



Eich cyf/Your ref
Ein cyf/Our ref

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Chair
Enterprise and Business Committee
National Assembly for Wales
Cardiff Bay CF99 1NA

06 November 2014

Dear William

Welsh Government Draft Budget Proposals 2015-16

Thank you for your letter dated 23 October 2014. In response to the discussion of the budget proposals for my Department at the budget scrutiny committee meeting on 16 October, I have provided the additional information requested as follows:

1. EU structural funds and private investment

The European Commission has announced £2bn of EU funding for the 2014 – 2020 period. This funding represents a significant opportunity for Wales. My Department has worked closely with the Welsh European Funding Office (WEFO) on the development of the ERDF Programme to ensure alignment with key priority areas of economic development.

WEFO is expecting to receive approval for the Operational Programmes shortly. In anticipation of the Programmes being approved, my Department has entered into advanced discussions with WEFO on potential new operations, to stimulate the economy and deliver against key Welsh Government priorities to achieve sustainable growth and jobs. This work will identify a strategic portfolio of projects that represents the most effective, integrated set of interventions over the next Structural Fund period and beyond.

As part of the development process we have been exploring how to maximise the use of EU funding, to ensure it is targeted effectively and efficiently to achieve my Department's strategic objectives and deliver

against policy commitments. This funding will be used to ensure that we derive the maximum benefit from the existing departmental budget, and will enable my Department to carry out activity over and above that which it could do with core funding only.

My Department's operations will seek to encourage private sector investment and employment wherever possible, with a clear alignment to Programme for Government objectives and policy priorities.

2. Revenue Reductions £16.5m

The budgets are subject to ongoing challenge, review and assessment. As the Director of Finance outlined at the scrutiny session, any potential underspends or savings, for example where projects have slipped or are underperforming, are reallocated across my portfolio in line with the current priorities. The additional revenue reductions of £8.4m in 2015-16 are predicated on an increase in the intervention rate and re-profiling of the drawdown of EU funding and leveraging in private sector match funding. At this stage in the development of the 2014-2020 EU Structural Funds the assessment of current savings is ongoing. I have provided a summary table showing the net movement of £16.5m at **Annex A**. The evidence paper outlines detailed considerations for each budget area where decisions were taken to reprioritise.

3. Wales Economic Growth Fund

The Wales Economic Growth Fund was launched specifically to encourage private sector enterprise to invest in projects to stimulate economic growth and create and safeguard employment to boost the economy at that time. Although we are not operating the fund at this time we are providing support to businesses through our sectors budgets.

Alongside the Wales Economic Growth Fund a number of funds were created within Finance Wales to provide much need finance for SMEs. A good example is the £40m Wales SME Fund, which operates alongside the £157.5m EU funded JEREMIE, providing repayable finance where returns can be reinvested in SMEs. Financial transaction funding has also supported the establishment of a number of important new funds such as the Technology Seed Fund and the Management Succession Fund.

I have attached a copy of the first Wales Economic Growth Fund Review at **Annex B**. Further evaluation will be undertaken on completion of WEGF 2.

Further WEGF schemes may be appropriate in response to changing economic conditions in the future. Any proposal would be reviewed in line

with competing priorities at that time prior to presentation to the Minister for Finance and Government Business for consideration.

4. Enterprise Zones

I offered to provide the Committee with an information paper that illustrates some examples of key projects and investments that have taken place in each Enterprise Zone to date.

As mentioned at Committee, we will be reporting and publishing overall Enterprise Zone performance data, rather than data for individual Enterprise Zones. That is a view which is shared very strongly by the Enterprise Zone Chairs who are concerned that comprehensive zone-level data would:

- a) fail to recognise the different starting points and stages of development of each Enterprise Zone
- b) risk creating competition between Enterprise Zones
- c) provide an inaccurate picture to potential investors
- d) present the Enterprise Zones as seven separate and stand alone initiatives, rather than a national initiative within which each Enterprise Zone shares many interdependencies.

For these reasons, this paper is not intended to be a comprehensive list or breakdown of projects and investments that have taken place in each Enterprise Zone. Rather, it is designed to assist the Committee in providing some illustrative examples of projects and investment in each Enterprise Zone.

I have provided a note at **Annex C**.

