France is to stop the production of petrol and diesel cars from 2019; Scotland is working towards a 2032 deadline; Plaid Cymru has called for a 2030 ban in Wales; WWF and other environmental organisations are calling for the UK ban to be brought forward to 2030. The Welsh Government has not, so far, issued a statement on the how the ban will affect Wales and whether that date is appropriate or ambitious enough.

Wales will have to rework its relationship with the car and develop more sustainable modes of travel. In doing so it should be driven by its own unique legislative framework aimed at achieving sustainable development. The 2015 Well-being of Future Generations (Wales) Act requires public bodies to “carry out” sustainable development by contributing to the achievement of the seven national goals, as described in table 1.

**Table 1: Goals of the Well-being of Future Generations Act**

<b>A prosperous Wales</b>	An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.
<b>A resilient Wales</b>	A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).
<b>A healthier Wales</b>	A society in which people’s physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.
<b>A more equal Wales</b>	A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio economic background and circumstances).
<b>A Wales of cohesive communities</b>	Attractive, viable, safe and well-connected communities.

**A Wales of vibrant culture and thriving Welsh language**

A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation.

---

**A globally responsible Wales**

A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.

---

The Act also lays down principles, or ways of working, to accompany the goals. These require public bodies to take an approach that is long term; preventative; collaborative; involves people affected by their actions and, perhaps most importantly, integrated. Public bodies must take actions that endeavour to meet all the goals, not simply trade one action off against another. Therefore, in Wales, transport departments at Welsh Government or local authority level should not be embarking on a transport project that simply benefits the economy if an alternative is available that can also benefit, for example, health and the environment. Public bodies in Wales, therefore, should not adopt a particular course of action to decarbonise without giving proper consideration to whether that course of action will have beneficial impacts for all, or at least, as many of the national goals as possible.

The purpose of this paper is to highlight the actions Wales needs to take to decarbonise its transport system. It will do so within the context of the Well-being of Future Generations (Wales) Act 2015 and seek to find solutions that will contribute to all of the goals, or at least as many as possible. It will also consider who should carry out those actions and how we can best ensure that we achieve the desired outcomes.

We have developed this work following interviews with over 30 experts from the energy and transport sectors, within and outside of Wales. These experts include politicians, civil servants, campaigners, local government officers amongst others, all of whom have offered their candid assessments on what would need to change to improve Wales' transport system. While we acknowledge that this paper is based on opinions, these are opinions which are backed up with evidence in most instances. We think this paper is a valuable contribution to the debate as it also offers a list of clear recommendations which could act as a starting point for integrated action on these issues. A full list of individuals interviewed is provided as Appendix 1.

There is no one magic bullet that will resolve all our transport problems. Rather, as Councillor Caro Wild said during an interview for this paper on sustainable transport in Cardiff, it will require 'a thousand small things'. Many of the actions we suggest will have their impact in the long term, but that makes it even more urgent that we design and implement these measures now.

# Chapter 1: Context

# Chapter 1: Context

## Transport Decarbonisation in Wales

Wales' efforts to decarbonise transport have to date been met with little success. In fairness, Wales has had, until recently, very limited powers over transport and this was particularly the case in 2010 when it produced its climate change strategy. That strategy included assumptions about what the UK Government's contribution to the reduction would be, notably the continuation of the fuel duty accelerator. The effective demise of this measure with the election of a new Westminster government in 2010 removed one of the key financial drivers for reducing car use.

Nevertheless, even in a strictly devolved context, Wales' action on carbon emissions from transport have been extremely limited. The 2010 *Climate Change Strategy for Wales: Delivery Plan for Emission reduction*<sup>5</sup> set out a number of measures to achieve a reduction in greenhouse gas emissions of 3% per year. The transport sector was required to account for 0.44% of that reduction. Furthermore, 0.10% of that was to come from Welsh Government resulting in a total of 0.29 MtCO<sub>2</sub>e saved by 2020, with 0.36% being achieved by the UK government (1.07 MtCO<sub>2</sub>e of savings by 2020).

The specific transport measures noted were:

- Sustainable Travel Centres
- Smarter Choices
- Travel planning and provision of personalised travel information
- Developing a series of strategic modal interchanges
- Promotion of eco-driving
- Promotion and support for walking and cycling
- Investment in rail services
- Investment in buses
- Improving traffic management on the strategic road network
- Supporting the freight industry to reduce emissions
- Alternative fuels infrastructure.

The first three of these interventions were all abandoned by 2013. The success to date of a number of the other interventions will be considered later in this paper. The lack of any real progress can be readily seen in the most recent emissions figures for Wales. Transport emissions in 1990 were 6.0930 Mt CO<sub>2</sub>e. By 2014 they had fallen to 5.923 Mt CO<sub>2</sub>e<sup>6</sup>, a reduction of 0.17 Mt CO<sub>2</sub>e.

With just six years remaining to reach the 2020 target, Wales has only achieved 58% of what it assumed Welsh Government measures alone would accomplish. It has reached a meagre 12.5% of its overall ambition. The truth is that carbon emissions from transport are flatlining and action to date has not been effective in bringing about any meaningful reduction. The Committee on Climate Change's forecast for a 'business as usual' scenario indicates that emissions from transport in Wales will increase in each of the five year budget periods up to and including 2030 set out in the Environment (Wales) Act 2016<sup>7</sup>.

## Transport in Wales

Detailed analysis of transport in Wales is seriously hampered by the lack of specifically Welsh data. This issue is discussed in greater detail elsewhere in this paper. The most accurate data we have on people's travel patterns comes from the National Travel Survey of 2011/12, which was the last time that survey was conducted in Wales. Table 2 shows data<sup>8</sup> on the reasons why people travel in Wales.

6 NAEI, Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990 – 2014, June 2016, p 61

7 Committee on Climate Change, Building a low-carbon economy in Wales: Setting Welsh carbon targets, December 2017, p30

8 Welsh Government, Statistics: Personal travel, November 2013

**Table 2: Purpose of personal travel in Wales**

<b>Purpose</b>	<b>Proportion of all trips in 2011/12</b>
Commuting	17%
Shopping	15%
Visit friends at private home	15%
Holiday/day-trip	14%
Business	10%
Sport/entertainment	8%
Other - escort	7%
Personal business	7%
Visit friends elsewhere	4%
Education	3%
Escort - education	1%
Other - including justwalk	1%

The percentages in Table 2 indicate the share of the total distance travelled; 84% of this distance was travelled by car, either as driver or passenger. In Wales, 8 out of 10 journeys to work are by car, and this proportion has remained broadly unchanged for 10 years. Wales has the highest proportion of people travelling to work by car of any region or country within Great Britain.

How people make these journeys is shown in greater detail in Table 3, which shows the number of journeys by each mode.



**Table 3: Percentage of trips by mode (2012)**

<b>Walk</b>	22%
<b>Car / van:</b>	
<b>Car / van driver</b>	46%
<b>Car / van passenger</b>	24%
<b>Car / van total</b>	69%
<b>Other private transport<sup>2</sup></b>	3%
<b>Local bus</b>	4%
<b>Other public transport<sup>3</sup></b>	2%

<sup>2</sup> Bicycle, motorcycle and private hire bus.

<sup>3</sup> Non-local bus, surface rail, taxi / minicab and other public (air, ferries, light rail).

As the figures indicate, public transport in Wales is dominated by the bus. However bus travel is in serious decline. In 2004/5, 123 million passenger journeys were made on buses in Wales. By 2016/17 that had dropped to 100 million<sup>9</sup>.

Rail journeys by contrast are increasing, but in 2016 still only numbered 21.2 million passenger journeys within Wales<sup>10</sup>. Rail travel in Wales is limited to a few areas where lines survived the Beeching cuts of the 1960s, essentially a north Wales and a south Wales mainline with a commuter network serving Cardiff and the south Wales valleys. Since the Welsh Government acquired some limited powers over rail in 2005, two routes have been reopened: Barry to Bridgend and Cardiff to Ebbw Vale. Wales shares with Albania the distinction of being the only European country with no electric powered trains. Work is underway to electrify the south Wales mainline as far as Cardiff and the core south Wales valley lines (north of Cardiff). The earlier plans to electrify as far as Swansea were cancelled in July 2017.

Walking is still a major mode of transport in Wales, at least when measured by number of trips. In terms of distance travelled, however, it accounts for only 2%. The level of walking has remained fairly constant over a number of years. Thanks to the Active Travel (Wales) Act 2013, Wales now produces specific statistics for walking and cycling. In 2016/17, 47% of adults walked for active travel purposes (defined as walking for at least 5 minutes or cycling to get to a particular destination). Only 5% of adults cycled at least once a week<sup>11</sup>.

9 Department for Transport, *Passenger journeys on local bus services by metropolitan area status and country: Great Britain, annual from 1970, 2018*

10 Stats Wales, *Rail passenger journeys to, from or within Wales and total journeys in Great Britain by year, March 2018*

11 Welsh Government, *Statistics Active travel: Walking and cycling, January 2018*

On the 7 May 2007 the Welsh Government added air transport to its operations with the commencement of an air service between Cardiff and Anglesey at a then projected subsidy of £800,000 pa. In 2013, it took control of Cardiff Airport.

The transport of goods also produces carbon emissions but the emissions from heavy goods vehicles are only one third of those from cars and taxis. The percentages of emissions from road transport by vehicle type for the UK in 2015 are shown in Table 4.

*Table 4: percentages of emissions from road transport by vehicle type for the UK in 2015*

<b>Cars and taxis</b>	62.05%
<b>Heavy goods vehicles</b>	17.48%
<b>Light vans</b>	16.21%
<b>Buses and coaches</b>	3.26%
<b>Motorcycles and mopeds</b>	0.45%
<b>Other road transport emissions</b>	0.45%
<b>Total</b>	<b>100.00%</b>

Light vans are clearly becoming an important emitter having increased by 3.5 percentage points since 2003. They are also significant because of their impact on air pollution in urban areas as internet deliveries become more common. Given that many of these vehicles are owned and operated by very small businesses there is concern that they may be slow to invest in replacement lower emission vehicles.

Wales' powers in this area are limited, since vehicle standards and regulations remain the province of Westminster. Its principal interventions have been in trying to persuade freight onto rail, an area in which it has had some limited success by financing new freight sidings and loading bays.

Most of the progress to be made in decarbonising heavy freight will come from changes in engine technology. Tim Williams<sup>12</sup> is convinced that cleaner diesel engines will continue to be necessary for years to come as the weight of batteries required to power long distance heavy haulage vehicles makes electric power unfeasible.

12 Interview with Tim Williams, Chief Executive of the Welsh Automotive Forum, 10 May 2018

The most likely cleaner source of power for freight in the short to medium term is biogas, which is already powering fleets of buses in Bristol. Welsh public bodies could potentially use their procurement policies as a means of encouraging a shift to this fuel without requiring additional powers or incurring significant additional costs. However it may be necessary to include conditions around the sources of the biogas to avoid the potential adverse side effects on land use (direct and indirect changes), biodiversity, food security, health, water use and water quality. Another option would be for cities to use clean air zones to prohibit higher emission vehicles from entering city centres.

Within cities, cargo bikes, particularly electrically assisted cargo bikes, are becoming increasingly popular in a number of European countries. Vienna, for example, is providing a grant<sup>13</sup> of up to €1,000 towards an e-cargo bike.

## Transport Data

In 2013 the Department for Transport decided that they would no longer conduct the National Travel Survey in Scotland and Wales. Given that transport was devolved they argued that the devolved administrations should pay to collect data about it. Wales responded by dispensing with a travel survey. This has meant that detailed information on how and why people travel in Wales is no longer available. Whilst it is possible to count vehicles at certain points on roads, and to calculate the number of public transport journeys through information on fares, critical issues such as the purpose of a journey, the length of a journey in a private vehicle, the number of transport modes used in that journey and all the personal data about the traveller can only be arrived at by interviewing people. Thus much of the information on personal travel in Wales ceases to be available after 2011/12.

Wales' current household survey is the National Survey for Wales. In 2016-17 it contained six questions on how children travel to school and two on adult active travel. The only other transport related question was examining the impact of car ownership on attendance at arts events. Given the number of subjects covered by the National Survey (more or less everything Welsh Government does) it is unrealistic to try to cram in more transport questions into the one survey. A new household survey dedicated to travel is required.

The Committee on Climate Change<sup>14</sup> have also highlighted the absence of detailed transport statistics as a key requirement of any carbon reduction programme in Wales; calling for a household survey that would 'help identify potential for switching from private cars to walking, cycling, public transport and electric vehicles'.

Wales now has a set of national indicators, established by the Well-being of Future Generations Act. These indicators must 'be applied for the purpose of measuring progress towards the achievement of the well-being goals'. There are currently 46 national indicators none of which relate to transport, despite the sixth goal requiring 'well-connected communities'.

13 Cycling Industry News, [Dr. Rachel Aldred: Why the electric bike business must lobby Government](#), 5 June 2018

14 Committee on Climate Change, [Building a low-carbon economy in Wales – Setting Welsh carbon targets](#), December 19, 2017, p 63

Public Service Boards are required to take into account the national indicators when developing their local well-being assessments, which are key to their plans for achieving their well-being objectives - essentially the joint action plan for all devolved public bodies in a local authority area. Coupled with the lack of any mention of transport in the Welsh Government guidance for Public Service Boards this has meant that these new bodies aimed at integrating public services are generally not giving transport the priority it requires. One exception is Cardiff where the council and the health board have embarked upon an ambitious programme to transform the way in which their staff travel to work. This initiative should be replicated across Wales.

## Rurality

According to the 2011 census, Wales has the highest percentage of rural dwellers of the UK nations at 32.8%<sup>15</sup>. The rural nature of much of Wales must therefore be a key consideration when mapping interventions.

The end of the petrol and diesel engined cars will have a more pronounced impact in rural areas where car ownership is higher: 87% of eligible rural dwellers hold driving licences, compared with 62% for London, and 65% for other built-up metropolitan areas<sup>16</sup>. Lower average earnings will also make the more expensive EVs less accessible for many, exacerbating inequalities in access to transport and thus employment opportunities.

Rurality is a particular challenge for buses. In an urban situation, according to Richard Davies of Cardiff Bus<sup>17</sup>, the ideal frequency is every ten minutes, meaning that passengers can just turn up at a bus stop and know that their wait will never be too long. With the sparse populations in most rural villages, such frequency is highly unlikely.

Future autonomous vehicles dispensing with the cost of drivers could provide a socially vital service in rural areas. The lower cost of running the service should allow far greater coverage than is possible with bus services and the economic benefits arising from better access to workplaces should more than compensate for any displacement of existing bus services.

Whilst significant decarbonisation of transport can be achieved by action in urban areas, principally the Cardiff Capital City Region, the process must not be allowed to further dislocate the connections between urban and rural Wales. People in rural areas frequently need to visit urban centres and how they do that must be given proper consideration in any decarbonisation plan.

15 Economic and Social Research Council, *The UK by numbers: rural and urban*, Summer 2014

16 Interview with Dr Paul Nieuwenhuis, Co-Director, Centre for Automotive Industry Research & Electric Vehicle Centre of Excellence, Cardiff Business School, Cardiff University, 8 May 2018

17 Interview with Richard Davies, Operations and Commercial Director, Cardiff Bus, 17 April 2018

## Transport Policy in Wales

Even before the Well-being of Future Generations (Wales) Act 2015, the Welsh Government was committed to sustainable development and this is reflected in the current Wales Transport Strategy *One Wales: Connecting the Nation* which dates from 2008. This was the time of the 'One Wales' Government, a Labour-Plaid Cymru coalition in which the Plaid Cymru leader, Ieuan Wyn Jones, was given responsibility for transport within the economy portfolio<sup>18</sup>. The strategy acknowledges the sustainable transport hierarchy in prioritising interventions that, in order of priority: reduce the need to travel; promote modal shift to walking, cycling and public transport; and shift the private motor vehicle to a less damaging fuel type.

The extent to which Welsh Government has followed this hierarchy, or even their own strategy, is debatable. John Griffiths, the Assembly Member for Newport East, put the following question to the Cabinet Secretary for Economy and Transport in January 2018: "How does the Welsh Government's prioritisation of walking, cycling and public transport over private motor cars impact on the allocation of resources within the economy and transport portfolio?". Ken Skates AM, Cabinet Secretary for Economy and Transport, stated: "As detailed in the national transport finance plan 2017 update, our resources are directed to achieving a sustainable and integrated transport system and supports all modes"<sup>19</sup>. The response indicates that at least as far as allocation of resources is concerned, being at the top of the hierarchy does not merit any priority.

Currently, the most significant debate around the allocation of transport resources in Wales centres on Welsh Government's plans for the construction of an M4 Relief Road around Newport at a cost of at least £1.4bn. To put this in context, this sum would allow a doubling of the annual direct subsidy to bus services for the next 28 years.

The Wales Transport Strategy (2008) was supplemented, some would say supplanted, by a revised National Transport Plan in 2012. The Transport Strategy was meant to be reviewed in 2014. However, this was downgraded to a promise of a new National Transport Plan to be in place by the end of March 2015 but this failed to materialise, instead being replaced by a National Transport Finance Plan<sup>20</sup>. It is understood that work on a new Wales Transport Strategy will begin later in 2018.

## Wales' Powers over Transport

Wales' powers over transport have gradually increased since devolution. In 1999, the then Welsh Assembly Government had competence solely in regard to road transport, having taken over the Welsh Office's highways department and a civil service whose primary function had been the creation and maintenance of roads. Some powers over rail were granted by the 2005 Railways Act, notably making the Welsh Government a joint signatory

18 Transport shares with Economy the distinction of being the only Welsh Government departments to have had Labour, Plaid Cymru and Lib Dem Ministers, with Mike German holding the portfolio in 2000-2001 during the Labour Lib Dem coalition.

19 National Assembly for Wales OAQ51498. Tabled on 03/01/2018

20 Welsh Government, [Written Statement - Transport Funding and Planning](#), 17 January 2014

with the Secretary of State for Transport to the Wales and Borders Franchise. In 2006, the Transport (Wales) Act 2006 (which was passed by Westminster, as the Assembly at that point did not have lawmaking powers) significantly extended Welsh Ministers' transport functions, introducing:

- A duty to develop and implement policies for the promotion of safe, integrated, efficient, economic and sustainable transport facilities and services;
- A duty to prepare a Wales Transport Strategy, setting out those policies;
- Provisions for joint working arrangements and for joint transport authorities in Wales so that local authority transport functions are carried out on a regional basis;
- Powers to secure the provision of public passenger transport services where the requirement for such services would not otherwise be met;
- A power to establish a new Public Transport Users' Committee for Wales.