5. Tourism and Major Events

As discussed in the Committee tourism projects may be supported by other capital budgets in addition to TISS. Between April 2013 and September 2014 55 grant offers with a value of £3.3m were issued under TISS. The new strategy recognises the importance of strategic capital investment. Therefore, during the same period, three projects were offered repayable business finance (RBF), all of which exceeded £1m. In addition the Wales Economic Growth Fund has supported 17 projects with an average of around £95k per project. Many of these projects are in development. The table below provides an indication of the projects supported under the schemes:

Project	Scheme	Funding £'000	Detail
Royal Mint, RCT	RBF	2,300	Attraction - New visitor experience
Surf Snowdonia, Conwy	Loan	1,500	Attraction- first inland surfing destination*
Zip World, Gwynedd	WEGF	240	Attraction – upgrade of facilities
Black Boy Inn, Gwynedd	WEGF	100	Upgrade of facilities
Plas Nanteos, Aberystwyth	TISS	162.5	High quality Country House Hotel
Wye Valley Canoes, Powys	TISS	38	High quality bunkhouse supporting an existing activity centre
Coast Restaurant, Pembrokeshire	TISS	34	New coastal destination restaurant

* Part of a £4.15m funding package.

The major events budget supports a number of high profile sporting and cultural events. The list of events supported in 2014 provided in **Annex D** confirms that the strategy encourages fair and equitable opportunities across Wales. The events supported for 2014-15 are expected to attract at least 280,000 visitors from outside Wales and generate an economic impact of nearly £50m, supporting around 1,140 jobs in Wales.

As discussed at the Committee these events add value to Welsh companies. I have provided two cases to illustrate the importance of these opportunities at **Annex E**.

6. Superfast Cymru

a. Allocation - £10m

The £10m allocation from centrally retained capital was part of the initial £30 million funding announced. The full public sector investment of £205m includes:

- £89.5m Structural Funds (ERDF);
- £56.9m UK Government funding;
- £28.6m EST capital budget and;
- £30m Centrally Retained Capital funding.

b. The Superfast Broadband Infill Project

A new project is intended to bring fast fibre broadband to areas not covered by either Superfast Cymru or by telecommunications companies' own roll-out projects.

The Superfast Broadband Infill project will be delivered in two phases. Both will bring superfast broadband to areas not currently scheduled to receive it. These were identified through an open market review and public consultation earlier this year. They include new areas scheduled to receive superfast broadband under BT or Virgin commercial roll-outs but where it was found to be not commercially viable, new build sites or areas not identified in the original open market review process. The second phase will also include those properties that were originally included under Superfast Cymru but where we were not able to provide access to fast fibre, for example where it is too expensive or technically challenging.

The project will cover around 45,000 premises; about 40,000 will be covered in phase one with the remainder targeted in phase two. The project will build on Superfast Cymru to bring coverage across Wales to as close to 100 per cent of premises as possible.

Procurement is underway for phase one which is scheduled to commence early in 2015 run alongside the Superfast Cymru project. It aims to provide broadband speeds similar to those under Superfast Cymru. Phase two will commence in 2016 following the completion of the Superfast Cymru project with the objective to use the most appropriate technology to provide superfast speeds.

The UK Department for Culture, Media and Sport have provided funding worth £12.1 million for the project. Dialogue is under way with WEFO about the prospect of using structural funds to match the BDUK contribution.

c. Independent Review

In January of 2014, officials undertook an analysis of value for money for the Superfast Cymru project, to identify the controls and mechanisms whereby Value for Money is ensured through the life of the project. This follows the value for money assessment undertaken as part of the project initiation work.

BDUK undertook a value for money review into superfast broadband projects recently, the report of which will be published shortly.

The Wales Audit Office is also in the final stages of a Value for Money review of the Superfast Cymru project. A report is anticipated within the next few months.

d. Enterprise Zones and Inward Investment

Officials continue to work with colleagues focussing on Enterprise Zones, as major economic priorities, ensuring that they will be among the first to benefit. The roll-out is underway in all but the Central Cardiff Enterprise Zone which is subject to state aid restrictions as a result of Cardiff's super-connected city status. Progress to date:

- **Anglesey Enterprise Zone:** Work on all telephone exchanges covering the Enterprise Zones is complete, however work is on-going to enable the remaining cabinets.
- **Deeside Enterprise Zone:** The Superfast Cymru roll-out continues with Connah's Quay, Hawarden Industrial Estate and Sealand exchanges enabled. Work to enable the cabinets with these areas continues.
- **Ebbw Vale Enterprise Zone:** Parts of Brynmawr, Tredegar and Ebbw Vale exchange areas are now live. Work is on-going to enable the remaining cabinets.
- **Haven Waterway Enterprise Zone:** Roll-out to Haverfordwest has progressed well, with Withybush Industrial Estate becoming one of the first areas to be able to order Superfast Broadband.
- **Snowdonia Enterprise Zone:** Engineering work is underway within Trawsfynydd and Llanbedr.
- **St Athan & Cardiff Airport Enterprise Zone:** Llantwit Major and Rhose exchanges are now live and work is continuing to enable areas within the enterprise zone

Officials across the Department for Economy, Science and Transport continue to work together to highlight the work to improve the digital infrastructure in Wales to international audiences. Of particular interest in the Cardiff Internet Exchange that was launched in mid October.

During the Committee I promised to provide a more detailed update on the Superfast Cymru project which is attached at **Annex F**.

7. National Transport Plan

At Committee I offered to share with Members two reports by the Public Policy Institute for Wales. Please find these attached and please note that I am sharing these with the Committee ahead of their publication. I understand that they will be publicly available shortly.

The budget-setting process is based on my priorities and projects within the National Transport Plan. The National Transport Plan as a whole is designed to contribute towards the delivery of the Wales Transport Strategy and its objectives. For each major spend area we have identified investment priorities that articulate how we will approach expenditure in that area. These investment priorities identify which specific Wales Transport Strategy outcomes they contribute to.

The Programme for Government's key objectives in terms of promoting jobs and growth and tackling poverty are reflected in the priorities which each of the interventions has been assessed against. They also reflect the importance of improving access to services, safety and sustainability, again reflecting the core themes of the Programme for Government.

8. Roads Maintenance Budget

The savings in the road maintenance budget are primarily the result of two initiatives. The first is a fundamental review of the Trunk Road Maintenance Manual (TRMM). TRMM sets out the inspection and routine maintenance necessary to maintain the day to day safety of the motorway and trunk road network in Wales. The frequency of these activities has been reviewed and adjusted to provide the optimum management of risk which will also result in cost savings next financial year. The second is a review of the arrangements for the management of motorways and trunk roads in Wales announced by the Minister on 4th June. It is envisaged that the outcome, which will be announced on 11th November, will start delivering efficiencies in the way maintenance is delivered on the ground from 2015/16 onwards.

9. National Transport Plan Project Costs

The Wales Transport Strategy establishes the framework for the creation of an integrated transport system and is intended to reflect priorities over a longer time period than the Local Transport Plan which has a five year time horizon. This means that the National Transport Plan will contain projects at various stages of development from early assessment to fully developed business cases. Clearly during the life cycle of transport projects the costs will be subject to challenge and reassessment as they go through more detailed planning and are subject to constant change. Therefore providing

detailed costs within the plan would quickly lead to the plan itself becoming out of date.

10. Funding the M4 Project

A £7m allocation has been made, within the Transport Capital Budget, for preparatory work on the M4 Corridor around Newport in 2015-16. Allocated costs include allowances for Optimism Bias, Risk and for fees associated with the scheme including commercial, technical and legal.

There is a cost estimate in the public domain of £998m which is indicative reflecting the early stage of development. The final costs will be subject to detailed design and negotiations with contractors. We will be doing all we can to ensure costs are kept to a minimum, and that we maximise the value for money we achieve.

A business case was published at the time I announced our proposals. This is available on the www.m4newport.com website. This demonstrates that the new section of motorway south of Newport has a high benefit to cost ratio of 2.29. These figures are based upon median traffic growth, in accordance with Department for Transport forecasts, and do not factor in wider economic benefits. The values further increase if wider economic benefits are included and would increase again should the Severn Crossing tolls be reduced or removed as that concession comes to an end.

We will be making use of our new borrowing powers to part finance this scheme. These powers will be available in principle to support investment from 2016-17, and will mean that part of the cost of the scheme will be met from future revenue budgets. The balance will be met from capital budgets. Whilst future years' budgets have not yet been agreed the project is considered affordable within the overall Welsh Government capital investment plans.