The Welsh Government's powers over bus services remained very limited and, despite efforts by some backbench Assembly Members to re-regulate the industry, the Welsh bus industry continued to operate within the free market model imposed by the 1983 Conservative UK Government. Welsh Government's most significant bus measure to date has been the introduction of a concessionary fare scheme providing free bus travel for the elderly (60 plus) and for people with disabilities. It also provided financial support for long distance bus routes through the TrawsCymru network.

The Wales Act 2017 gave significant extra powers over transport, including: setting speed limits; regulating pedestrian crossings, school crossing and traffic signs; regulating bus routes - allowing a departure from the free market in bus services; licensing of taxis and private hire vehicles; and regulating the majority of Welsh ports. Matters still reserved to the UK Government include: rail infrastructure; shipping; most aspects of civil aviation; policing; vehicle construction and use regulations.

In March 2018, the UK Government belatedly devolved the procurement and management of the Wales and Borders franchise train services within Wales but responsibility for most rail infrastructure remains with Westminster. The term 'within Wales' is significant as part of the franchise serves England and the agreement on the devolution of the franchise contains safeguards for services and passengers on the English side of the border.

## Transport Governance

Since 1999 the transport function within Welsh Government has been variously part of the Environment Department, the Economy Department, the Communities, Local Government and Public Services Department, most recently returning to the Economy portfolio. Unlike the UK, Scotland and Northern Ireland, Wales has never had a separate minister for transport.

Responsibility for transport in Wales is shared between Welsh Government and the 22 local authorities. Until 2014, local authorities worked together on transport issues in four Regional Transport Consortia (RTCs):

- South East Wales (the South East Wales Transport Alliance - SEWTA);
- South West Wales (the South West Wales Integrated Transport Consortium - SWWITCH);
- Mid Wales (Trafnidiaeth Canolbarth Cymru - TraCC);
- and North Wales (the North Wales transport consortium - TAITH).

Welsh Government had been continually strengthening the role of the RTCs, for example giving them responsibility for the planned new bus service funding system<sup>21</sup>, which was to be known as the Regional Transport Services Grant. SEWTA was seen as the key body in coordinating the establishment of the new South Wales Metro project. The RTCs were well supported by local authorities, who realised the essentially regional nature of many transport projects, particularly given the small size of many local authorities in Wales. The main criticism of RTCs was a tendency to allocate funding in a manner designed to ensure every area got a 'fair share' rather than on strictly regional priorities. Addressing this issue was a key part of the Welsh Government's approach to strengthening their governance.

However, the RTCs were effectively dismantled by the then new Minister, Edwina Hart AM, shortly after she took over the Economy and Transport portfolio in 2014<sup>22</sup>. This led Local Transport Today<sup>23</sup>, a respected transport journal, to criticise Welsh Government's policy as 'A muddle in the Valleys', describing changes to the local authority collaboration agenda as 'bewildering'. Ken Skates AM, the current Cabinet Secretary for Economy with responsibility for transport, is attempting to recreate a regional transport structure, though the situation is now complicated by the arrival of the city regions. The South East Wales region is now covered by a City Deal arrangement with the UK Government. It is the Cardiff Capital Region City Deal itself - rather than Welsh Government - that is establishing a subsidiary Regional Transport Authority.

This lack of strategic planning and continual structural change has caused significant concern both at local authority level and with commercial partners. John Pockett of the Confederation of Passenger Transport identifies clarity of aim and stability as being two key factors for developing the bus industry in Wales<sup>24</sup>.

21 Welsh Government, [Written Statement - Bus Services in Wales](#), 17 January 2013

22 Welsh Government, [Written Statement - Transport Planning and Funding](#), 17 January 2014

23 Wales Online, [Welsh Government transport policy 'is a muddle' says respected public policy journal](#), 14 April 2014

24 Interview with John Pockett, Director, Confederation of Passenger Transport Cymru, 9 April 2018

Transport finance is also divided between local authorities and Welsh Government. Most of the funding allocated to local councils for transport matters is built into their Revenue Support Grant (RSG), the annual allocation of funding from Welsh Government to local authorities that makes up around 70% of their income. Local authorities are able to allocate these resources according to their own priorities. This raises the question of how national transport policies are enforced.

Local authorities are required to draw up local transport plans but these are generally simply lists of upcoming transport projects and have never been overturned by Welsh Government. The RSG is supplemented by the Local Transport Fund and Local Transport Network Fund, grants from Welsh Government which local authorities can bid for, but the amount available has diminished from around £100 million when the funding was allocated by the regional transport consortia to £9 million in the current year. This model of funding gives Welsh Government very little financial leverage over local authorities' approach to transport. Most of the measures needed to promote sustainable transport are very local, including, for example, active travel and bus priority measures. Yet if a local authority chooses not to invest in decarbonising measures they are unlikely to face any financial penalty.

There are clearly differences in local authorities' attitudes to transport modes, even within the same region. Discussions with Cardiff<sup>25</sup> as part of this paper demonstrate that they have a strong desire to limit the car, at least in part because of increasing concerns about the health impact of vehicle emissions. Neighbouring Rhondda Cynon Taff want to tackle congestion, primarily because of its negative economic impact but do not see discouraging the use of the car as the solution, rather they are keen to invest in new highways<sup>26</sup>.

Tim Peppin of the Welsh Local Government Association (WLGA)<sup>27</sup> is convinced that the Well-being of Future Generations (Wales) Act 2015 is having an influence on local authorities' investment decisions. Tim believes they are starting to take their duties seriously to achieve the Act's goals. Health outcomes, in particular, have become an important consideration. He pointed out that the capital resource available to local authorities for transport projects is now limited, so they are tending to focus more on smaller schemes and this tends to favour sustainable transport. The annual nature of the funding allocation also makes it difficult to indulge in the large-scale road building projects seen in the past.

However, if Wales is serious about achieving the degree of change in its transport system that is necessary to meet its climate change targets, much clearer governance and financial arrangements need to be in place. We need arrangements that can ensure national priorities are able to be effectively implemented at a local level.

This is not an argument for riding roughshod over local democratic processes, but rather for clarity about how and where decisions are made and setting an expectation that those decisions should then be carried out. **The role of local authorities and regional transport authorities in co-producing detailed transport plans for their area should be a key part of any Welsh transport strategy.**

25 Interview with Cllr Caro Wild, Cabinet Member for Strategic Planning & Transport, Cardiff City Council, 1 May 2018

26 Interview with Councillor Andrew Morgan, Leader, Rhondda Cynon Taff County Borough Council, 24 April 2018

27 Interview with Tim Peppin, Director of Regeneration and Sustainable Development, Welsh Local Government Association, 22 May 2018



## Transport for Wales

In 2016, Welsh Government established Transport for Wales (TfW), a not-for-profit company without share capital wholly owned by the Welsh Government. On its website<sup>28</sup> it describes its role as: 'to drive forward the Welsh Government's vision of a high quality, safe, integrated, affordable and accessible transport network that the people of Wales are proud of'. Its principle responsibility to date has been the management of the tendering process of the Wales & Borders railway franchise, which includes the South Wales Metro. This process was successfully completed on 2 June 2018.

Ken Skates AM said in Plenary on 18 July 2017 that his long-term ambition is for TfW to develop on a model similar to Transport for London.

From the interviews conducted for this paper, there seems to be a general feeling in the sector that TfW is a positive development and that Wales needed an effective national delivery vehicle for major transport projects. However that feeling is tinged with concern about the uncertainties around the organisation's future development and its governance. There is a real danger that if those concerns are not addressed then the current positive attitude to TfW amongst partner organisations will dissipate.

To date most of the information about the future role of TfW has emerged piecemeal in Ministerial statements, rather than through the setting out of a formal plan.

For instance, when the Welsh Government's Economic Action Plan *Prosperity for All* was published in December 2017, it became apparent that TfW had acquired a role as a vehicle for the nationalisation of the bus industry:

'Transport for Wales will work with our new regional teams, the emerging regional transport authorities and partners to create an integrated public transport network, covering the rail and bus networks. This will be increasingly directly owned or operated by Transport for Wales, following the successful model of acquisition of Cardiff Airport. We will focus the network on the needs of passengers and it will be safe, reliable, affordable and low carbon<sup>29</sup>'.

For a public body, information on its remit is not widely available. The Senedd Research Service's note on Transport for Wales<sup>30</sup> states: 'At time of writing the business plan and remit letter are unpublished but are available to Assembly Members from the Research Service on request'. By contrast, the remit letters for Natural Resources Wales are published on the Welsh Government website.

The National Assembly's Economy, Infrastructure and Skills Committee examined TfW's governance arrangements when it undertook an inquiry into Welsh Government's plans for the Wales and Borders Rail Franchise in June 2017. It concluded<sup>31</sup>: 'While the governance arrangements for TfW are unusual, the Committee consider them to have been appropriate

28 Transport for Wales website: accessed at <http://tfw.gov.wales/> June 2018

29 Welsh Government, *Prosperity for All: economic action plan*, December 2017, p.38

30 Senedd Research Service Blog, *Transport for Wales – Past, Present, Future?*, 18 January 2018

31 National Assembly for Wales, Economy, Infrastructure and Skills Committee, *On the right track? The Rail Franchise and South Wales Metro*, June 2017, p 44

to this stage of the organisation's development where it is effectively an advisory body. However, they will not be suitable in the longer term'.

In its submission to the inquiry<sup>32</sup>, Railfuture Cymru highlighted the risk that Transport for Wales will have 'indistinct links with government, local authorities and local communities as it has no clear democratic accountability'.

Professor Mark Barry of Cardiff University's School of Geography and Planning believes that getting the governance of TfW right is key to the future of the organisation. He told us 'There must be an independent board, appointed by the Minister, not by the organisation itself.'<sup>33</sup>

TfW currently has a board with six directors all of whom are men, a marked contrast with Transport for London which has a board of fifteen, of whom nine are women and three are Welsh women. We will examine later some of the ways in which transport impacts on gender equality.

The future development of TfW should not just be a matter for Welsh Government. A top down approach will miss the opportunity for TfW to build important bridges with local authorities, as it will need to form effective partnerships with their transport teams.

Uncertainty about how far its remit will extend is also becoming a distraction from delivery. There are suggestions that responsibility for active travel will be transferred from Welsh Government to TfW but there is no clarity about how or when.

TfW offers significant opportunities for rationalising and better integrating delivery of transport but a lack of clarity and long term planning risks damaging the image of the organisation at a critical stage.

The future role and structure of TfW must become far more transparent. It must not be allowed to become a Welsh Development Agency style quango in which unelected people provide vital services to the people of Wales with little accountability. It is essential that TfW's strategic policies are set by a minister answerable to the Assembly and, where appropriate, democratically elected local authorities and their regional bodies. They should not be set by the organisation itself.

Given those reforms, TfW should be developed to its full potential becoming the delivery vehicle for all but minor transport projects in Wales, working with local authorities through strengthened Regional Transport Authorities (RTAs) to ensure that Wales-wide policy priorities are delivered effectively and in accord with local needs.

32 National Assembly for Wales, Economy, Infrastructure and Skills Committee, *On the right track? The Rail Franchise and South Wales Metro*, June 2017, p43

33 Interview with Professor Mark Barry, Professor of Practice in Connectivity, Cardiff University, 31 May 2018

### **Infrastructure Commission**

In an attempt to take a longer term approach to infrastructure development and mirroring the approach of the UK Government, Welsh Government has established another layer of governance that will impact upon transport, the National Infrastructure Commission for Wales. Its role is to 'support independent, better informed advice on a longer-term strategy of infrastructure investment, which enshrines the principles of the Well-being of Future Generations (Wales) Act 2015'. It is a non-statutory, advisory body to provide advice and recommendations to the Welsh Ministers on the economic and environmental infrastructure needs of Wales over 5-30 years. Its remit will specifically exclude advice on existing or upcoming infrastructure schemes. The twelve commissioners are currently being appointed through a public appointments procedure with interviews taking place up until the end of July 2018.

### **Decarbonisation Task Force**

To complicate matters further, decarbonisation of transport policy within Welsh Government is being undertaken as part of the cross-government Decarbonisation Task Force. The task force is answerable to the Cabinet Secretary for Energy, Planning and Rural Affairs who is also the cabinet member with responsibility for meeting the emissions targets in the Environment (Wales) Act 2016.

The Welsh Government's attempts at cross-departmental working have not always met with success, however the officials leading the programme are confident that, with the new statutory frameworks of the Environment (Wales) Act 2016 and the Well-being of Future Generations (Wales) Act 2015, other departments, including transport, are taking ownership of the decarbonisation agenda. In interviews for this report they cited regular meetings on the decarbonisation programme that are attended by the Cabinet Secretaries themselves - rather than just their officials - as an indicator of positive change. The various strands of the decarbonisation project will be constructing a draft of the Low Carbon Delivery Plans (LCDP) required by the Environment (Wales) Act 2016 and consulting on them from July of 2018. There will be one LCDP for each period defined by the Act, with the first to be published in 2019 for the period up to 2020, essentially a statement of the current position. The real test of Welsh Government's readiness to make real change will not be fully apparent until the second LCDP is produced in 2021 for 2021-25.

## **Conclusions on Governance**

This complexity of governance in matters of transport and the seesaw approach to regional governance has hindered the delivery of effective decarbonisation measures in Wales. The situation is complicated by the transport department being the responsibility of the Minister with the enormous responsibilities of the economy portfolio.

Managing the establishment of Transport for Wales, a new rail franchise, the resurrection of the regional transport structure, putting in place a new Wales Transport Strategy, the construction of the South Wales, North East Wales (and possibly Swansea/West Wales) metros, and the question of whether to spend £1.4 billion on a new motorway around Newport, is a titanic political task. If the task is to be accomplished effectively and with the degree of accountability to the National Assembly for Wales that Wales has a right to expect, there is a clear need for a separate Minister of Transport, albeit at ministerial rather than cabinet secretary level.

## Recommendations

### **Recommendation:**

Welsh Government should accelerate the development of Regional Transport Authorities, clearly setting out their purpose, governance and financial arrangements as well as their relationship with Transport for Wales, local authorities and Welsh Government. The new structure should be fully functional before the next local authority elections in 2022.

### **Recommendation:**

Welsh Government should clearly set out its long term plans for Transport for Wales, working with local authorities to allocate future transport roles. It should also ensure that by the end of this Assembly term, Transport for Wales has a new governance structure providing clear accountability to the Minister through an independently appointed, diverse board. Transport for Wales should become the delivery vehicle for all but minor transport projects in Wales, working with local authorities through strengthened Regional Transport Authorities to ensure that Wales-wide policy priorities are delivered effectively and in accord with local needs.

### **Recommendation:**

Wales should have a Minister for Transport, to consolidate governance of the transport system, develop the role of Transport for Wales and provide leadership. This is in recognition that the role of the transport department in Welsh Government has to move from being an administrator of systems to an initiator of change. This should happen following the appointment of Wales' new First Minister.

### **Recommendation:**

Welsh Government should commission a national transport survey with a sufficiently large sample to collect high quality transport data which would allow accurate analysis down to local authority level. The first survey should be undertaken as quickly as accuracy permits to establish a baseline for the Transport Decarbonisation Plan. Any forthcoming review of Wales' National Indicators should incorporate indicators on public transport provision.

Chapter 2:  
Transport  
Decarbonisation  
Measures

## Chapter 2:

# Transport Decarbonisation Measures

Chapter 1 sets the context in which Wales seeks to address the decarbonisation of transport. Welsh Government does not have full powers over transport, but the powers it has are substantial, and we argue that with better governance arrangements those powers could be used much more effectively.

This paper will now examine the practical measures that Wales can undertake to decarbonise its transport system in a manner compatible with the Well-being of Future Generations (Wales) Act 2015.

### a. Reducing the Need to Travel

#### Planning

At the top of the sustainable transport hierarchy, and the most radical means of eliminating carbon, is eliminating or reducing the need to travel. In the long term, this can be most effectively achieved by altering the way we plan our communities. Most western countries embraced the motor car as a symbol of progress and designed communities around the opportunities for the relatively cheap and easy travel that it offered. Thus workplaces, shopping centres, places of entertainment and even public services could be located significant distances from residential areas - providing road links and parking spaces were in place - making travel an essential part of daily life. This car-centred approach lasted for several decades and the results can be most clearly seen in the sprawling out-of-town shopping centres, many of which cannot be reached by public transport and are too distant from centres of population to be accessible for pedestrians. Opposition to this style of planning has grown as the damage to traditional town centres has become evident and as the desire to curb emissions from motor vehicles has increased.

In Wales, planning is a function primarily of local authorities but the policy framework is set out in Welsh Government's Planning Policy Wales (PPW). The current edition, Edition 9, came into force in 2016, the year after the Well-being of Future Generations (Wales) Act 2015, and takes into account the new duties that the Act imposes. Most relevant here is the reference to the goal of cohesive communities<sup>34</sup>: 'Locate developments so as to minimise the demand for travel, especially by private car'.

A new edition of Planning Policy Wales which is even more closely aligned to the Well-being of Future Generations (Wales) Act 2015 is being currently considered following a consultation process. Indeed, bringing planning policy in line with the Act is given as the reason for the production of a new edition. The draft Edition 10 contains very clear statements on the need to reduce dependency on the car and adopts the sustainable transport hierarchy. This is in marked contrast to the English National Planning Policy Framework<sup>35</sup> which has replaced references to reducing the need to travel, and the requirement for local planning authorities to reduce the use of the private car, with the very vague phrasing 'support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport'.

However there are concerns that the wording of draft Planning Policy Wales 10 still makes it too easy for developers to provide inadequate or no sustainable transport infrastructure and still obtain planning permission. The National Assembly for Wales' Cross Party Group on the Active Travel Act made this comment in their response to the consultation:

'However, the document still fails to confer any effective obligation on the developers of land to properly incorporate active travel routes and facilities and contribute to the development of active travel networks with their schemes. As in previous editions of PPW, active travel is presented as a desirable thing to encourage and promote through development rather than an essential component of development schemes'<sup>36</sup>.

It remains to be seen whether the final version of Edition 10 will resolve these concerns. Having a planning policy that is forthright in requiring new developments to significantly reduce carbon emissions from the journeys they generate is clearly an important part of any decarbonisation plan.

The impact of Planning Policy Wales is, however, limited, not least by the simple fact that it applies only to new developments: there are only around 6,000 new dwellings built each year in Wales. But aside from the long-term nature of its impact, the parallels with the limited effectiveness of Welsh Government's transport policy are striking, in both cases principally arising from the disjuncture between the organisation developing policy - Welsh Government - and the bodies responsible for implementing it - local authorities.

34 Welsh Government, *Planning Policy Wales: Edition 9*, November 2016, 2016, p50

35 Ministry of Housing, Communities & Local Government, *National Planning Policy Framework*, 2012, para 30

36 Document shared with the author, it will shortly be published on the Welsh Government website here: <https://beta.gov.wales/planning-policy-wales-edition-10>

Planning Policy Wales' main role is to set the policies that local authorities have to include in their Local Development Plans (LDP). A change to Planning Policy Wales can therefore take a long time to work through the system as LDPs last fifteen years. This delay is exacerbated by developers being able to develop using planning permission granted decades ago with just minimal access arrangements being constructed to keep the permission in force. Councillor Andrew Morgan, Leader of Rhondda Cynon Taf County Borough Council<sup>37</sup>, is endeavouring to protect the town centres in his county and is anxious to restrict out of town shopping developments. He finds it frustrating that Trago Mills have recently opened a store adjacent to the A470 with 2,000 parking spaces, using planning permission granted twenty years ago. Both the current and draft new editions of PPW have strong statements against new large scale out-of-town shopping developments but have no impact on pre-existing planning permissions.

Another key limitation of Planning Policy Wales is the willingness or capacity of local authorities to implement the national policies if there is a risk of losing any development. Councillor Huw David<sup>38</sup> sees a marked contrast between developments close to or south of the M4 where returns on developments are higher and developments in the valleys communities of his county. Requiring developers in less prosperous areas to include social housing, plus community obligations such as schools and medical facilities and sustainable transport infrastructure in a new housing estate can cause developers simply to walk away. He would like to see a Welsh Government housing fund that local authorities could draw on to assist housing development away from the areas favoured by the free market.

Once planning permission has been granted by the local authority the battle is not necessarily over. Developers frequently return to the local planning departments to seek variations allowing them to downgrade or remove some of the conditions they agreed to in the original planning permission, citing market changes or increased costs threatening the viability of the development. Some senior Welsh planners we spoke to, who did not wish their comments to be attributed, are concerned that the significant cuts to local planning departments in recent years have seriously diminished the capacity of local authorities to resist pressure from developers, and all too often the development that takes place is markedly different in terms of provision of sustainable infrastructure to that originally planned.

New housing developments offer an important opportunity to bring about behaviour change. When someone moves into a new house in a new area, the change in their travel patterns offers real potential to also change their travel mode. However for this to happen the alternative mode needs to be available from the moment the person moves into the new property. Unfortunately this is not happening: bus services and active travel routes are all too often not in place until people have already established a car based travel pattern.

Developers will often argue that the viability of the development relies on them being able to collect revenue from housing sales before they can afford the costs of the sustainable infrastructure. Thus, whether they carry out the construction themselves or pay the local authority to do it, there is often insufficient money available to meet the costs until the development is well advanced.

37 Interview with Councillor Andrew Morgan, Leader, Rhondda Cynon Taff County Borough Council, 24 April 2018

38 Interview with Councillor Huw David, Leader, Bridgend County Borough Council, 23 May 2018



## Health and well-being

The way we utilise our planning system to modify the use of the car within our communities impacts not only on levels of carbon emissions, air quality and physical activity, it also affects our mental health. In February 2018 the Minister for Children and Social Care, Huw Irranca-Davies AM, declared tackling loneliness to be a national priority<sup>39</sup> because of its 'significant impact on people's physical and mental health'. The link between social isolation and traffic volume has been known since Donald Appleyard published his seminal work *Livable Streets* in 1981<sup>40</sup>. This found that how well people are connected to their neighbours, and how many they count as friends, is directly associated with the traffic volume in their street. A similar study in Bristol in 2008<sup>41</sup> found that the number of friends and acquaintances reported by residents was significantly lower on streets with higher volumes of motorised vehicles. The study asked residents on quiet, medium and busy traffic streets to draw lines on a map of their street representing where their friends and acquaintances were on the street. The average number of friends of each resident on the light traffic street was 5.35, compared to 2.45 on the medium traffic street and 1.15 on the heavy traffic street. Residents on the light traffic street also reported more of a sense of community and togetherness.

Both these pieces of research are highlighted in the Annual Report of the Director of Public Health for Cardiff and Vale of Glamorgan 2017: '*Moving forwards: Healthy travel for all in Cardiff and the Vale of Glamorgan*', which examined the impact of transport on all aspects of health and well being, including loneliness:

'Seventeen percent of people in Wales report being lonely, with results from a recent local survey in Cardiff and Vale putting the figure at nearly 1 in 4 (23.3%) among people in more vulnerable groups. As car use has become more prevalent, people's social and support networks have also become more geographically dispersed. (...) Increased car use has been associated with 'severance', the isolation of individuals and communities for example where a wide, busy road makes short local walks difficult'<sup>42</sup>.

This clearly demonstrates the significant impact that our over-reliance on the car has had in increasing levels of loneliness, and the beneficial effect on mental health that measures to restrict its use in residential areas could produce. The new draft version of Planning Policy Wales explicitly embraces the concept of placemaking and sees healthier lifestyles as an important outcome of the placemaking process<sup>43</sup>. However, its consideration of mental health is limited to the beneficial effects of increased physical activity and access to the natural environment. Given the importance the Welsh Government now attaches to loneliness, the relationship between over-reliance on the motor car and social isolation should be a consideration in the planning process.

39 Welsh Government, "Tackling loneliness and isolation in Wales is a national priority" – Huw Irranca-Davies, 14 February 2018

40 Donald Appleyard, M. Sue Gerson, Mark Lintell, University of California Press, *Livable Streets*, 1981

41 Hart J et al, *Driven to excess: impacts of motor vehicles on the quality of life of residents of three streets in Bristol*, UK, 2008

42 Cardiff and the Vale University Health Board, *Moving forwards: Healthy travel for all in Cardiff and the Vale of Glamorgan*, 2017, pp 17, 18

43 Welsh Government, *Draft Planning Policy Wales: Edition 10*, February 2018, p 20

## Other Welsh Government Location Policies

Welsh Government's *Prosperity for All: economic action plan* launched in December 2017 explicitly recognises the impact of its location policies on carbon emissions, declaring:

'We will work to maximise the amount of residential, business and leisure space within walking distance of public transport to improve connectivity and increase our contribution toward the lowering of carbon footprints.

We will require all providers of public services (including ourselves) to adopt the same approach to the integration and planning of service provision - sustainable, accessible for all, integrated and focused on the needs of people, communities and business.

(...)

This will include co-locating services and delivering them digitally and where that is not possible, ensuring our infrastructure supports modal shift towards a lower carbon and more sustainable delivery mode. This will include the provision of better more integrated and reduced carbon public transport and walking and cycling.<sup>44</sup>

However that declaration clearly came too late to influence the siting of the new 471-bed Critical Care facility to be built at Llanfrechfa Grange, Cwmbran which has been planned in the knowledge that access to the facility will have to be principally by car. This is a clear example of how the lag in planning policy is adversely impacting our ability to ramp up action.

## Changing travel to work

At 17% of all journeys in Wales, commuting to work is the main motive for personal travel in Wales and 83.8% of those journeys are by car or van<sup>45</sup>. Interventions that can change this pattern are clearly going to have a significant impact on carbon emissions. According to the 2011 census<sup>46</sup> there are already more people in Wales who work from home than commute to work by bus. The Trades Union Congress estimate that a further 1.8 million people across the UK would like to work from home<sup>47</sup> and highlight the current very low take up in the public sector.

Martin Mansfield, General Secretary of the Wales TUC<sup>48</sup>, believes that allowing employees more flexibility in their working hours and the ability to work from home could help reduce transport emissions and relieve congestion at peak periods. He sees the main barrier being an outdated approach to managing staff.

Simply allowing employees to work from home one day a week could make a substantial contribution to decarbonisation, though the employee's normal mode of commuting and the amount of energy they might need to heat their home also has to be taken into account.

44 Welsh Government, *Prosperity for All: economic action plan*, December 2017, p.37

45 Welsh Government, *Stats Wales: Mobility - Percentage of people travelling to work by main modes*, 2014

46 The Guardian, [Proportion of people working from home reaches record high](#), 4 June 2014

47 TUC, [Four million people are now homeworkers but more want to join them](#), 5 June 2015

48 Interview with Martin Mansfield, General Secretary, Wales TUC, 10 May 2018

Flexibility in working hours is also a key factor for carers who need to fit working hours around, for example, childcare. Being constrained by the need to be at their workplace by 9.00am and thus making multiple journeys during peak periods makes it more likely that they will opt for travelling by car rather than active travel or public transport.

However, as Chwarae Teg discuss in their report *Working Womens' Journeys*<sup>49</sup>, carers - who are in the main women - who do manage to secure more flexible work patterns will often find it difficult to benefit from multi-journey discounts on public transport, for example season tickets which are generally designed around a five day working week. Bringing more equity to ticketing arrangements should be a consideration for Transport for Wales as they develop an integrated ticketing system for Wales.

## Recommendations

### **Recommendation:**

The new edition of Planning Policy Wales should ensure that provision of sustainable transport infrastructure is a fundamental requirement of new developments, not just a desirable outcome.

### **Recommendation:**

Welsh Government should actively consider how it could introduce expiry or review dates for large scale planning permissions where the construction of the development was subsequently so delayed that the planning conditions under which permission was granted no longer comply with Planning Policy Wales.

### **Recommendation:**

Welsh Government should review the capacity of local planning authorities to enforce planning policies effectively. This should be undertaken within this current Assembly term.

### **Recommendation:**

Given Welsh Government's declaration that tackling loneliness is a national priority and the strong evidence linking heavy traffic flows in residential areas with reduced social contact amongst the people living there, the new edition of Planning Policy Wales should take account of the impact of traffic flow on social isolation and loneliness.

### **Recommendation:**

Working through Welsh Government's Workforce Partnership Council, public sector employers in Wales should consider how they could grant greater flexibility in working hours to their employees. The journey to work should be an important consideration in their approach to achieving public sector decarbonisation targets.

### **Recommendation:**

Transport for Wales should ensure that new ticketing arrangements for public transport also cater for flexible and part-time working in multi-journey discounts. For example, carers - most of whom are women - who have more flexible work patterns will often find it difficult to benefit from multi-journey discounts on public transport, such as season tickets which are generally designed around a five day working week.

## b. Active Travel

### Context

Walking and cycling are the forms of transport that emit the least carbon. Both were once dominant travel modes but the emergence of the motor vehicle led to serious decline. Transport planners increasingly focussed on the needs of the motor car and what little provision was made for walkers and cyclists catered for leisure use. The term 'active travel' has been coined to redefine walking and cycling as serious means of transport and refocus public investment in the modes away from leisure routes towards purposeful journeys.

Using the limited data available for Wales it is possible to track the continued decline of walking. Between 2003/4 and 2011/12 the average number of miles walked per person per year in Wales fell from 164 to 161 and amounted to just 2% of total distance travelled. The average length of a walking trip is under a mile. Because people tend to make a lot of shorter journeys, walking constitutes 22% of all trips made in Wales, a figure that put Wales at the bottom of the league table for UK regions and nations in 2011/12. Only 10% of people walked to work in Wales in 2011/12.

Cycling as a means of transport in Wales had so diminished by 2010 that it did not merit a separate classification in the personal travel statistics, sharing 3% of total distances travelled with motorcycles and private hire buses. Figures for Great Britain show cycling's importance in 1949 when 14.7 billion miles were cycled on British roads but by 1973 that had tumbled to 2.3 billion miles. Since then there has been a slight recovery but only to 3.45 billion miles in 2016.<sup>50</sup> The distance cycled on Welsh roads remained fairly constant at 130 million miles from 1993 to 2008 but by 2016 had risen to 190 million miles<sup>51</sup>.

The reasons for the decline in walking and cycling are complex, much of it associated with the general cultural perception in the twentieth century that the car was the future of transport, and its ownership and use were closely associated with a person's social and economic status.

As congestion and environmental harm caused by over-reliance on the car has led to a desire to encourage more walking and cycling, it has become increasingly clear that the main barrier to people taking up active travel is the presence of motor vehicles. NICE state: 'Motor traffic is a major deterrent for many cyclists (potential and current) and pedestrians in rural areas – and for children in all areas'<sup>52</sup>. Living Streets, the walking charity, cite 'car dominant planning and street design' as the main barrier to getting more people walking: 'there is still lots to do to make Wales' streets safe and pedestrian friendly. A crucial step would be 20mph limits as default'<sup>53</sup>. Car ownership is closely linked to how much walking and cycling people do: 'You are much less likely to undertake active travel if you have a car (37% with a car, compared to 71% without)<sup>54</sup>.

50 Department for Transport, *Pedal cycle traffic (vehicle miles / kilometres) in Great Britain, annual from 1949 - Table TRAO401*, 2017

51 Stats Wales, *Volume of road traffic by type of vehicle and year*, November 2017

52 NICE, *Physical activity: walking and cycling: Public health guideline [PH41]*, November 2012, Chapter 3

53 Interview with Holly Smith, Policy & Research Assistant for Living Streets, March 2018

54 Cardiff and the Vale University Health Board, *Moving forwards: Healthy travel for all in Cardiff and the Vale of Glamorgan*, 2017, p 10

## Welsh Government's Approach

The Welsh Government has supported walking and cycling initiatives since the institution came into being. It particularly focussed on increasing the number of children walking and cycling to school with its Safe Routes to Schools programme in 1999. This is still providing grants to local authorities in 2018, albeit now as *Safe Routes in Communities. A Walking & Cycling Action Plan for Wales 2009 – 2013* set ambitious targets for increasing walking and cycling to school and work from the 2005 baseline. However by 2011 little progress had been made and in one case, children walking to school, there had been a decline<sup>55</sup>.

The granting of lawmaking powers to the Welsh Assembly in 2011 allowed a different approach and in 2013 the Assembly passed the Active Travel (Wales) Act 2013. The Act set out to make walking and cycling 'the most natural and normal way of getting about'<sup>56</sup>.

The Act required local authorities to map out walking and cycling networks that would enable people to make everyday journeys on foot or by bike from their homes to access services and amenities. The Act put in place Wales' own *Active Travel Design Guidance*<sup>57</sup> to ensure that all new walking and cycling infrastructure should be to a high standard. The routes were to be so constructed that people could make their journeys in a way that was coherent, direct, safe, comfortable and attractive. Fundamentally it was about separating walkers and cyclists from traffic, with the degree of separation depending on the speed and volume of traffic.

## Impacts on emissions

The Active Travel (Wales) Act's success required a modal shift, with most of the health and environmental benefits claimed for the Act only being realisable if substantial numbers of people replaced car journeys with active travel. However it did not set out to restrict the use of the car. Simply having more people walking and cycling does nothing to reduce carbon. Indeed since many mountain bikers and ramblers access their starting points by car, an increase in some types of walking and cycling could increase carbon emissions. The Explanatory Memorandum to the Act sets some calculations for the potential carbon savings of active travel: 'the average emissions saving for each car journey that is replaced by cycling or walking is 918gm and 224 gm CO<sub>2</sub> respectively'<sup>58</sup>, however it makes no projection for the total amount of carbon that the Act would save.

Given that the capacity of active travel to displace motorised transport is dependent primarily upon achieving behaviour change in motorists, it is difficult to assess exactly how much carbon active travel can save in practice. The European Cycling Federation calculate that even if the CO<sub>2</sub> used in manufacturing a bike and the food a cyclist consumes is taken into account, the CO<sub>2</sub> saving per kilometre of a bike over a car is 250gm<sup>59</sup>. So on an individual basis the position is clear, the difficult question is how great a shift to active travel can Wales achieve.

- 55 Welsh Government, *Monitoring 'A Walking & Cycling Action Plan for Wales 2009 – 2013': Interim Update 2012*, 2012
- 56 Welsh Government, *Active Travel (Wales) Bill Explanatory Memorandum*, 2013 p 9
- 57 Welsh Government, *Design Guidance Active Travel (Wales) Act 2013*, December 2014
- 58 Welsh Government, *Active Travel (Wales) Bill Explanatory Memorandum*, 2013 p 37
- 59 European Cycling Federation, *How much CO<sub>2</sub> does cycling really save?*, 2013

The Explanatory Memorandum to the Act quotes research showing that 30% of car journeys could be made by active travel, and cites the National Travel Survey findings that 'Nearly a quarter of car journeys in Great Britain are of less than two miles, and over half of all journeys made by car are of less than five miles'<sup>60</sup>, meaning that 25% of car journeys are within a comfortable walking distance and fully 50% are cyclable.

Research by the Institute for Transportation & Development Policy and the University of California<sup>61</sup> found that a global push to increase cycling could cut CO<sub>2</sub> emissions from urban passenger transport by nearly 11 percent in 2050. Given that the Committee on Climate Change is predicting that, on current performance, Wales' total transport emissions will have increased by 2030, an 11% cut by 2050 solely from active travel should be very welcome indeed. Given its unique legislative framework, Wales ought to be aiming to achieve much more.

The exemplar for cycling is the Danish city of Copenhagen where '41 % of all trips to work and study to/from Copenhagen is by bike and 62 % of Copenhageners choose to bike to work and study in Copenhagen. In total, 1.4 million km is cycled in the city on an average weekday which is an increase of 22% since 2006'<sup>62</sup>.

Closer to home, in London, the number of journeys made by bike has seen a 154% increase since 2000, reaching 730,000 journeys each day in 2016<sup>63</sup>.

In Cardiff, the *Bike Life* report, published jointly by Cardiff City Council and Sustrans, produces statistics based on large scale polling<sup>64</sup>. According to the report, 7% of Cardiff residents say they usually cycle to and from work. Even with the currently low level of cycling, the council claims that 5,014 tonnes of greenhouse gas emissions are saved annually, the equivalent to the carbon footprint of 983 people. Perhaps most significantly, 57% would like to start riding a bike, or could ride their bike more.