Any legal challenge to the M4 Corridor around Newport will be funded from the transport capital budget (New Roads and Improvements Budget).

11. Active Travel

Following the most recent reshuffle, I am responsible for the implementation of the Active Travel (Wales) Act 2013.

12. Transport – Other Issues

We discussed the timescale for the 'Access for All' work being undertaken at Llandaff Station. I can confirm that the construction completion for Llandaff Station 'Access for All' Project is planned for May 2015. In

response to specific issues raised about the route into Newport from Ebbw Vale the current timescales for improvements is detailed as follows:

- Pye Corner Station – Due to be operational on 14th December 2014 (December timetable change date).
- Ebbw Vale Extension and Ebbw Vale Town Station – Due to be operational by May 2015 timetable change.
- Ebbw Vale line speed enhancements – Complete by March 2016
- Ebbw Vale Frequency enhancements – Complete by March 2016

I would like to thank the Committee for the very positive discussion of the issues in delivering the budget priorities.

A handwritten signature in black ink, appearing to be 'L. M.', is located in the lower-left quadrant of the page. The signature is fluid and cursive.

Economy & Science – Impact of Revenue Reductions £16.5m

ACTION	2014-15 Final Budget £'000	2015-16 Draft Budget £'000	IMPACT OF CHANGE
Sectors	(1,878)	-	Managed reduction across sectors
Entrepreneurship and Business Information	(202)	(4,351)	Reprofiling of EU funding and an increase to the intervention rate for the Start Up programme reduces core budget requirement. Reprioritisation of business information activities
Innovation	(244)	(4,069)	Reprofiling of EU funding and an increase to the intervention rate for the Start Up programme reduces core budget requirement. In addition the potential to co finance new programmes using external funding is anticipated to release domestic budget
Science	(76)	-	Reprofiling of Ser Cymru delivery
Major Events	(102)	-	Reprofiling of events to achieve target reductions.
Deliver ICT Infrastructure	400	-	Additional Resource for PSBA Network
Deliver Property Related Infrastructure	551	-	Additional Resource for Property Maintenance
Corporate Programmes	(64)	-	Efficiencies achieved by re-scoping core ICT Departmental programmes
Motorway & Trunk Road Operation	(1,148)	-	Managed reductions in trunk road and highway maintenance
Rail and Air Services	(3,579)		Proposed reduction in Rail franchise
Sustainable Travel	(1,802)		Proposed reductions to Bus Support and Concessionary Fares
Net Impact (Revenue Budget Decrease)	(8,144)	(8,420)	

Annex B

Wales Economic Growth Fund 1 – High Level Review

BACKGROUND

In November 2011, in response to the continuing economic difficulties presented to business in Wales, a £15m short term Economic Growth Fund was launched. This fund was open for applications from 12th December 2011 until 31st January 2012. The scheme was highly successful with around 500 applications received representing a grant request of approximately £155m.

Due to the overwhelming response from businesses the allocation of funding was increased to over £30m to accommodate more high quality projects in Wales which would deliver further growth and jobs.

118 offers of support were made with a commitment level of over £30m, which could potentially create around 1800 jobs and safeguard around 1600 jobs.

In order to inform a further round of the Fund, a desktop review was undertaken of the WEGF 1 scheme. A “lessons learnt” exercise was undertaken in-house to improve the process of any further rounds. From this exercise, issues picked up were as follows:

- **Customer Focus** – for the first Economic Growth Fund, applicants were expected to submit a full application form and all supporting documentation before being deemed eligible. This was a cost to the applicant both monetary and commitment in time. *WEGF 2 changed to a 2 page Expression of Interest for the initial application stage to deem whether a project would be eligible;*
- **Business planning** – WEGF 1 was an unknown quantity, and the small team was overwhelmed with applications which caused a delay in decisions being relayed to applicants. *The expression of interest stage for WEGF 2 would ensure that the Sectors and Business team responsible for administration would have an indication of the volume of application forms issued and therefore early indications of workloads*
- **Market need** – WEGF 1 minimum value of £100,000 grant was considered too high for by some SMEs and *that a minimum of £50,000 would enable the fund to help many good proposals.*

Results

We are now at the end of the WEGF 1 full process. The actual figures paid to businesses are in the table below:

Sector	Total Amount Paid (£)	Total Capital Investment (£)	Jobs New	Jobs safeguarded
Advanced Materials and Manufacturing	10,266,582	34,083,953	338	968
Construction	571,450	1,413,018	38	13
Energy and Environment	1,944,832	6,222,283	100	62
Financial and Professional Services	1,496,578	812,797	132	12
Food & Farming	2,314,990	9,997,557	197	73
ICT	1,788,819	4,697,754	74	23
Life Sciences	1,693,760	5,573,758	26	151
Non Sector	696,803	1,969,014	63	29
Tourism	400,000	947,825	21	0
Total	21,173,814	65,717,959	989	1331

Enterprise Zones

This paper compliments the Enterprise Zone Key Performance Indicators (KPIs) which Welsh Government publishes twice a year. The next release of these KPIs will cover the period April to September 2014 and will be published shortly.

Anglesey Enterprise Zone

- Joint funding contribution of £22k with Stena on the Holyhead Port Development Master plan.
- A £2.2m funding commitment to support plans led by Conygar Investment Company PLC to develop the first phase of a logistics and distribution hub at Parc Cybi Business Park.
- Support of over £150k to deliver a mapping exercise which will help better support indigenous businesses and identify issues which need to be addressed to attract more inward investors to the Enterprise Zone.

Central Cardiff Enterprise Zone

- The acquisition of Site EO4, Callaghan Square enabling the delivery of 500,000 sq. ft. of Grade A space to business.
- The acquisition of Building No 1, Capital Quarter enabling the delivery of 80,000 sq. ft. of Grade A space to business.
- The conditional acquisition of 79,500 sq. ft. Grade A space in Capital Quarter, Cardiff - JR Smart Building.

Deeside Enterprise Zone

- Commissioned an in-depth study, £72k, to develop the concept for an Advanced Manufacturing Skills & Technology Centre.
- Good progress made towards resolving Northern Gateway infrastructure issues. In particular, a £160k contract has been awarded to undertake essential flood defence works that will allow development of the site and protect existing infrastructure. This is due to be completed by spring 2015.
- Funding of £5k for a phase 1 feasibility study of a North Wales Advanced Manufacturing and Skills Park.

Ebbw Vale Enterprise Zone

- The provision of match funding of £1.2m and £720k, from WEFO for site infrastructure at the Rhyd y Blew site to facilitate the delivery of a strategic site for the Enterprise Zone.
- An investment of £110k to upgrade the electricity power supply capacity for development sites within the Enterprise Zone.
- The start of £250k preparation and signage works to assist all key identified sites to become investment ready.
- A Property Development Grant of £2m to the Heads of the Valleys Development Company to support the initial project development phase of the Circuit of Wales project.
- The development of the new A465 dual carriageway already underway, investing £40m and the development of an £11m extension of the railway line from Parkway to Ebbw Vale Works site.

Haven Waterway Enterprise Zone

- Investment of £135k on studies to bring sites to market, including the Waterston site.
- Works underway to explore the future potential for the Blackridge site, with the ambition to maximise the business potential of this key site within the Zone.
- A feasibility and scoping exercise costing £5k is underway to explore the potential of a Maritime Centre of Excellence.

Snowdonia Enterprise Zone

- Key studies completed – £60k Strategic Options Assessment for Trawsfynydd site and £30k Llanbedr Masterplan.
- An Energy Pricing Study is underway to better understand whether the Enterprise Zone and wider region can offer a competitive and comparative advantage in terms of energy pricing.

St Athan – Cardiff Airport Enterprise Zone

- Commissioning of a detailed Master plan of St Athan – Cardiff Airport Enterprise Zone site.
- Investment of £2.75m in the Gileston Bends Project, completed in August 2014.