Councillor Caro Wild who, as the Cabinet Member for Strategic Planning & Transport on Cardiff Council, is responsible for achieving their target of 50% of journeys to be made by bike, on foot, or by public transport by 2026, is convinced that change is happening: 'There is a continual increase in the number of people cycling in the city'<sup>65</sup>.

There is considerable potential for increasing active travel in Wales, though that potential will clearly vary from place to place depending mainly on the length of journeys travelled (which tend to be longer in rural areas than urban centres) and topography (lots of steep hills can be a discouragement, though electric bikes could change this).

60 Welsh Government, *Active Travel (Wales) Bill Explanatory Memorandum*, 2013, p 15

61 Institute for Transportation & Development Policy and the University of California, *A Global High Shift Cycling Scenario*, 2015, p 4

62 Cycling Embassy of Denmark, *Copenhagen City of Cyclists – facts and figures 2017*, 2017

63 Transport for London, *Travel in London, Report 10*, p 56

64 Sustrans, *Bike Life Cardiff*, 2017

65 Interview with Cllr Caro Wild, Cabinet Member for Strategic Planning & Transport, Cardiff City Council, 1 May 2018

However the newly compiled active travel figures, produced to monitor the Active Travel (Wales) Act 2013, continue to show disappointing results:

- 61% of adults walked at least once a week for active travel purposes. This has fallen from 66% in 2013-14.
- 44% of children actively travel to primary school, and 34% to secondary school. This was a slight reduction for primary school from 50% in 2013-14.
- Cycling to school is relatively rare, with fewer than 1% cycling to primary school or secondary school on a typical day<sup>66</sup>.

### Enabling Active Travel

The Active Travel Act was hailed as groundbreaking when it was passed in 2013, but five years later there is considerable disappointment and frustration at the effectiveness of its implementation. The Economy, Infrastructure and Skills Committee has recently published a report of their post-legislative scrutiny of the operation of the Act: *Post Legislative Scrutiny of the Active Travel (Wales) Act 2013*. In it they blame a 'lack of leadership, funding and ambition' from the Welsh Government and local authorities for the lack of significant outcomes from the legislation<sup>67</sup>.

Roger Geffen, Policy Director of Cycling UK<sup>68</sup>, says setting ambitious targets is key to boosting active travel but to be effective there has to be an analytical underpinning of the targets based on the measures in the plan and the resources dedicated to its implementation.

The Scottish Government has a clear ambition in their *Cycling Action Plan for Scotland: 2017-2020*: '10% of everyday journeys to be made by bike, by 2020'<sup>69</sup>. The Welsh Government's *Active Travel Action Plan*, put in place under the previous Minister, contains the vague and far less ambitious: 'We are aiming to move towards a pattern by 2026 where 10% would cycle at least once a week'. As far as definite targets are concerned the only commitment is to develop them: 'We will develop appropriate targets and also monitor which proportion of the population makes frequent active travel journeys, meaning at least three walking or cycling trips per week'<sup>70</sup>.

In its advice to other organisations on travel planning and achieving modal shift Welsh Government explicitly calls for the setting of targets: 'Draw up an action plan outlining set objectives and SMART targets. The action plan should include measures that would need to be put in place to achieve the set targets'<sup>71</sup>. Its own targets for increasing recycling have been extraordinarily effective and it has recently introduced targets for the generation of

66 Welsh Government, *Statistical Bulletin: Walking and cycling in Wales: Active travel, 2016-17*, 2018

67 National Assembly for Wales, *Post Legislative Scrutiny of the Active Travel (Wales) Act 2013*, 2018, p 5

68 Interview with Roger Geffen, Policy Director of Cycling UK, 16 June 2018

69 Scottish Government, *Cycling Action Plan for Scotland: 2017-2020*, 2017, p 8

70 Welsh Government, *An Active Travel Action Plan for Wales*, 2016, p 26

71 Welsh Government, *Welsh Travel Plan Awards*, 2014, p 4

renewable energy. Welsh Government should rework its *Active Travel Action Plan* to meet ambitious SMART targets that at least match the level set by Scotland but aligning the timeframe to the Welsh carbon budgeting cycle, ie to be achieved by 2025.

Until this financial year (2018-19), Welsh Government had been spending approximately £12 million per year on active travel. On 1 May 2018 the Finance Secretary announced a new funding stream of £60m over three years from the Wales Investment Infrastructure Plan. For the first time Wales will have a dedicated Active Travel Fund, as previously the majority of funding had been included in the Local Transport Fund and it was up to local authorities whether they applied for active travel projects or other transport schemes. Adding in other funding streams such as *Safe Routes in Communities* the total spend in Wales will be £30,666,667 per annum, amounting to £10 per head of population.

The announcement was widely welcomed, however it still leaves Wales well behind other areas committed to increasing active travel. Scotland have a commitment in their Programme for Government, *A Nation with Ambition*, to 'double investment in walking and cycling to £80 million a year'<sup>72</sup>. This amounts to £17 per head. Greater Manchester have also set out an ambitious ten year plan<sup>73</sup> which involves spending £150 million per year on walking and cycling infrastructure, amounting to £54 per head. The Economy, Infrastructure and Skills Committee report *Post Legislative Scrutiny of the Active Travel (Wales) Act 2013* recommends: 'Capital and resource funding combined should be set at £17-£20 per head per annum'.<sup>74</sup>

One of the main complaints about the operation of the Act is that during the three years that the Act's mapping process has taken, hardly any infrastructure has been built. Wales therefore has a lot of ground to make up. Even the new level of spending will not achieve the step change the Act promised. Welsh Government should accept and implement the Economy, Infrastructure and Skills Committee's recommendation that funding for active travel, capital and resource combined, should be set at £17-£20 per head per annum.

There is substantial evidence that such investment provides major returns in public benefits:

'NICE found that off-road cycle routes were good value for money, with every £1 investment in off-road routes returning around £14 in benefits. They advise that cycle routes should ideally be on quiet streets or segregated, in order to minimise exposure to air pollution. Investments in walking infrastructure return £37 for every £1 invested'<sup>75</sup>.

Greater Manchester estimate that their ten year £1.5 billion investment will produce returns of at least £8.3 billion in public benefits<sup>76</sup>. As in Wales, many of those benefits will arise from improvements in people's health. Greater Manchester is looking to recoup some of its active travel investment from those health benefits. Wales should monitor how Greater

72 Scottish Government, *A Nation with Ambition*, 2017 p 7

73 Greater Manchester Combined Authority, *Made to Move*, 2017, p 9

74 National Assembly for Wales, Economy, Infrastructure and Skills Committee, *Post Legislative Scrutiny of the Active Travel (Wales) Act 2013*, 2018, p 8

75 Cardiff and the Vale University Health Board, *Moving forwards: Healthy travel for all in Cardiff and the Vale of Glamorgan*, 2017 p 21

76 Greater Manchester Combined Authority, *Made to Move*, 2017, p 9



Manchester achieves this, with a view to encouraging greater direct investment in active travel programmes by the Welsh NHS.

The constant complaint of walking and cycling groups is that despite the evidence of its effectiveness, active travel is still not taken seriously by most public bodies in Wales and the staff time devoted to it is negligible. Welsh Government is understood to have the equivalent of 2.5 full time staff dealing with active travel programmes. Most local authorities do not have a dedicated active travel officer and those roles that exist tend to be at quite a low level in the staff hierarchy. This makes it very difficult to develop respect for active travel across the institution. In addition, within transport departments, few if any of the highways engineers are familiar with the Active Travel Design Guidance. Similarly within the Welsh Government there is little evidence of concerted action across departments. This was apparent in the failure of the education department to include active travel requirements in their flagship 21st Century Schools programme. Four years after the Act came into force, the 2017 *Active Travel Annual Report* celebrated the arrival of a draft update of the Business Case Guidance for 21st Century Schools that finally gave consideration to how children might walk and cycle to the new schools<sup>77</sup>.

There has also been concern expressed at the absence in Draft *Planning Policy Wales: Edition 10* of a clear requirement for new developments to take account of the provisions of the Act and, in particular, its design guidance.

When preparing their report *Post Legislative Scrutiny of the Active Travel (Wales) Act 2013*, the Economy, Infrastructure and Skills Committee heard evidence from several bodies that expressed concern about the capacity of local authorities to deliver on the active travel agenda without significant extra resource in terms of additional personnel and staff training. The WLGA called for development of expertise at a regional level; the Cabinet Secretary indicated a preference for giving Transport for Wales a lead role<sup>78</sup>.

Given the importance of integrating active travel with public transport and enhancing the status of the mode so that it is given equal consideration in any transport project, it is essential that Transport for Wales (TfW) develops expertise in active travel delivery. It would therefore seem logical to give TfW a lead role in active travel delivery, as is the case with Transport for London. This development should take place in partnership with local authorities and regional transport authorities with a view to building an effective network of active travel practitioners, offering professional development and enhanced status. It would also be an interesting experiment to see if the public service in Wales can change its way of operating from prioritising the needs of each individual organisation to focussing on jointly achieving national outcomes.

In terms of what is delivered, the Active Travel (Wales) Act 2013, if properly implemented and resourced, provides a framework for developing high quality, safe infrastructure. What is lacking is a means of prioritising the development of infrastructure in a manner that provides quick wins in the the form of significant modal shift away from the car. Much of the scepticism about active travel could be dispelled if there were Welsh examples of cities or towns where active travel was a significant and growing transport mode. This requires concentrating

77 Welsh Government, *Active Travel: Annual Report 2016/17*, October 2017

78 National Assembly for Wales, Economy, Infrastructure and Skills Committee, *Post Legislative Scrutiny of the Active Travel (Wales) Act 2013*, 2018, p 52

funding into building comprehensive and complete local networks of routes that remove potential conflict with motor vehicles for the entire journey - essential if new active travellers are to be encouraged - in a few areas, rather than spreading the available resources thinly across the whole of Wales. To achieve this, the Welsh Government should target a significant proportion of its active travel investment into creating active travel communities, areas where concentrated investment in infrastructure and behaviour change programmes can demonstrate the achievability of modal shift from the car to walking and cycling.

To accompany the investment in and development of infrastructure, Wales requires a long term Active Travel Action Plan detailing the behaviour change programmes that the Welsh Government and other public bodies will undertake to promote active travel. The number and variety of effective interventions that could be included is too extensive for inclusion in a paper of this nature. Welsh Government should co-produce with local authorities, Regional Transport Authorities, representatives from national and local walking and cycling groups and Public Health Wales a new long-term Active Travel Action Plan. The plan should extend over two carbon budgeting cycles with evidence-based targets and milestones in place for each five year cycle. The targets should at least match the ambition shown by Scotland. The plan should be in place for the start of the next cycle in 2020.

### **Integrating active travel with public transport**

Active Travel is essentially a mode of travel most suited to short journeys, around a mile for walking and five miles for cycling. However when combined with public transport it has the potential to displace the car even for the longest journeys. According to Living Streets<sup>79</sup>, a key issue for walkers is the availability of good public transport within walking distance of where people live. For cyclists, effective integration with other modes requires changes in policy by public transport providers, as travelling by bike and train can be difficult, and taking a bike on a bus is almost impossible.

At the Welsh Government's Active Travel Conference held in Wrexham in May 2018, Ken Skates AM said all new buses should be able to carry bikes, though it is not yet clear how that will be brought about. At the moment, cyclists do not even have adequate facilities to secure their bikes at bus stops.

It is also unclear what provision the new rolling stock for the South Wales Metro and Wales and the West Rail franchise will make for passengers wishing to take their bikes with them. There certainly are solutions available with local Danish trains comfortably accommodating ten or more bikes in each of the 'flex space' carriages. Arriva Trains Wales<sup>80</sup> allow bikes 'at discretion of the conductor/guard, even if you have a reservation.' Bikes cannot be carried on many of the Valleys lines during peak periods, effectively ruling out a bike/train combination for commuting to work.

Cardiff Council is now providing Wales' first large scale municipal bike hire scheme through their partnership with Nextbike. The system, which is similar to the Santander bikes in London, allows people to take a bike from one of the twenty five docking stations located around the city, cycle to their destination and return their bike to the nearest station. The

79 Interview with Holly Smith, Policy & Research Assistant for Living Streets, March 2018

80 Arriva Trains Wales, [Can I take my bicycle on a train?](#), accessed June 2018

service costs £1 per hour or 50p per hour with a £5 monthly subscription. After only a few weeks of operation the system is already proving popular<sup>81</sup>. With a more comprehensive provision of docking stations, Cardiff Council sees the bikes as an important extension of the South Wales Metro in the city, intending to site docking stations outside public transport hubs<sup>82</sup>. Were there to be similar schemes in operation at the originating station and adjacent communities of the thousands of people who commute from the Valleys into Cardiff each day, this has the potential to displace significant numbers of car journeys.

### Electric bikes

Electric bikes are essentially ordinary bikes with an electric motor attached to assist the pedaller. They require pedalling to start and the user can extend the range of the battery by pedalling on the flat, reserving the motor for ascending hills or longer journeys. Thus they still have some of the health benefits of conventional bikes and make cycling in hilly areas more accessible for much of the population. Roger Geffen<sup>83</sup> says they are particularly successful in helping older or less fit people use cycling as a form of transport, providing healthy exercise that will gradually improve their fitness. They are much more affordable than electric cars, some now costing less than £1,000. The running costs are around 10p for a charge that will last 50 miles<sup>84</sup>.

### Active Travel and the Well-being Goals

Active travel contributes more to the Well-being of Future Generation (Wales) Act's goals than any other mode of transport. It aids the economy by reducing congestion, currently estimated to cost Wales £2bn per annum<sup>85</sup>, and by improving the health of the workforce. It contributes to resilience by reducing emissions, to equality by providing a low cost transport mode; it helps community cohesion by enabling people to interact more easily, similarly making it easier and cheaper for people to involve themselves in cultural activities; and it has a global impact by helping to combat climate change. But its greatest contribution is to a Healthier Wales.

Leaving aside the issue of the air quality improvements achieved by displacing car journeys, the simple physical activity of walking and cycling has profoundly beneficial impacts on the nation's health. Wales has the lowest physical activity levels in Britain<sup>86</sup>, resulting in obesity and a whole range of illnesses that are estimated to cost the Welsh NHS £35 million each year to treat. The situation with younger people is particularly concerning: 'Welsh teenage girls have the lowest physical activity levels out of the UK countries, with only 8% of Welsh teenage girls meeting the physical activity guidelines'<sup>87</sup>. Given that health expenditure now accounts for 50% of the Welsh Government budget, interventions that help to avoid the enormous costs that 'lifestyle diseases' such as obesity and Type 2 diabetes impose on society should be prioritised for investment.

81 Wales Online, *Cardiff is seeing a huge cycling boom on back of city's new bike-hire scheme*, 13 June 2018

82 Interview with Cllr Caro Wild, Cabinet Member for Strategic Planning & Transport, Cardiff City Council, 1 May 2018

83 Interview with Roger Geffen, Policy Director of Cycling UK, 16 June 2018

84 Cyclescheme.co.uk, *Why would I buy an e-bike for the cost of a car?*, 23 March 2018, accessed June 2018

85 BBC News, *Newport was Wales' most congested city in 2017*, figures show, February 2018, accessed June 2018

86 Public Health Wales, *What is Physical Inactivity Costing NHS Wales?*, 2017

87 Cardiff and the Vale University Health Board, *Moving forwards: Healthy travel for all in Cardiff and the Vale of Glamorgan*, 2017, p 10

## Recommendations

### **Recommendation:**

Welsh Government should co-produce with local authorities, Regional Transport Authorities, representatives from national and local walking and cycling groups and Public Health Wales, a new long-term Active Travel Action Plan, which is fully integrated with the Transport Decarbonisation Plan. The Active Travel Action Plan should extend over two carbon budgeting cycles with evidence based targets and milestones in place for each five year cycle. The targets should at least match the ambition shown by Scotland. The plan should be in place for the start of the next cycle in 2020. The plan should also consider the potential for promoting electric bikes in Wales.

### **Recommendation:**

Welsh Government should accept and implement the Economy, Infrastructure and Skills Committee's recommendation that funding for active travel, capital and resource combined, should be set at £17-£20 per head per annum. This should form a part of the draft budget developed by Welsh Government in 2018.

### **Recommendation:**

As part of the Transport Decarbonisation Plan, Welsh Government should target a significant proportion of its active travel investment into creating active travel communities. These are areas where concentrated investment in infrastructure and behaviour change programmes can demonstrate the achievability of modal shift from the car to walking and cycling to provide an example for other areas of Wales of the effectiveness of well-designed active travel infrastructure.

### **Recommendation:**

Transport for Wales should ensure sufficient space is allocated to bikes on all new rolling stock as it is procured to enable train and bike commutes to become a practical option within the South Wales Metro area.

## c. Public Transport

Public transport should be an obvious way of reducing carbon from transport. Having many people transported by one engine ought to be more efficient than having one person transported by one engine. However, in practice, achieving that reduction depends on a range of factors.

### Buses

The lack of a comprehensive rail network in Wales, other than around Cardiff, means that public transport in Wales is essentially the bus: 100 million passenger journeys<sup>88</sup> in Wales are made each year by bus, with only 21 million by rail<sup>89</sup>. So how effective is bus travel in reducing carbon compared to the dominant Welsh transport mode, the private car?

Given that in an urban environment, a conventional diesel bus emits 852.15 grams of CO<sub>2</sub> per vehicle kilometre, while a petrol engined car emits 160.75, savings start once 5.31 cars are displaced by a bus<sup>90</sup>. The average car occupancy in England in 2016 was 1.55<sup>91</sup>. Figures are not available for Wales. A bus starts to save carbon when it is carrying just over eight passengers. From the figures available, it would appear that the average occupancy of buses is only just over 8, in fact 8.024252094<sup>92</sup> to be precise. These figures are based on averages and do not reflect the higher occupancy and greener vehicles of some areas of Wales. Nevertheless, taken as a whole, bus travel in Wales is not achieving the significant reduction in carbon that might be expected, or that many people believe. The potential to change this situation and the interventions required to do so will be examined in greater detail below.

There are two key approaches to improving the carbon performance of buses: increasing the number of passengers on each bus and reducing the amount of carbon each bus emits.

### Bus Funding

As has been noted above, bus passenger numbers in Wales are in serious decline. In 2016 three significant bus service providers in Wales went out of business. According to data from Welsh Government<sup>93</sup>, the number of buses used for local and school services has declined from 1,900 in 2005 to 1,500 in 2017 and the number of passenger journeys has fallen by almost 20% since 2004. As a local example of decline in services, Llŷr Gruffydd AM cites Wrexham where there has been:

88 Stats Wales, [Vehicle kilometres and passenger journeys on buses and coaches by year](#), February 2018

89 Stats Wales, [Rail passenger journeys to, from or within Wales and total journeys in Great Britain by year](#), March 2018

90 Department of Energy and Climate Change, [A review of data and methods to calculate greenhouse gas emissions from alternative fuel transport](#), January 2014

91 Department for Transport, [Car / van occupancy: England, 2002 to 2016 - Table 0905](#), 2017

92 This figure was calculated by dividing the total passenger Kms travelled in Wales (taken from: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/666791/bus0302.ods](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/666791/bus0302.ods)) by the total vehicle Kms travelled in Wales (taken from <https://stats.wales.gov.wales/Catalogue/Transport/Roads/Public-Service-Vehicles/vehiclekilometresandpassengerjourneysonbusesandcoaches-by-year>).

93 Department for Transport, [Number of buses used as Public Service Vehicles by metropolitan area status and country, local bus operators only: Great Britain, annual from 2004/05 - Table 0602](#), 2017

- A 31% reduction in departures from Wrexham bus station from 2015/6 to 2016/7
- A 20% reduction in bus mileage between 2006/7 and 2016/17
- A 20% reduction in passengers between 2004/5 and 2016/7
- A 46% reduction in bus services between 2005 and 2015.<sup>94</sup>

The reason for this decline are many and varied. The Confederation of Passenger Transport<sup>95</sup> believes that cuts in Welsh Government support has damaged the industry. Public bus subsidies in Wales come in a number of forms and from a number of sources. Until 2013 the main direct subsidy came from Welsh Government in the form of the Bus Service Operators Grant. This was a system that predated devolution and was essentially a rebate to bus operators of some of the fuel duty they had paid to the Treasury. The anomaly of Welsh Government paying a rebate on a duty it did not collect did not become an issue until fourteen years after devolution when the grant was reviewed as part of a budgetary process and a 25% cut was imposed<sup>96</sup>.

In 2013, the then Minister with responsibility for transport, Carl Sargeant AM, announced plans to radically change bus financing in Wales, bringing together the Bus Service Operators Grant with the Local Transport Support Grant which had previously been paid to each local authority to assist them in contracting non-commercial bus services. He gave responsibility for administering the new fund to the four regional transport consortia. He set out plans for a subsidy based not on burning fuel but on a formula that would pay a higher per mile subsidy if the service provider met additional criteria including:

- Driver training in disability equality and awareness
- The provision of audible and visual announcements on buses
- Standardised information displays at all bus stops
- The application of safe and efficient – economical – driving
- Networks that take account of the needs of people who wish to use buses to access health, education, training and employment
- Multi-operator integrated ticketing schemes so that passengers are able to use their tickets on any service, not just some
- Integration of timetables with other transport modes<sup>97</sup>.

However the funding system that was subsequently brought into being was less ambitious, simply requiring bus companies to meet a number of core equalities and information criteria in order to qualify for funding. Local authorities are given the option of providing further incentives but out of their own resources<sup>98</sup>. The amount of funding has been frozen at £25m since the new scheme was introduced in 2013.

94 Correspondence with Llŷr Huws Gruffydd AM, 24 May 2018

95 Interview with John Pockett, Director, Confederation of Passenger Transport Cymru, 9 April 2018

96 Welsh Government, *Written Statement: Bus Services in Wales*, January 17, 2013

97 Welsh Government, *Written Statement, Bus Services in Wales*, January 17, 2013

98 Welsh Government, *Voluntary Welsh Bus Quality Standard*, 2017

The Campaign for Better Transport has also severely criticised cuts in public subsidy for buses in Wales. Its report *Buses in Crisis: A report on bus funding across England and Wales 2010 - 2016* showed that in total £2.1 million had been cut from supported bus funding in 2015-16, a reduction of 11.3% while 32 bus services had been reduced or altered and 21 had been withdrawn altogether. They found that between 2011 to 2016 £4.2 million had been cut from supported bus services, which amounted to a 20.6% overall reduction. All but five of the 22 Welsh local authorities had made cuts to bus funding in the past year<sup>99</sup>.

The impact of cuts in subsidy is borne out by Welsh Government's statistics for distance covered by local service buses. Whilst commercial services have decreased slightly from 80 million kms in 2010-11 to 79.14 million kms in 2016-17, the distance covered by subsidised services has more than halved, from 44 million kms to 21.14 million kms<sup>100</sup>. And the situation shows no sign of improving as austerity continues to put pressure on local authority budgets. Councillor Huw David, Leader of Bridgend County Council, says that cutting subsidised bus routes is on every Welsh council's list of possible savings<sup>101</sup>.

However whilst the direct subsidy has been in decline, Welsh bus services receive significant public funding from other sources, most notably through the Welsh Government concessionary fare scheme for the over sixties and disabled. The budget for this scheme and the new reduced fares scheme for young people provides a further £23 million of public funding for the bus industry.

Another significant funding input into the bus industry comes from the provision of transport to schools. The Welsh Government contribution to this amounts to £110 million. This funding stream has the potential to act as a spur to improvements in bus services. By intelligent procuring, school transport could help to decarbonise the bus fleet. This could be achieved by offering longer contracts in exchange for higher quality, lower emission vehicles, which would then also be available for scheduled services. Currently school buses tend to be the oldest vehicles in the fleet and at the moment many of the contracts are awarded to coach companies, removing any of the benefit that the education funding may have provided to public transport.

Pooling all transport budgets, whether they be for health, education, concessionary fares or scheduled services, has been advocated by a number of transport experts as a means of making better use of public resources and increasing occupancy. In England, the UK Government has funded an £8 million pilot scheme across 37 local authorities to test this 'Total Transport' approach. The IPPR, in their report *Total transport authorities: A new deal for town and rural bus services*,<sup>102</sup> recommend the establishment of Total Transport Authorities working across local authority boundaries.

99 Campaign for Better Transport, *Buses in Crisis: A report on bus funding across England and Wales 2010 - 2016*, November 2015

100 Welsh Government, *Stats Wales: Vehicle kilometres and passenger journeys on buses and coaches by year*, 2018

101 Interview with Councillor Huw David, Leader, Bridgend County Borough Council, 23 May 2018

102 IPPR, *Total transport authorities: A new deal for town and rural bus services*, 2015

Welsh Government should certainly explore this approach. At the very least they should ensure that all bus, taxi and coach commissioning is administered jointly, perhaps through the new Regional Transport Authorities. Bringing together the budgets for school transport, the Bus Services Support Grant and concessionary fares at a regional or national level would allow much greater coordination of services, give greater financial leverage in negotiating contracts and enable the concentration of the skilled personnel needed to manage complex negotiations.

The bus industry is clearly frustrated by the changes and reductions in Welsh bus funding. Above all, it wants long term clarity on how the system will work. However the industry is also clear that the car is by far the most important impediment to greater use of the bus.

### Prioritising the Bus

According to Richard Davies of Cardiff Bus<sup>103</sup>, his passengers' main requirement is reliability: knowing that the bus will get them to their destination at the promised time. The principal obstacle to providing reliability is congestion caused by cars. The road network in the city endures such density of traffic that a restriction in any part of it can easily cause near gridlock. He cites the recent example of the closure of Mardy Bridge on the eastern outskirts of the city as part of the works to electrify the south Wales railway line; the shift of traffic to other routes led to buses travelling through the Rumney area of Cardiff being delayed by twenty minutes in the morning. Bus services using Cathedral Road have a twenty minute journey outside of rush hour but can be up to fifty five minutes in the evening when congested.

The rising numbers of cars also has an impact on the competitiveness of the bus. Cardiff Bus recently blamed congestion on the city's roads for their decision to increase prices. One of their key costs is labour; congestion means that bus drivers are working longer hours, albeit stuck in traffic queues.

Infrastructure changes can make significant improvements to bus journey times and reliability. Dedicated bus lanes and priority at traffic signals allow buses to bypass queues of stationary traffic. This also sends a very visible message to the stationary car drivers and can help to convince them to try public transport. Given the choice between increased public subsidy and more bus priority measures, Richard Davies opts for the latter.

There is currently no clear funding source for bus priority measures. The cuts in Welsh Government's transport capital grants to local authorities and the squeeze on the councils' own budgets mean significant investment in this highly effective intervention is unlikely to happen. There is therefore a strong case for Welsh Government to establish a dedicated capital fund for the purpose.

However, in addition to finance, such infrastructure requires road space to be taken from cars, both moving and parked, and this requires political will and a readiness on the part of councillors, AMs and Ministers to defend the interests of the public transport user against the more numerous car users. John Pockett of the Confederation of Passenger Transport has 'politicians who are prepared to stand up against the dominance of the car' at the top of his wish list for the bus industry.

103 Interview with Richard Davies, Operations and Commercial Director, Cardiff Bus, 17 April 2018



The other key factor in people's decision whether to use the bus, is their ownership of a car. Findings from the National Travel Survey published in *Annual bus statistics: England 2016/17* are blunt: 'As the proportion of the household car ownership increases, the level of bus use decreases'.<sup>104</sup>

We are in a vicious circle of more cars making buses more unattractive causing more people to want cars. And it is important to note that the role of the car here is not related to the type of engine used, it is entirely a matter of the space occupied by the vehicle and the particular model of ownership that means once a car has been purchased, the marginal cost of using it is often less than those of more sustainable means.

The situation has been exacerbated by the UK Government's transport policies, in particular the freezing of fuel duty. The RAC Foundation's chart of transport costs inflation<sup>105</sup> shows that, in the past ten years, the total cost of motoring has risen by 29.11%, less than the rise in the cost of living at 31.2%, whilst bus and coach fares have increased by 65.07% and rail fares by 49.1%.

### **Decarbonising Wales' Bus Fleet**

Turning to how buses can emit less carbon, buses themselves vary significantly in the amount of carbon they emit and significant numbers of low or no emission hybrid, electric, gas and hydrogen buses are now operating in the UK, though very few in Wales. Cardiff Bus has just begun a Welsh Government assisted trial of a Volvo electric bus.

In their economic action plan, *Prosperity for All: economic action plan*<sup>106</sup>, Welsh Government have pledged to 'introduce a range of measures whose aim is that all taxis and buses in Wales will have a zero carbon footprint within 10 years.' However, there are currently no details as to how that will be achieved.

According to Cardiff Bus and the Confederation of Passenger Transport, the reason for Wales' poor record in adopting low emission buses is the lack of funding. Whilst the old Bus Services Operators' Grant provided a higher payment per litre of fuel burned for lower emission buses, Welsh Government has never replicated the Scottish and UK Government's capital grants for the purchase of greener buses. Ken Skates AM has made clear his desire to access the UK Government's funding stream rather than use his own budget (a somewhat different approach to that being taken on charging points for electric cars where £2m was found as part of a budget deal with Plaid Cymru<sup>107</sup>).

Steven Salmon of CPT highlights the cost of securing the electricity supply as a key issue in rolling out more electric buses. The purchase and running costs of an electric bus are now comparable with that of a diesel vehicle but electricity suppliers will often impose a substantial up front cost to channel the electricity supply to where the bus company needs it, assuming that the electricity grid is capable of bearing the additional demand.

104 Department for Transport, *Annual bus statistics: England 2016/17*, 2017

105 RAC Foundation, *Transport price index*, accessed June 2018.

106 Welsh Government, *Prosperity for All: economic action plan*, 2018 p.38

107 BBC News, *Labour and Plaid Cymru agree two-year budget deal*, 1 October 2017. Accessed June 2018

Richard Davies of Cardiff Bus<sup>108</sup> believes that improvements in diesel technology are currently more likely to make the biggest contribution to lowering harmful emissions from buses in the immediate future. The latest Euro 6 buses, of which Cardiff have forty, produce one eighth of the highly toxic NOx of an older Euro 4 engine, and are therefore much less damaging to people's health. However the Euro 6 actually emits more carbon than the Euro 4, at 869.59 CO<sub>2</sub> g/vkm to 852.15 CO<sub>2</sub> g/vkm. If the Welsh Government is serious about delivering on its pledge of zero carbon buses then the only real options are electric or hydrogen powered vehicles.

Hydrogen fuel cell buses are potentially free of all harmful emissions producing only water vapour. However they share with electric buses the need to obtain power generated elsewhere and their ultimate impact on decarbonisation depends on how that power is generated. The UK's largest hydrogen powered bus fleet is operated by Stagecoach in Aberdeen which has ten buses. The energy they use to power the electrolysis that produces the hydrogen is being provided from renewable sources via the National Grid. Their ultimate aim is to link the process directly to a wind turbine in the region<sup>109</sup>. Dundee is about to deploy twelve hydrogen powered buses. Both Scottish cities are part of a European project to deploy 152 vehicles across the continent. None of the vehicles will make their way to Wales.

Wales has a lot of ground to make up in greening its bus fleet partly because of the historic absence of any capital support for the industry to adopt low emission vehicles. As we will discuss later with electric vehicles, the lack of a detailed plan for decarbonising buses is a significant barrier to accessing external funding, both from the UK and Europe. Of the 479 new buses financed in the latest round of grants from the UK Government's Office of Low Emission Vehicles (OLEV), only four were destined for Wales.<sup>110</sup> And it is understood that that project - four electric buses in Denbighshire - has still not materialised.<sup>111</sup> Welsh Government, Transport for Wales and local authorities (or the Regional Transport Authorities where they exist) working with the bus industry should put in place a clear plan for decarbonising the bus fleet with the utmost urgency, with the next round of OLEV funding applications already being open to bidders.

Another popular fuel for greening buses is biomethane, which is produced through anaerobic digestion, using food waste, farm waste and sewage. Substantial fleets of biomethane buses are to operate in the west of England and Nottingham thanks to a £9m investment by OLEV. However, whilst being substantially cleaner than diesel, and producing 84% less CO<sub>2</sub> than a conventional Euro 4 diesel, they still emit carbon, effectively ruling them out for the zero carbon bus future Welsh Government has pledged.

## Bus Regulation

Were Wales to undertake a successful campaign to reverse the fortunes of the bus industry, and put in place comprehensive bus priority measures and successfully reduce car volumes, it is still possible that we would not reap all the potential decarbonisation benefits - simply because of the market-based system under which the Welsh bus industry currently operates.

- 108 Interview with Richard Davies, Operations and Commercial Director, Cardiff Bus, 17 April 2018  
109 Stagecoachbus.com, [Aberdeen Hydrogen Bus Project – a greener future](#), Link accessed June 2018  
110 Department for Transport, [Low emission bus scheme: successful bidders](#), 2017  
111 Local Transport Today, [Rural electric bus-trial fails to go the distance](#), 16 March 2018

Since bus deregulation in 1986, any bus operator that meets certain basic standards has been able to register a route and compete with the existing operator. For example, were the Welsh Government, at public expense, to pay for the re-engineering of the roads of Swansea to allow buses to become much more speedy and reliable than the private motor car, producing a significant modal shift to buses and achieving an occupancy rate of say 30 people per bus, it would be entirely legitimate for another operator to enter the market and run an alternative bus service on the same routes at more or less the same times. At a stroke we would see the occupancy rate halved and carbon emissions doubled.

It could be argued that increased competition may mean a reduction in price, at least in the short term, (though there is little evidence of this happening in Wales) but in respect of the environment and air quality, such a laissez faire approach to providing bus services makes no sense at all. There is no requirement for bus companies challenging on a route to match the emissions levels of the existing service provider. Given that low emission vehicles are more expensive to run, a challenger utilising less environmentally friendly buses will be able to secure a market advantage by offering lower prices. Cardiff Bus say that increased competition is a key inhibiting factor in their adoption of lower emissions buses.

The logic of the market also means that rival operators will alter their service pattern to maximise profit. It is also entirely possible that one of the operators will decide to withdraw from the market if profitability is not sufficient, potentially leaving customers without any service on some routes, at least for a period of time. Inevitably this builds into the system a greater degree of long term unreliability of services than even traffic congestion can cause. A fuller analysis of the negative impact of bus deregulation in Wales can be found in *A Fare Deal? Regulation and Financing of Bus Services in Wales*.<sup>112</sup> For a more contemporary, and political view of bus deregulation in North Wales see Llŷr Huws Gruffydd AM's article on Nation.Cymru.<sup>113</sup>

Fortunately, in the 2017 Wales Bill, Wales acquired the powers to legislate for a system that regulates the market by imposing a franchise arrangement for the provision of bus services. This would mean local authorities and/or Welsh Government assessing service requirements for a specific area, which might be a county or even a region, and issuing an invitation to tender to provide services. The franchise could be broken down into smaller contracts to enable smaller bus companies to compete. Whichever company secured the contract would be given exclusive rights to run services in the area during the length of the franchise. Some franchises, particularly those in rural areas, would require public subsidy to make them viable; others would be able to subsidise socially necessary but loss-making routes from the profits made on more lucrative routes.

Properly planned and managed, the franchise could meet important social, economic and cultural needs, rather than simply aiming to make a profit. It is clearly essential that the emissions levels of the buses and the types of equalities requirements currently within the Bus Services Support Grant be built into the franchise specifications. Given that the franchise could guarantee five or seven year returns on the investment in new vehicles, such improvements should be more achievable. According to Disability Wales, Wales still has some way to go in delivering accessibility requirements with many buses and even bus stops

112 Public Policy Institute for Wales, *A Fare Deal? Regulation and Financing of Bus Services in Wales*, 2014

113 Llŷr Huws Griffiths AM, *The people of Wales would love to do without their cars – but where are the buses?*, Nation.Cymru, 13 April 2018

inaccessible for wheelchair users and audible stop announcements often turned off even when the facility is available<sup>114</sup>.

The introduction of franchising enjoys strong political support, however it is not an easy option. There will be strong opposition from bus operators and it is questionable whether Wales currently has the expertise necessary to properly assess, design, and cost the route networks that would constitute the individual franchises. The development of this expertise must be a key priority for Transport for Wales and the Regional Transport Authorities.