Annex D

Major Events 2014

Date	Event	Activity	Area
14 February	Classic FM Live	Music	Cardiff
20-26 April	International Harp Festival	Music	Caernarfon
23-26 April	Focus Wales	Music	Wrexham
2-4 May	Machynlleth Comedy Festival	Arts/Comedy	Machynlleth
18 May	Snowdonia Slateman	Triathlon	Snowdonia
22 May – 1 June	Hay Festival	Arts/Literature	Hay-on-Wye
23-24 May	Amlin & Heineken Cup Finals	Rugby	Cardiff
13-29 June	Gregynog Festival	Music	Gregynog
24 – 5 Jul	Mametz	Arts/WW1	Usk, Mon'shire
28 June – 6 July	Pembrokeshire Fish Week	Food	Pembrokeshire
6 July	Beyond the Border Storytelling Festival	Arts/Literature	St Donats, Llantwit Major
11-13 July	Long Course Weekend	Triathlon	Tenby
11-13 July	Wakestock	Music	Abersoch
12 July	British Speedway Grand Prix	Motorcycling	Cardiff
24-26	Powerboat P1 Superstock Series	Powerboating	Cardiff
24-27	Senior Open Championship	Golf	Porthcawl
31 July – 4 August	Welsh International Supercup	Football	Cardiff
9-15	World Topper Championships	Sailing	Pwllheli
8-25 August	World Alternative Games	Sport	Llanwyrtyd Wells, Powys
12 August	UEFA Supercup	Football	Cardiff
16 August	Cardiff LGBT Mardi Gras	Music/Cultural	Cardiff
17 August	Merthyr Rock	Music	Merthyr Tydfil
18-23 August	IPC Athletics Champs	Athletics	Swansea
22-25 August	Extreme Sailing Series	Sailing	Cardiff
27 August	One Day International Cricket (Eng v India)	Cricket	Cardiff
5-7 September	Festival No6	Music/Cultural	Portmeirion
7-14 September	Tour of Britain	Cycling	Pan Wales
14 September	Etape Cymru	Cycling	Wrexham
18-21 September	ISPS Handa Wales Open	Golf	CMR, Newport
21 September	Anglesey Sandman	Triathlon	Anglesey
5 October	Cardiff Half Marathon	Athletics	Cardiff
8-12 October	Iris Prize	Arts/Film	Cardiff
17-18 October	AIF Congress	Music	Cardiff
25-26 October	Conwy Feast	Food	Conwy
23 Oct – 22 Feb'15	Artes Mundi 6	Arts	Cardiff
27 October	Dylan Thomas Centenary	Arts/Literature	Pan-Wales
31 Oct – 2 November	Made By Hand	Arts/Craft	Cardiff
14-16 November	Wales GB Rally	Motorsport	North Wales

Major Events Case Studies

A. EXTREME SAILING 22ND AUGUST 2014

The Extreme Sailing Series (ESS) has established itself as one of the very best events in sailing, and holds ISAF (International Sailing Federation) Special Event Status. It consistently achieves a high level of both regional and international media coverage (that has been growing annually by more than 40%), and attracts significant (and ground-breaking for sailing) public attendances as well as an active and fast developing online following. ESS encompasses top-level and action-packed professional sailing in a stadium format. The event has been held in Cardiff Bay since 2012.

Background

The recent job creations in Cardiff and CCEZ enjoying Tier 2 Assisted Area status provided the Sector with a strong basis on which to build momentum around this event. It presented an opportunity to promote Cardiff/CCEZ as a near-shoring solution for London and to enhance relationships with companies we knew to have potential investments.

Although the sector had already engaged with the individuals we targeted, securing this event provided us with an opportunity to gain face time with key decision making senior managers many of whom we knew to be sailing enthusiasts. Furthermore, it was an opportunity to showcase Cardiff demonstrating the great lifestyle offer that accompanies the compelling business rationale. The event also provided the Sector with opportunities to begin selling cost effective property solutions in and around the CCEZ to FTSE500 companies that are facing the need to restructure their operations as a result of regulatory changes to regulations and their need for more cost-effective business models.

Alongside international investment, the event also provided the Sector with an excellent opportunity to engage indigenous company Senior Executives with growth projects.

F&PS sector is exploring the opportunities for using the 2017/18 Volvo Ocean Race as a lever to promote Cardiff and Wales as the best near-shoring solution for London businesses. Many of the top City executives are known to be sailing and yachting fans. We plan using the Extreme Sailing event to develop our marketing and engagement strategy for the high profile Volvo Ocean Race.

B. WALES RALLY GB - NOVEMBER 2013

Wales Rally GB is the largest and most high profile motor rally in the United Kingdom. It is a round of the FIA World Rally Championship and was formerly a round of the MSA British Rally Championship and the 2013 event was based in North Wales.