If Ken Skates AM's radical vision for a publicly owned transport system managed by Transport for Wales becomes a reality then the potential to ensure bus services meet social needs will be greatly increased, providing there is the will and capacity to meet the costs of subsidies.

Franchising or control by Transport for Wales could also finally resolve the integrated ticketing issue. Very few bus companies in Wales will routinely accept multi-journey tickets (day passes, etc.) from other operators. This makes bus travel more expensive for those commuters who need to use services provided by different operators to get to their place of work. One simple machine-readable pass system for all public transport in Wales would also significantly speed up bus travel as the purchasing of tickets when boarding a bus is a major cause of delays and a further contributor to emissions as the bus engine idles at the bus stop.

### **An image problem?**

However, aside from reliability and cost buses do seem to have an image problem. Margaret Thatcher never actually said that 'anyone over the age of thirty who travels by bus is a failure', but it is concerning that so many people have found it easy to believe that she did say it. It is clear that low levels of income and bus travel go together. In 2016/17, individuals with an annual income of less than £25,000 accounted for 67% of journeys on local buses in England.<sup>115</sup> No current data is available for Wales but a report based on the one of the last National Travel Surveys to be conducted in Wales and using figures from 2008/10 found that the average personal income for a bus user was £7,978, whilst the figure for car drivers was £18,873 and £12,909 for rail users.<sup>116</sup>

When asked to explain why buses are used by the middle classes in Central London but not in Swansea, Steven Salmon of CPT has no hesitation in crediting the lack of the car as a practical alternative. He is clear about the importance of buses being consistently clean, comfortable and having ticketing that is easy to use, acknowledging that even so, if unrestricted use of the private motor car is available, wealthier people will shun the bus<sup>117</sup>.

Councillor Huw David, who takes pride in using the local bus when his working hours permit, believes the fact that policymakers and officials don't use the bus but the car and the train is a key reason why the bus is the poor relation of public transport in Wales. He is concerned that the South Wales Metro will be too rail focussed and cites the impossibility of re-

114 Interview with Ruth Nortey, Policy & Research Officer, Disability Wales, 1 June 2018

115 Department for Transport, *Annual bus statistics: England 2016/17*, December 2017

116 RAC Foundation, Le Vine and Jones, *On the Move: Car, rail and bus travel trends in Wales*, December 2014

117 Interview with Steven Salmon, Director of Policy Development, Confederation of Passenger Transport UK, 25 May 2018

establishing rail links to many of his county's valleys communities, whereas a comprehensive bus network could bring major economic and social benefits to the area<sup>118</sup>.

Councillor Caro Wild wants to change the image of buses in his city, citing Bogota where 'buses and bikes are now the coolest way of getting around...We need to see middle class people on buses in Cardiff' he asserts<sup>119</sup>.

### **Buses and the Goals of the Well-being of Future Generations (Wales) Act**

There are clearly major challenges facing the bus industry in Wales. Nevertheless, with effective reform and appropriate investment, the bus industry should be able to make an important contribution to reducing carbon, at least in the more urban parts of Wales, by displacing significant numbers of car journeys. It is important that this success comes about since buses also have a key role to play in achieving other goals of the Well-being of Future Generations (Wales) Act 2015.

In displacing car use, buses can produce significant health benefits by reducing NOx and other pollutants. Using public transport also helps to reduce the health problems arising from physical inactivity. Living Streets calculate that getting to and from bus stops and train stations involves at least twenty minutes of physical activity each day.<sup>120</sup>

Public transport has significant social and economic impacts. Martin Mansfield, General Secretary of the Wales TUC, argues that because of the low incomes prevalent in Wales, the availability of public transport is a determining factor in many people's choice of work, given that their wages do not stretch to owning a car<sup>121</sup>.

Buses are also vitally important for young people. Under 17 year olds make up 19% of local bus users in England (figures are not available for Wales)<sup>122</sup>, offering opportunities to travel independently of their parents and being a key means of access to educational and social activities. Welsh Government has introduced discounted travel on public transport for 16 - 18 year olds across Wales, through Mytravelpass which offers 30% off adult fares. Though, as Councillor Huw David noted, the real value of Wales' concessionary fares is diminishing as the number of services on which they can be used is constantly falling<sup>123</sup>.

The Bevan Foundation recently argued that Wales could afford to make bus travel free of charge for everyone.<sup>124</sup> However there is a serious question as to whether removing all fare revenue would ever allow an expansion beyond the currently inadequate service provision. There is already concern that free bus passes have skewed buses towards a timetable that favours the needs of the elderly rather than the working population.

118 Interview with Councillor Huw David, Leader, Bridgend County Borough Council, 23 May, 2018

119 Interview with Cllr Caro Wild, Cabinet Member for Strategic Planning & Transport, Cardiff City Council, 1 May 2018

120 Interview with Holly Smith, Policy & Research Assistant for Living Streets, March 2018

121 Interview with Martin Mansfield, General Secretary, Wales TUC, 10 May 2018

122 Department for Transport, *Annual bus statistics: England 2016/17*, December 2017

123 Interview with Councillor Huw David, Leader, Bridgend County Borough Council, 23 May 2018

124 The Bevan Foundation, *The case for free bus travel for all*, January 2018

The provision of bus services also impacts on gender equality. A report by Chwarae Teg, *Working Women's Journeys*, found that whilst 3% of the general Welsh population travel to work by bus, the figure for women is 6%. Whilst the report shows that more women now drive than previously there is still a gender divide with 80% of men and 67% of women aged 17 or over in Wales having a full driving licence. Economically inactive women are the group least likely to have access to a car, making it more difficult for them to gain employment<sup>125</sup>.

## Recommendations

### **Recommendation:**

Welsh Government should bring all bus, taxi and coach commissioning together under a single administration, utilising the new Regional Transport Authorities and pooling the budgets for school transport, the Bus Services Support Grant and concessionary fares. This would facilitate greater coordination of services, give greater financial leverage in negotiating contracts and enable the concentration of the skilled personnel needed to manage complex negotiations.

### **Recommendation:**

Welsh Government should commit to establishing a dedicated capital fund for bus priority measures within a Transport Decarbonisation Plan.

### **Recommendation:**

Welsh Government, Transport for Wales and local authorities (or the Regional Transport Authorities where they exist), in partnership with the bus industry, should agree steps to decarbonise the bus fleet with the utmost urgency, with a view to maximizing funding for Welsh buses from the current Office for Low Emission Vehicles funding round.

### **Recommendation:**

Welsh Government should introduce the legislation required to allow a system of bus franchising to be developed in Wales. The legislation should complete its passage during the current Assembly term. Transport for Wales should give priority to ensuring they and/or the Regional Transport Authorities have the necessary expertise in place to manage a franchise system.

### **Recommendation:**

If the South Wales Metro is to achieve its full potential it must reach beyond rail-based services. Transport for Wales should prioritise the development and integration of bus services into the South Wales Metro network, working with existing bus operators to minimise negative impacts on current services.

125 Chwarae Teg, *Working Women's Journeys*, 2016, p2

## Rail and the South Wales Metro

The announcement of the new Wales and the Borders rail franchise, which incorporates the South Wales Metro, came during the drafting of this paper. The initial plans have been warmly welcomed. However the plans for development of services beyond the current heavy rail lines remain quite vague. The commercial sensitivities around the franchise process make carrying out the 'involving people' principle required by the Well-being of Future Generations Act very difficult to achieve, an important lesson for the design of the future bus franchising system.

## New Franchise

The powers that gave the Welsh Government joint responsibility for the franchise with the UK Government were not granted until the 2006 Transport (Wales) Act, some three years after the current 15 year franchise was awarded to Arriva Trains Wales in 2003 by the UK Strategic Rail Authority. As Ken Skates said, 'We are at an historic point for the railway in Wales. For the first time a rail service has been procured and awarded in Wales, for Wales.'

The new franchise process was managed by Transport for Wales with the contract awarded to the Franco-Spanish consortium Keolis Amey who will operate the service from October 2018. Despite having a private sector operator, the service will be branded Transport for Wales.

The ambition for the new franchise puts it in a different league to its predecessor. The 2003 franchise foresaw minimum development in Welsh rail with the franchisee being required to invest £400,000 over the 15-year period<sup>126</sup>, whereas the new franchise involves a 'nearly £2 billion investment programme'.<sup>127</sup>

## Emissions

There is a clear and ambitious commitment to cut emissions in the new franchise. The principal Welsh Government statement<sup>128</sup> released after the announcement of the new franchise concentrates entirely on the decarbonisation of the rolling stock. However this will not involve full electrification of the Valleys Lines. In order to save on the substantial costs of altering bridges and tunnels to accommodate continuous overhead electric cabling, the rolling stock will employ a variety of power sources:

'The new contract reflects our commitment to carbon reduction. Treherbert, Aberdare, Merthyr Tydfil, Coryton and Rhymney lines running north out of Cardiff Queen street will be 100 per cent electric traction, with the electricity sourced from 100 per cent renewable sources (50 per cent from within Wales). There will be a reduction in

126 National Assembly for Wales Research Service, *Rail Franchising in Wales*, 2016, p 5

127 Welsh Government. *Written Statement - Update on the Procurement for the Wales and Borders Rail Service and South Wales Metro*, 2018

128 Welsh Government. *Written Statement - Update on the Procurement for the Wales and Borders Rail Service and South Wales Metro*, 2018

carbon emissions of 25 per cent across the whole service by the fifth year, as a result of introducing the latest generation of low emission Diesel Multiple Units (DMU).

The tri-modes trains will bring together three well proven technologies – diesel, batteries and 25kV electric traction (from renewable energy sources) – and builds on well-established bi-mode trains. The tri-mode trains, along with the Metro Vehicles, will enable a 100% diesel free and zero carbon solution for Metro operations<sup>129</sup> to significantly reduce harmful pollution in the most populated area of Wales, supporting our goals of a globally responsible and healthier Wales’.

The tri-modes trains will operate on the routes from Cardiff to Rhymney, Coryton, Penarth, Barry and the Vale of Glamorgan using electric power north of Cardiff and diesel power to the south.<sup>130</sup>

Decarbonising the rail system itself is an important ambition for the franchise but not as significant as the reductions that can be achieved through a modal shift away from the car. This was explicit in the original 2016 Welsh Government consultation on the franchise, *Setting the Direction for Wales and the Borders Rail* which set ‘Reduced emissions through lower road vehicle use’<sup>131</sup> as a high level outcome.

There are 32.3 million passenger journeys per year on the current franchise (including journeys out of Wales). The new franchise is promising an additional 285 services each weekday across Wales (a 29% increase) by the end of 2023<sup>132</sup> and a 22% increase in Sunday services by 2019<sup>133</sup>. Network Rail’s *Welsh Route Study* of 2016 predicts that rail travel from Wales to destinations in England will increase by 27-34% and commuter traffic into the Cardiff City Region by 68% by 2023.<sup>134</sup>

However such increases still leave rail’s passenger capacity far behind that of buses.

Rail infrastructure is expensive and difficult to install. If the Metro is to reach many of the communities of South Wales then integration with the bus is the only practical option. The key to the Metro’s success, and overcoming the perception that it is too Cardiff-centric, will be its ability to seamlessly integrate other modes, particularly buses, into the system. Professor Mark Barry, who was the originator of the South Wales Metro concept, is generally pleased with how the project is turning out but stresses the importance of having ‘a journey mentality not a mode mentality’ and ‘ensuring the core network and next phase, is delivered in a way that future proofs its ongoing development and expansion’. He says ‘The challenge for TfW is to move from being an organisation focussed on rail procurement to one focussed on system design, implementation and operations.’<sup>135</sup>

129 Welsh Government. *Written Statement - Update on the Procurement for the Wales and Borders Rail Service and South Wales Metro*, 2018

130 Railway Gazette, *Electrification and train-trams in ambitious Wales franchise*, 6 June 2018

131 Welsh Government, *Setting the Direction for Wales and the Borders Rail*, 2016 p 7

132 Wales Online, *How Wales’ railways will be transformed with new stations, trains and jobs through investment worth billions*, 4 June 2018

133 Railway Gazette, *Electrification and train-trams in ambitious Wales franchise*, 6 June 2018

134 Network Rail, *Welsh Route Study*, 2016

135 Interview with Professor Mark Barry, Professor of Practice in Connectivity, Cardiff University, 31 May 2018



The Welsh Government statement makes no mention of buses. In fairness the procurement exercise was about the rail franchise but the integration with buses must be a key priority. Similarly, the references in the written statement to ticketing improvements do not mention integrated ticketing with bus companies.<sup>136</sup>

There is a reference to taking the new Metro vehicles onto roads, as the vehicles will be 'on street capable'. And there will be an on street operation pilot in Cardiff Bay to evaluate the feasibility of using this approach elsewhere on the network. A key question is whether on street running means taking space from cars or whether the two modes will share space. Richard Davies of Cardiff Bus<sup>137</sup> suggests that proposed corridors for on street operations could be utilised in the first instance as fast bus corridors.

Its broader impact, at least in the Metro area, could be in changing attitudes to public transport. Rail is already seen as an acceptable alternative to the car across the social classes, so transferring that acceptance by good branding through to light rail, then trams, to guided or trolley buses could help change people's attitudes towards using the bus.

### The Metro and Active Travel

How people get to stations will have a significant impact on the rail system's, and particularly the Metro's, carbon footprint. Combining public transport with active travel is the most sustainable transport form for longer journeys. Providing good facilities for walkers and cyclists will reduce emissions if people can be persuaded not to drive to the station as part of their commute and could also lead to wider lifestyle changes as people become accustomed to the more sustainable alternative. Encouraging active travel will also enable the franchise to make a greater contribution to achieving a healthier Wales.

The 2016 Welsh Government consultation document on the franchise, *Setting the Direction for Wales and the Borders Rail*, makes a clear commitment to providing space for bikes on the new rolling stock:

'Improvements in the rolling stock used on the next Wales and Borders franchise will be expected in all these areas, together with additional provision for passengers wishing to travel with bicycles to support advancement of our active travel objectives.'<sup>138</sup>

An email received by Swansea cycling campaign group Wheelwrights from Keolis Amey set out the new operator's plans<sup>139</sup>:

'All new trains, and indeed cascaded trains after 2022, will be fitted with bike storage facilities. Rural and long-distance trains will have dedicated, reservable, cycle storage and South Wales Metro and Valley Lines trains will have flexible cycle storage (i.e. with tip-up seats). All trains will have at least space for three bikes, and most of them will have space for more.'

136 Welsh Government, *Written Statement - Update on the Procurement for the Wales and Borders Rail Service and South Wales Metro*, June 2018

137 Interview with Richard Davies, Operations and Commercial Director, Cardiff Bus, 17 April 2018

138 Welsh Government, *Setting the Direction for Wales and the Borders Rail*, 2016, p 19

139 Interview with John Sayce, Chair of Wheelwrights, 18 June 2018

Three bikes per train hardly seems likely to support the Active Travel Act's objective of making 'walking and cycling the most natural and normal way of getting about.'<sup>140</sup> By contrast the Scottish Government has just announced<sup>141</sup> that they will be providing five rail carriages entirely reserved for bikes and outdoor equipment.

## The Franchise and the Well-being Goals

The new franchise is clearly taking account of the goals, with explicit reference being made to the Well-being of Future Generations (Wales) Act 2015 in many of the Cabinet Secretary's statements.

There will be direct contributions to creating a 'prosperous Wales' from the plans to create a new depot to house and service the new Metro vehicles in Taff's Well. More significantly, there are plans for a significant proportion of the new rolling stock to be constructed in Wales. The Taff's Well depot is also to operate to high environmental standards:

'Electricity sourced from 100% renewable sources will be used at the new Taff's Well depot, with rain water harvesting expected to save over 3,000m<sup>3</sup> of water per year. Added to this, solar panels will also be installed and the latest LED lighting will minimise light pollution and energy use, in line with the Environment (Wales) Act 2016 and helping to achieve the policy goals of the Well-being of Future Generations Act.'<sup>142</sup>

The planned extension of the Coryton line to serve the proposed Velindre hospital also indicates an intention to mitigate transport emissions from journeys to Welsh Government facilities.

The new franchise seems to have made a good start and clearly has significant potential to contribute to the decarbonisation of transport in Wales. Given the complexity and legal constraints of the franchise process, it is too soon to expect a fully comprehensive statement of how the network will extend beyond the current heavy rail lines. But it is essential that the system starts work on integrating with and improving bus services at the earliest possible stage.

### Recommendation:

If the South Wales Metro is to achieve its full potential it must reach beyond rail-based services. Transport for Wales should prioritise the development and integration of bus services into the South Wales Metro network, working with existing bus operators to minimise negative impacts on current services.

140 Welsh Government, *Active Travel (Wales) Bill Explanatory Memorandum*, 2013, p 9

141 The Scotsman, *Cycle coaches to be hitched to trains to ease bike crush*, 19 June 2018

142 Welsh Government, *Written Statement - Investment in rolling stock depot facilities to support the new South Wales Metro*, June 11, 2018

## d. Cars

### Reducing Car Use

It is clear that the presence of the car in large numbers, however powered, and particularly when travelling at speed, is a major barrier to increased use of the more sustainable modes of travel discussed above. Any successful shift to a sustainable decarbonised system will need to embrace measures to discourage use of the car, particularly in urban areas. An intelligent application of those measures will require extensive public engagement to explain the reasons for the measures. Those reasons will often focus on health rather than environmental issues, and are more likely to achieve public support, or at least acceptance, if they do so. The movement away from the car in the Netherlands began not as a campaign for more cycling but as a protest against deaths and serious injuries of children caused by collisions with cars.<sup>143</sup>

Consistency in the application of, and messaging behind, these measures across the public sector in Wales will be essential to their success. Weaning Wales off its over-reliance on the car will require a long term campaign of promoting the sustainable alternatives and making the car less attractive. Unfortunately the consistency of messaging and action needed is not currently evident.

Speed limits of 20mph have been shown to have a significant impact on the extent of injuries arising from collisions between motor vehicles and pedestrians or cyclists. Slower traffic also encourages more people to take up walking and cycling as the perceived danger from traffic is reduced. They also make driving a less attractive alternative to public transport, as journey times by car increase. Living Streets consider it to be the single most effective measure for increasing walking rates.<sup>144</sup> A report by Public Health Wales<sup>145</sup> examined the case for 20mph speed limits in the context of the Well-being of Future Generations Act goals. It included a table assessing the range of benefits:

143 Peter Walker, *How Cycling can Save the World*, 2017

144 Interview with Holly Smith, Policy & Research Assistant, Living Streets, March 2018

145 Sarah J Jones, Huw Brunt, Public Health Wales, *Safeguarding the health and well-being of future generations by introducing Wales-wide 20mph speed limits*, 2016

**Table 5: The case for 20mph speed limits**

<b>Road traffic casualties</b>	Decreases in injuries, crashes, pedestrian and child pedestrian injuries of 17 to 70%
<b>Air pollution</b>	12% reduction in gear changes, 14% in braking and 12% in fuel use; transport emissions reduced in residential areas by 12% 32% reduction in NOx when average speeds drop from 31 to 19mph 48% reduction in NOx emissions with a calmer driving style Acceleration accounts for 35-55% of pollutants Decrease in NOx emissions of 24-31%
<b>Active travel</b>	12-25% increase in walking and cycling (Bristol) Three fold increase in cycling to schools (Edinburgh)
<b>Noise</b>	2dB reduction in traffic noise
<b>Inequalities</b>	Narrowed, differences across areas equalised
<b>Social inclusion</b>	Improved and enhanced
<b>Community cohesion</b>	Increased, communities improved
<b>Local business viability</b>	Improved; people using active travel to visit shops spend more money

The report concluded that the road casualty savings alone justified the application of a Wales-wide 20mph speed limit.

For many years Welsh Government had consistently called upon local authorities to introduce more 20mph speed limits, citing the positive evidence to justify the measure and regretting that its lack of powers over speed limits prevented it taking any direct action. Thus this contribution to a 2013 Assembly debate<sup>146</sup> on 20mph limits by the Minister then responsible for transport, Carl Sargeant AM:

‘There is a direct correlation between lower speed limits and reduced casualties, which is why the Welsh Government has always supported their introduction.

(...)

146 National Assembly for Wales, [Record of Proceedings 06/02/2013,15:39](#)

As Members have alluded to, there are excellent examples regarding the introduction of the 20mph zone scheme, such as Sandfields estate in Port Talbot, where a long-term strategy has been introduced to improve road safety, including a blanket 20mph zone across the entire estate. That was funded by the Welsh Government and it has led to a 48% reduction in personal injuries over a three-year period, which is quite remarkable.

(...)

Twenty mile per hour zone schemes can have an impact on social deprivation, where the likelihood of a pedestrian road casualty, particularly among young people, is highly disproportionate. I am passionate about addressing the link between poverty and road casualties, and that is why I have made additional funding available to local authorities during this financial year to introduce 20mph zone schemes in Communities First areas, which have a history of road casualties.

The Welsh Government does not have the powers to change the national speed limits or to impose 20mph limits on roads that are the responsibility of local authorities, and I accept that local decision making is important, but I share the views of many in the Chamber and outside the Chamber that the call for local authorities to increase the number of 20mph zones across Wales should be heeded and seriously considered.'

Welsh Government's *Road Safety Framework for Wales*<sup>147</sup> extols the virtues of lower speed limits:

'Research shows that reducing speed on the roads dramatically reduces the severity of collisions and encourages more people to walk. There are approximately 560 20mph speed limits and zones in Wales, many of which have been funded by the Welsh Government.'

The Wales Act 2017 gave Welsh Government powers over speed limits, making possible the imposition of a default 20mph speed limit. However, rather than grasping this opportunity to put in place a measure that it had long argued was well justified by the available evidence, Welsh Government responded to a call from campaign group 20's Plenty For Us for it to use its new powers to reduce speed limits from 30mph to 20mph in built-up areas with a statement that: 'wider research remains inconclusive.'<sup>148</sup> They added that they were awaiting the outcome of a Department for Transport commissioned three-year research project to consider the benefits of lowering the speed limits in 30mph zones.

The response can hardly have been welcome news for Cardiff City Council who are currently (June 2018) consulting on *Cardiff's Transport and Clean Air Green Paper*<sup>149</sup> aimed at reducing car use in the city, and in which citywide 20mph speed limits are a major feature. The Green Paper has come about partly at the behest of Welsh Government's Natural Resources

147 Welsh Government, *Road Safety Framework for Wales*, July 2013, p11

148 BBC Wales, *Use new powers on 20mph zone*, Welsh Government urged, April 2018

149 Cardiff City Council, *Cardiff's Transport & Clean Air Green Paper: Changing how we move around a growing city*, March 2018

Department who are anxious to be seen to be taking action on the poor air quality levels in the capital city, following legal action against them by ClientEarth. A statement from the Transport Department within Welsh Government that the evidence for 20mph limits is inconclusive in the middle of that consultation shows little evidence of a consistent approach to tackling the environmental and health impacts of the transport system.<sup>150</sup>

Decarbonising transport in Wales in a manner consistent with the Well-being of Future Generations (Wales) Act 2015 requires behaviour change. Successfully bringing about that change requires consistency of messaging. Welsh Government's approach to 20mph speed limits sends out the message that allowing cars to travel quickly is more important than reducing road casualties, and by so doing reinforces the propensity to drive and diminishes the propensity to walk and cycle.

#### **Recommendation:**

Welsh Government should impose a default 20mph limit in urban areas, allowing local authorities discretion in exempting routes where justified.

### **Parking**

On average, private cars are parked for 95% of the time.<sup>151</sup> The amount of land needed for parking places a considerable strain on urban space and has a significant impact on property prices. Councillor Caro Wild, Cardiff Cabinet Member for Strategic Planning & Transport, thinks it is 'crazy when you look down a street of forty houses and see fifty cars parked outside, which for over 90% of the time are not being used.'<sup>152</sup>

Parked cars are a potential hazard for pedestrians, and particularly children, when trying to cross roads. Illegal and inconsiderate parking is widespread and a cause of delay for bus services and real danger for cyclists who may have to swerve into busy traffic. Parking on pavements, whilst often not illegal, causes major problems for people with disabilities and parents or carers with buggies. The amount of urban land covered in tarmac or concrete to accommodate parking also exacerbates urban drainage problems with less soil exposed to absorb rainfall.

The infrastructure required for more sustainable transport modes, such as bus priority lanes, cycle lanes and wider pavements, often cannot be put in place without removing parking spaces. The opposition of residents to that removal often prevents the installation of effective sustainable transport infrastructure.

Controlling parking offers a powerful means of disincentivising the use of the car. Parking charges can help to make car travel less attractive than other modes. Some cities have used parking charges as a means of financing greener infrastructure. Nottingham City Council has

150 BBC Wales, *Use new powers on 20mph zone*, Welsh Government urged, April 2018

151 The Guardian, *'It's the worst place to park in the world' – why Britain is at war over parking*, 29 May 2017

152 Interview with Cllr Caro Wild, Cabinet Member for Strategic Planning & Transport, Cardiff City Council, 1 May 2018

a workplace parking levy, which charges employers £402 for each space if they provide more than 10 parking places for employees. The scheme has been in operation since 2012 and has raised £44 million<sup>153</sup>. The funds raised have been used to develop sustainable transport in the city including a tram system, the redevelopment of the railway station and the largest fleet of electric buses in Europe<sup>154</sup>. The scheme is also credited with producing a reduction in congestion as the number of vehicles travelling into the city centre has fallen<sup>155</sup>.

*Cardiff's Transport and Clean Air Green Paper*<sup>156</sup> contains a suggestion that the city could introduce a Nottingham style levy with funds raised going to 'public transport alternatives'.

Meanwhile the Welsh Government continues to promote free parking as a means of regenerating town centres<sup>157</sup>. A Welsh Government spokesman said:

'A £3m fund has been made available to all local authorities in Wales to explore the potential benefits that free car parking, or wider strategies, can have in supporting the regeneration of our towns and cities.

We recognise however that different approaches exist to support the vitality and viability of town centres and we respect that this funding will be used in varying ways in line with local considerations.'

Of course parking can never be cost free as it takes up valuable land space and the car park itself has to be constructed and maintained. For an interesting discussion of the social inequities in 'free parking' see this Economist article<sup>158</sup> which looks at how car parks are often utilised by the more prosperous, but paid for by the less prosperous through hidden charges.

Rather than reducing the advantage that out-of-town shopping centres have over high streets by lowering town centre parking fees, a more sustainable approach would be to impose a levy on out-of-town parking with the revenue used to fund sustainable transport. There is some support for such an approach within local councils but also nervousness about the electoral consequences of any rise in parking charges. There is also clear evidence of the economic benefits of well-planned pedestrianisation schemes which, according to a Living Streets report quoted in the Department for Transport's Cycling and Walking Investment Strategy, can produce up to a '40% boost in shopping footfall'<sup>159</sup>.

Welsh Government should undertake a review of parking policies and how they contribute to the development of a sustainable transport system. The review should pay particular attention to the issue of parking in out of town retail centres.

153 Nottingham City Council, *Workplace parking levy wins praise from independent bodies*, January 30, 2018

154 WWF Scotland, *Workplace Parking Levy, Nottingham, UK*, 2016

155 Living Streets, *Written evidence to the Transport Select Committee's inquiry into urban congestion*, 2016, p 5

156 Cardiff City Council, *Cardiff's Transport & Clean Air Green Paper: Changing how we move around a growing city*, March 2018, p16

157 South Wales Argus, *One other Gwent council will use Welsh Government's car parking grant for additional financial pressures*, 13 November 2017

158 The Economist, *How not to create traffic jams pollution and urban sprawl*, 8 April 2017

159 Department for Transport, *Cycling and Walking Investment Strategy*, 2017

## Cost of driving

When the 1997 UK Labour Government introduced measures to restrict the car, including a law entitled the Road Traffic Reduction Act (1998), it planned to maintain the previous government's fuel duty escalator. The rapid increase in oil prices led to a deferment of the increases but the measure remained in place. The continuance of this measure was a key expectation of Welsh Government's 2010 Climate Change Strategy as continually rising fuel costs are a clear disincentive to car use. However in 2011 the incoming coalition government effectively abolished the measure and the costs of motoring have fallen against inflation. Thus whilst the costs of public transport have continued to increase above inflation, the relative cost of using the car has reduced. Welsh Government does not have the power to change UK fuel duty policy but it has other options available to it that could help to redress the balance between the cost of the car and public transport.

One measure frequently employed in continental Europe is charging for road use. This has also been used in England, for example the M6 Toll Road around Birmingham. No such tolls exist in Wales. According to Professor Gerry Holtham<sup>160</sup>, a former adviser to Welsh Government, 'The Welsh Government seem prejudiced against the use of road tolls but they should not be. Tolls provide a way to finance infrastructure investment more equitably, a way to discriminate in favour of public transport and a way to tax non-resident road-users who otherwise inflict costs that they don't help to defray'. The most significant example of tolling in Wales is on the second Severn Crossing. The UK Government's announcement of the forthcoming abolition of those tolls was warmly welcomed by the Welsh Government.

Cardiff City Council is considering a Clean Air Zone in which access would be restricted for vehicles that did not meet the required emission standard, or charges made for entry, as with the London congestion zone.

Other car reduction measures include school exclusion zones where cars are banned from areas around schools during defined periods. Examples exist in Scotland<sup>161</sup> and in Solihull<sup>162</sup>.

## Car culture

The major difficulty in reducing car use is the nature of the relationship between the vehicle and its owner. Lee Waters AM describes it as 'tied up with a sense of identity and economic status'<sup>163</sup>. Tim Williams, Chief Executive of the Welsh Automotive Forum, says the 'relationship with the car is emotional'<sup>164</sup>.

The extent to which the political will exists to restrict the use of the car, even incrementally, is questionable. Simon Thomas AM<sup>165</sup> believes the reaction of most people to the ban on diesel and petrol cars will be to seek another car, but with a different type of engine: 'People

160 Highways Magazine, [Funding conundrum for Welsh transport](#), 3 March 2018

161 Perth & Kinross Council website, [School exclusion zones](#), accessed June 2018

162 Solihull Metropolitan Borough Council, [School Streets FAQ](#), accessed June 2018

163 Interview with Lee Waters AM, 2 May 2018

164 Interview with Tim Williams, Chief Executive of the Welsh Automotive Forum, 10 May 2018

165 Interview with Simon Thomas AM., 26 April 2018



can be enticed into a new technology but not a lifestyle change', though he still thinks that modal shift should be part of any decarbonisation plan with people at least using the car less or owning fewer of them. Where there is unanimity is in the belief that the principle barrier to behaviour change in much of Wales is the absence of an effective alternative to the car.

Lee Waters AM is confident that the culture can be changed but is nervous about the energy needed to promote behaviour change being diverted into catering for electric cars<sup>166</sup>.

## Car ownership models

One of the key ways in which a more rational relationship could be encouraged would be to remove all the emotional and status issues which arise from the ownership of a particular vehicle, though Tim Williams is convinced that even on-demand driverless pods will be available in luxury versions<sup>167</sup>. To encourage people to use the car only when it is absolutely necessary, and sustainable transport at all other times, it is necessary to shift the cost of the car from the initial purchase and ongoing maintenance and legal costs towards a cost per journey similar to that of public transport. Cardiff City Council estimate<sup>168</sup> that it costs £4,000 pa to own a car. It can be difficult to persuade someone who has made one of their life's major investments in a car and is paying annual charges for vehicle excise duty and insurance, that they should leave their car at home and pay an additional charge to travel in a bus, particularly when that bus is crawling to its destination in a queue of cars.

There are a range of car hire models from the traditional commercial operation, such as Enterprise or Hertz, and a growing number of municipal car clubs. Cardiff City Council is planning to launch a new municipal scheme later this year<sup>169</sup>, which will 'offer a complete self-service, app based system'.

There are still instances in which the public sector rewards private car ownership, specifically by paying employees generous mileage allowances to use their own car rather than incentivising the use of sustainable transport or providing pooled or hire cars. This 'grey fleet' of employee owned vehicles can have a significant if undocumented impact on a public body's transport emissions as the vehicle could be extremely inefficient. The Energy Saving Trust who provide advice to organisations on employee travel have encountered sports cars, vintage cars and heavy four by fours being used to travel to meetings at public expense.

166 Interview with Lee Waters AM, 2 May 2018

167 Interview with Tim Williams, Chief Executive of the Welsh Automotive Forum, 10 May 2018

168 Cardiff City Council, *Cardiff's Transport & Clean Air Green Paper: Changing how we move around a growing city*, March 2018, p22

169 Cardiff City Council, *Cardiff's Transport & Clean Air Green Paper: Changing how we move around a growing city*, March 2018, p22

## The Impact of Cars on Health

In addition to the health problems caused by the car's impact on air quality, the car imposes a number of other serious health costs on society, most directly in the deaths and injuries caused by collisions with motor vehicles.

In 2016, 103 people died in road accidents in Wales, ie two people each week. There were 975 road accidents that resulted in death or serious injury<sup>170</sup>.

Across Britain, 69 children died in road accidents in 2016, an increase of 15 over 2015, whereas 2,033 children were seriously injured, that is 40 children killed or seriously injured each week. A total of 15,976 children suffered some form of injury on Britain's roads. 'Between the ages of five to 14, the most common cause of death is being hit by a vehicle'<sup>171</sup>.

The negative health impacts of the car also exacerbate social inequalities in two ways. First, in respect of air quality: 'On the one hand, people in the least deprived communities are more likely to have a car than those in the most deprived areas. On the other, the impact of pollution (particularly NO<sub>2</sub>) is felt more in deprived areas, which tend to be located closer to main highways, have a higher proportion of "imported" traffic (from less deprived areas), and have a higher proportion of people with chronic illness which makes them more vulnerable to air pollution exposure'<sup>172</sup>.

Second, in respect of injuries from collisions: 'Children in more deprived wards are four times more likely to be hit by a car compared with the least deprived wards'<sup>173</sup>.

A report by Transport for London found that the sedentary lifestyle associated with car use leads to 'an increased risk of obesity, while walking and use of public transport is associated with not being overweight or obese'<sup>174</sup>.

## Electric Vehicles

For many, electric vehicles (EVs) are the panacea for decarbonising transport. They have the significant advantage of being the lower carbon alternative transport that is closest to the transport system we have in Wales now. They hardly require any behaviour change on the part of the population and for some politicians that alone makes them the most attractive option. For many parts of Wales, mainly rural areas where public transport is inadequate and significant improvement unlikely, the EV does offer the best, if not the only, low carbon alternative to the conventional car for longer journeys.

170 Cardiff and the Vale University Health Board, *Moving forwards: Healthy travel for all in Cardiff and the Vale of Glamorgan*, 2017 p 15

171 Sustainable Development Commission, *Fairness in a Car-dependent Society*, February 2011, p27

172 Cardiff and the Vale University Health Board, *Moving forwards: Healthy travel for all in Cardiff and the Vale of Glamorgan*, 2017 p 19

173 Cardiff and the Vale University Health Board, *Moving forwards: Healthy travel for all in Cardiff and the Vale of Glamorgan*, 2017 p 19

174 Greater London Authority, *Health Impact of Cars in London*, 2015, p2

Of course their impact on lowering carbon is, in the greater part, dependent on how the electricity they use is generated. If 90% of the current cars in the UK were replaced by electrically powered vehicles, they would require an additional 18GW of electricity<sup>175</sup>. The new nuclear power station at Hinkley Point will generate 3.2GW.

A report produced for WWF which advocates a bringing forward of the ban on conventional engines from 2040 to 2030 argues that generating electricity for EVs at power stations will produce far less CO<sub>2</sub> than the equivalent number of conventional engines would emit:

'In the 2030 scenario, the number of conventional cars and vans would decrease to 22 million. This would result in a reduction in tailpipe CO<sub>2</sub> emissions of 13 MtCO<sub>2</sub>e in 2030

(...)

The corresponding increase in emissions from electricity generation would be much smaller, at around 1.4 MtCO<sub>2</sub>e in 2030. EVs offer the greatest CO<sub>2</sub> reductions when they are charged with low-carbon electricity. The Committee on Climate Change recommend that the CO<sub>2</sub> intensity of electricity generation should decrease to below 100g/kWh in 2030<sup>176</sup>.

According to the European Environment Agency, the CO<sub>2</sub> intensity of electricity in generation is 388.8g/kWh<sup>177</sup>. Whilst the Committee on Climate Change may be recommending 100g/kWh in 2030 there is no certainty that this will happen.

According to the House of Commons Environmental Audit Committee: 'Recent figures show that clean energy investment has fallen dramatically since 2015. In cash terms it fell by 10% in 2016 and by a further 56% in 2017. Annual clean energy investment in the UK is now the lowest it has been since 2008 and the rate at which we are installing new renewable capacity is slowing<sup>178</sup>. In 2016, the Energy and Climate Change Committee warned that the UK will fail to achieve its 2020 renewable energy targets to provide 15% of its energy needs from renewable sources<sup>179</sup>.

The Welsh Government's powers in regard to energy are still limited to granting or refusing planning permission for power plants and energy generating schemes up to 350 megawatts. This means most renewable energy schemes such as on and off-shore wind. They have no power over subsidies for renewable energy or the prices that supply companies are required to pay.

The other key requirement for electric vehicles, as we saw with electric buses, is getting the power to the charging point. Here again, Welsh Government has limited powers over energy grids. As with the future source of the electricity needed for EVs, there is considerable uncertainty over the capacity of the grid to cope with the additional demand that EVs will

175 National Grid, *Future Energy Scenarios*, 2017, p 40

176 WWF, *Accelerating the EV transition*, March 2018, p 27

177 European Environment Agency, *CO<sub>2</sub> emission intensity*, December 15, 2016

178 Environmental Audit Committee, *Green finance: mobilising investment in clean energy and sustainable development*, May 2018 tm

179 UK Parliament, *Government to miss 2020 renewable energy targets*, September 9, 2016

create. Advocates of EVs argue that improved storage capacity in batteries and smarter charging technologies will mitigate these problems.

However there is little certainty about how the infrastructure for charging EVs will develop. According to a report by Regen, *Harnessing the Electric Vehicle Revolution*:<sup>180</sup> 'There has been little coordination in the early roll out of charging facilities with different companies competing to establish market leadership. There are 11 major public electric vehicle charging networks within the UK and a further 10 minor networks. The lack of standardisation between these networks creates an obvious barrier to EV adoption with consumers confused by the systems of membership payments, cards and apps'. The House of Commons' Business, Energy and Industrial Strategy Committee has conducted a major inquiry into developing the market and infrastructure for EVs, their report is in preparation.

### EVs in Wales

In 2017, of the 1.5 million cars registered in Wales around 2,500 of them were EVs, making up just 0.019 of the UK's 130,000 strong 'plug in' fleet<sup>181</sup>. Dr Paul Nieuwenhuis<sup>182</sup> believes Wales' relative lack of prosperity will make it difficult for it to lead the change to EVs, given the high cost of the new vehicles. The other deterrent is the absence of a charging network. Cllr Andrew Morgan<sup>183</sup> bemoans the fact that in his local authority, Rhondda Cynon Taff, the second largest in Wales, there is currently only one charging point, and that is privately owned. According to the Committee on Climate Change, as of June 2017, Wales had 390 charging points, a share of 3.2% of UK charging points. This is in contrast to Scotland where there were 1,811 public charging points equating to 14.7% of total charging points in the UK<sup>184</sup>. Significantly, these points had, in the main, been paid for by the UK Government.

Tim Peppin<sup>185</sup> of the WLGA is concerned that Wales access a fair share of the money that Westminster has made available for EV infrastructure. He believes that Welsh councils will need to raise awareness of the funding that is available and develop a direct relationship with the UK Government to ensure they do not miss out. Welsh Government has created a budget line for charging infrastructure of £2m from its own resources, but notably this was a concession won by Plaid Cymru to back the Welsh Labour budget<sup>186</sup>.

Even if the funding were available for the charging points there remain major questions about the capacity of the grid in Wales. Cllr Huw David<sup>187</sup> has serious concerns about how an adequate EV charging network could be established in much of Bridgend county, citing the inability of the grid in Caerau to accommodate a local bakery's expansion plans. His authority has embarked upon an energy mapping exercise to assess capacity across the county.

180 Regen, *Harnessing the Electric Vehicle Revolution*, 2018, p 13

181 <https://www.goultralow.com/news/press-releases/2017-record-year-electric-plug-car-registrations/>

182 Interview with Dr Paul Nieuwenhuis, co-Director, Centre for Automotive Industry Research & Electric Vehicle Centre of Excellence, Cardiff Business School, Cardiff University, 8 May 2018

183 Interview with Councillor Andrew Morgan, Leader, Rhondda Cynon Taff County Borough Council, 24 April 2018

184 Committee on Climate Change, *Meeting Carbon Budgets: Closing the policy gap 2017 Report to Parliament*, 2017, p 194

185 Interview with Tim Peppin, Director of Regeneration and Sustainable Development, Welsh Local Government Association, 22 May 2018

186 BBC News, [Labour and Plaid Cymru agree two-year budget deal](#), 1 October 2017. Accessed June 2018

187 Interview with Cllr Huw David, Leader, Bridgend County Borough Council, May 23, 2018

This lack of coordination and planning at a national level is concerning but should EVs be a priority for Welsh Government? As Lee Waters AM says<sup>188</sup>, EVs are still cars and carry with them almost all the economic, social, environmental and - with the exception of a reduction in NOx - health problems of their petrol- and diesel-powered cousins. They are also primarily private vehicles and it can to a great extent be assumed that the market will provide for them, as there are already privately operated charging networks. The UK Government is offering a £4,500 grant to anyone purchasing a new EV.

### The risks of not having a plan

Without proper planning Wales runs the risk of seeing a charging network develop only where there are people wealthy enough to purchase electric vehicles and patronise the privately owned facilities. That would almost certainly mean they would predominate in urban areas, the areas most suited to the development of active travel and public transport. The Regen report *Harnessing the Electric Vehicle Revolution*<sup>189</sup> cited above states: 'Commercial models are unlikely to address rural needs'.

On a very basic level we need to ensure that EV charging infrastructure does not obstruct walkers and cyclists.

EVs must be an integral part of Wales' decarbonisation plan, if only to ensure that they do not obstruct the development of the more sustainable alternatives. Wales' plan should be based on the sustainable transport hierarchy and should, wherever possible, prioritise interventions at the top of the hierarchy, aiming to provide viable alternatives to the car. It is only where those alternatives, because of population sparsity, topography or journey length, are not practical that the EV should be prioritised.

This is even acknowledged by the UK Government in *Making the connection: the plug-in vehicle infrastructure strategy*<sup>190</sup>: 'It is important to acknowledge that, although they have a significant environmental and economic role to play in transport, plug-in vehicles will not address all the implications of road transport, such as congestion. For some journeys, such as those in rural areas, the car is the only viable mode and we want to see an increasing number of these journeys undertaken by ultra-low emission vehicles. However, for other journeys, particularly those within towns and cities, public transport, walking and cycling can be the more sustainable and efficient modes'.

Fundamentally that means the priority area for the development of EVs should be rural Wales. Dr Paul Nieuwenhuis<sup>191</sup> is keen that EVs are seen much more as a solution to rural rather than urban transport problems. Improvements in battery technology resulting in increased range between charges are reducing the initial concerns about taking an EV far

188 Interview with Lee Waters AM, May 2, 2018

189 Regen, *Harnessing the Electric Vehicle Revolution*, 2018, p 29

190 Office of Low Emission Vehicles, *Making the Connection The Plug-In Vehicle Infrastructure Strategy*, 2011, p 22

191 Interview with Dr Paul Nieuwenhuis, co-Director, Centre for Automotive Industry Research & Electric Vehicle Centre of Excellence, Cardiff Business School, Cardiff University, 8 May 2018

from centres of population. He also points out the greater potential for rural areas to devote space to local renewable energy generation, bypassing grid problems. Improved battery technology offers the possibility of using additional used EV batteries to store the locally produced energy until it is needed.

He cites two community projects in Wales that are providing shared EVs. Talybont on Usk Energy Community Car sharing<sup>192</sup> operate a Kangoo van/people carrier, charged by locally generated solar power alongside a biodiesel-powered (actually recycled vegetable oil-powered) Skoda Octavia. The project is now signed up to participate in a trial of a Riversimple hydrogen-powered car. Rev Cymru<sup>193</sup> is a group of four car clubs in Pembrokeshire which all use pure electric vehicles, charging with renewable energy when they can. One of their aims is to 'actively encourage people to let go of unnecessary vehicles in their household'.

This provides an important example for the way Wales should be looking to shape the relationship with the new vehicle, away from private and towards shared ownership. Changing the form of propulsion will not necessarily reduce the problems caused by the sheer numbers of cars in Wales, but changing our relationship with it could. Wales should be encouraging a new form of ownership as an intrinsic part of the shift to EVs.

There are also strategic reasons why Wales needs to ensure a proper charging network, whether private or public is in place, on its strategic road network. Wales' economy and transport system is intricately linked to the UK's systems. If Wales is not able to cater for people coming into the country with EVs from the rest of the UK our economy, particularly tourism, will suffer. There are significant opportunities to link rural EVs with tourism. Visitors to the Brecon Beacons National Park can already hire small electrically powered Twizy cars and recharge them at an network of locations across the park.

## Hydrogen

As we have seen with buses, the other fuel that offers the potential of zero emissions is hydrogen. Wales already has a stake in the development of hydrogen fuelled cars with the Riversimple project based in Llandrindod Wells. Like electric cars, hydrogen fuelled vehicles do not emit carbon where they operate but the production of hydrogen requires considerable energy to be generated somewhere.

The competition between hydrogen and electricity to become the principal power source for cars, and the uncertainty as to which may become the main replacement fuel source, has been one of the barriers to extensive investment in EV charging networks. However at least in the short term it is clear that EVs are gaining greater purchase in the private car market. For example, the German car manufacturer, Daimler, which had produced a number of hydrogen fuel cell concept vehicles is now concentrating on a new range of electric vehicles<sup>194</sup>.

192 Talybont on Usk Energy, [Report on Hydrogen Transport Possibilities](#), 14 March 2018. Accessed June 2018

193 [RevCymru.co.uk](#), accessed June 2018

194 RAC, [Are electric cars actually worse for the environment?](#), December 22, 2017

## EVs and the goals of the Well-being of Future Generations Act

### Prosperity

The advent of EVs and the decline of the conventionally powered car will seriously impact on Wales' economy, most notably in the automotive manufacturing sector. The sector in Wales currently directly employs around 20,000 people. The two major centres are the Toyota plant on Deeside and the Ford plant in Bridgend. There are currently no plans for these sites to switch away from the time limited diesel and petrol models. But even more portentously Wales also has specialist manufacturers of vehicle parts that simply have no future with EVs, as for example exhausts are entirely unnecessary. This has major implications for achieving the first of the Well-being of Future Generations (Wales) Act's goals: a prosperous Wales.

Added to the uncertainty caused by Brexit, there is real concern that the Wales based branches of multinational automotive companies will not receive the investment needed to adapt their plants to production for the new electric vehicles. Given the significance of the battery in the value of the finished vehicle, there is likely to be increased concentration in fewer production plants. Paul Nieuwenhuis<sup>195</sup> believes that the return on vehicles will increasingly shift from production to post sales service. Martin Mansfield<sup>196</sup> believes that Welsh Government should be more proactive in seeking the job opportunities available from encouraging green technology. Tim Williams<sup>197</sup> wants to see a strategy in place to ensure Wales can cope with the threats and opportunities that the transition to EVs poses for Welsh industry.

### Global Impact

Even though electric vehicles are not currently manufactured in Wales, our global goal requires us to consider the environmental impact of their production. A report by the Fraunhofer Institute for Building Physics<sup>198</sup> revealed that it takes twice the amount of energy to build an electric car than a conventional vehicle. There are also concerns that the increase in demand for the lithium needed for batteries is leading to increasing exploitation of mineral deposits: 'Some of these opportunities are arising where environmental codes are not as strong and social settings not as protective or inclusive. It's a combination of risks'<sup>199</sup>. Lithium batteries are, at least at the moment, more difficult to recycle, with fewer than 5% of lithium ion batteries being recycled compared to 90% of conventional car batteries.

195 Interview with Dr Paul Nieuwenhuis, co-Director, Centre for Automotive Industry Research & Electric Vehicle Centre of Excellence, Cardiff Business School, Cardiff University, 8 May 2018

196 Interview with Martin Mansfield, General Secretary, Wales TUC, 10 May 2018

197 Interview with Tim Williams, Chief Executive of the Welsh Automotive Forum, 10 May 2018

198 RAC, [Are electric cars actually worse for the environment?](#), December 22, 2017

199 RAC, [Are electric cars actually worse for the environment?](#), December 22, 2017

## Equalities

The affordability of electric cars will also be a major issue for Welsh households and businesses, at least until there is an extensive second market in EVs. Again, changing the ownership model could make a major difference here with municipal car clubs that remove the higher purchase cost of EVs but pass on the lower running costs.

For many disabled people the car is their only viable form of transport. Accommodating their needs following the demise of the conventional car is vital, as is ensuring the greater cost of EVs does not make transport unaffordable for them.

## Health

EVs offer some health benefits by eliminating NOx, though brake and tyre particulates will still be an issue and they will have no impact on levels of physical inactivity or injuries from road traffic accidents.

## Recommendations

**Recommendation:** Welsh Government, working with the automotive industry and the trade unions, should put in place an 'Automotive Industry Task Force' to ensure that Welsh manufacturing is able to respond effectively to the threats and opportunities of the transition to electric vehicles. The work of this task force should be integrated with the Transport Decarbonisation Plan.



## Conclusion

Decarbonising transport in Wales is fundamentally about reducing emissions from the private motor car. Given the inordinate importance of the car within our society making that change will not be easy, but given the importance of meeting the global challenge of climate change it is a challenge we must meet.

However carbon emissions are not the only challenge that over reliance on the car poses for Wales. Many would argue that its impact on the nation's health is our greatest concern. Wales has a health crisis which is feeding a crisis in our public finances. Over 50% of the Welsh Government's budget is now devoted to health expenditure. The way we go about changing the use of the car must therefore take into account the need to address other challenges besides carbon emissions. In Wales this is not just a sensible approach, it is a legal requirement. The Well-being of Future Generations (Wales) Act 2015 requires public bodies to take actions that aim to achieve all of the national goals and its requirement for an integrated approach means that no one goal is to be achieved at the expense of the others.

The car in itself is not a problem. It has made a huge contribution to human development. The problem lies in their vast numbers and the way we value them over and above their usefulness as a means of transport. We need to begin to think of the car much more as something to be used, not owned, and pay for it by journey - in the way we would for a bus or a train - forgetting about the social status we think it conveys.

Welsh Government believes Wales needs a further 293,500 homes by 2026<sup>200</sup>. At the current ratio of vehicles per household (1.22<sup>201</sup>) that would mean a further 358,070 cars on Wales' roads. Much of that development will take place in our cities. For them to be livable places, a concept increasingly associated with economic success, we need the available space to be dedicated to people not cars. Congestion already costs the Welsh economy £2bn per annum<sup>202</sup>. We have seen how the car acts as a major obstacle to the use of more sustainable transport modes. Achieving a modal shift away from the car is fundamental to Wales having a world class public transport system, as public transport works at its best when significant numbers of people use it and provide the revenue for service enhancements. Put simply, if more people used public transport, particularly buses, we would have better public transport.

Wales needs a long term comprehensive plan to wean our transport system away from its over reliance on the car and towards much greater use of public transport and active travel.

200 Welsh Government, *Housing need and demand in Wales*, 2010

201 Department for Transport, *Household car ownership by region and area type: Great Britain, 1995/971 and 2011/122*, 2013

202 BBC News, *Newport was Wales' most congested city in 2017, figures show*, February 6, 2018

# Appendix

## Appendix 1 - Interviewees

---

<b>Name</b>	<b>Job title</b>	<b>Organisation</b>
<b>Professor Mark Barry</b>	Professor of Practice in Connectivity	Cardiff University
<b>Councillor Huw David</b>	Leader	Bridgend County Borough Council
<b>Prys Davies</b>	Head of Decarbonisation and Energy Division	Welsh Government
<b>Richard Davies</b>	Operations and Commercial Director	Cardiff Bus
<b>Jon Fudge</b>	Planning Policy Branch	Welsh Government
<b>Roger Geffen</b>	Policy Director	Cycling UK
<b>Rhodri Griffiths</b>	Transport Policy Team Leader	Welsh Government
<b>Neil Hemington</b>	Chief Planner	Welsh Government
<b>Andrew Johnson</b>	Special Adviser	Welsh Government
<b>Glyn Jones</b>	Chief Statistician	Welsh Government
<b>Martin Mansfield</b>	General Secretary	Wales TUC
<b>Rachel Maycock</b>	Wales Manager	Living Streets Cymru
<b>Councillor Andrew Morgan</b>	Leader	Rhondda Cynon Taff County Borough Council
<b>Dr Paul Nieuwenhuis</b>	co-Director	Centre for Automotive Industry Research & Electric Vehicle Centre of Excellence, Cardiff University
<b>Ruth Nortey</b>	Policy & Research Officer	Disability Wales
<b>Tim Peppin</b>	Director of Regeneration and Sustainable Development	Welsh Local Government Association
<b>John Pockett</b>	Director	Confederation of Passenger Transport Cymru

<b>Mark Pont</b>	Statistician	Welsh Government
<b>Dr Tom Porter</b>	Consultant in Public Health	Cardiff and the Vale University Health Board
<b>Neville Rookes</b>	Policy Officer - Environment	Welsh Local Government Association
<b>Steven Salmon</b>	Director of Policy Development	Confederation of Passenger Transport UK
<b>John Sayce</b>	Chair	Wheelrights
<b>Holly Smith</b>	Policy & Research Assistant	Living Streets
<b>Simon Thomas AM</b>	Shadow Cabinet Secretary for Sustainable Communities, Energy and Rural Affairs	National Assembly for Wales
<b>Lee Waters AM</b>	Chair, Cross Party Group on the Active Travel Act	National Assembly for Wales
<b>Councillor Caro Wild</b>	Cabinet Member for Strategic Planning & Transport	Cardiff City Council
<b>Tim Williams</b>	Chief Executive	Welsh Automotive Forum

*A number of other people gave valuable insights into the issues considered in the paper but, for a variety of reasons, did not wish to be identified.*



MAKING  
WALES  
BETTER