Background:

The Advanced Materials and Manufacturing Sector organised ancillary events were very successful:

Many Welsh based suppliers and local charities benefited from contracts and car parking monies from the WRGB

The Welsh Government produced a directory of motorsport companies, who have benefited from increased awareness and market opportunities

The 'peripheral' events arranged by the Welsh Government to coincide with the WRGB, provided an opportunity for the automotive sector to promote their capabilities who have also benefited from increased awareness and market opportunities. Including 130 delegates and 35 companies exhibited at Autolink 2013 in Venue Cymru.

Hospitality at Major Events:

Between January and October 2014 the Strategic Business Events Team have worked with the Major Events Unit to deliver hospitality at 20 major events held in Wales. Hospitality at these events has provided the Welsh Government with the opportunity to bring together over 225 business leaders and executives to discuss key business issues, create jobs and secure inward investment for Wales.

Superfast Cymru – Additional Briefing

The Superfast Cymru roll-out continues to progress well. Our aim to reach 96% of Welsh premises by the end of Spring 2016 means that superfast broadband will become available to more people more quickly than the rest of the UK. Compared to other areas of the UK we have a bigger job to do.

It is a huge undertaking laying 17,500kms of optical fibre cable and installing around 3,000 new green roadside cabinets across Wales. This will see 691,000 premises across Wales able to gain access to superfast broadband services through the Superfast Cymru programme.

By the end of September 2014 superfast broadband had been made available to around 234,000 premises. The aim is to have enabled around 480,000 - about one third - of premises in Wales by Spring 2015. Work is planned to be underway in every telephone exchange in Wales by the end of September 2015.

Meeting current deployment targets has required a step change in the rate of deployment to around 100,000 premises per quarter, a rate of deployment far greater than many other areas of the UK. For example, when combining the counties of Bedfordshire, North Lincolnshire and Greater Manchester, these will deliver superfast broadband to approximately 103,000 premises combined, to the end of March 2016. Or comparing activity in Wales to Cumbria, whereas we will see 100,000 premises benefit from the roll-out every three months, it will take until the end of 2015 for 148,000 premises in Cumbria to benefit. These comparisons illustrate clearly how Wales is going further, faster and quicker in delivering superfast broadband to premises.

The pace of roll-out for Wales is significant and BT faces a substantial challenge. The scale of roll-out and complexities of the build are real obstacles which must be overcome. However, BT is working hard on the ground towards achieving these quarterly targets.

The Superfast Cymru roll-out is complete for over 50 per cent of premises in the intervention area in Newport, Bridgend, Swansea, Rhondda Cynon Taff, Flintshire and Gwynedd and over 80 per cent in Merthyr Tydfil and Blaenau Gwent.

Take-up of fast fibre broadband in the Superfast Cymru intervention areas for cabinets over one year old is currently 18.57 per cent.

The agreement between BT and Welsh Government is not part of the BDUK framework contract. Instead Welsh Government undertook a separate open procurement competition which resulted in the Wales contract being signed on 18 July 2012. This allowed the provider to undertake some work at its own risk, prior to state aid being obtained, which has helped hugely in terms of achieving targets early.

The majority of homes and businesses will be able to access broadband download speeds in excess of 30Mbps by 2016, with at least 40% of all the premises in the intervention area also benefitting from access to services in excess of 100Mbps. This is in line with the EU's ambitions for widespread superfast broadband by 2020. To support this ambition, the EU is contributing £90 million via the ERDF programme to assist funding the delivery and roll-out of Superfast Cymru across Wales.

BT plan on using predominantly fibre to the cabinet (FTTC) technology, but there will be some fibre to the premise (FTTP) according to the prevailing engineering required for a premise/set of premises. Generally FTTC provides the most cost effective way of delivering service to the broadest range of people. The contract does not mandate the split of FTTC/FTTP – instead it sets the output target which the provider has to meet. However, 40% of premises are required under the contract to be capable of receiving at least 100Mbps – which we anticipate will be achieved by a blend of direct FTTP provision and the “Fibre On Demand” product.

The contract is underpinned by a stringent testing and verification regime which entails sampling a proportion of cabinets to ensure that BT demonstrates to the Welsh Government that:

- appropriate and relevant new network components have been built by BT in the geographic areas covered by the claim;
- the physical cabinet tests clearly demonstrate compliance with contract requirements and definitions;
- that the new Network is built to comply with agreed contract design rules;
- that BT has performed tests to prove that the new network platform will support the wholesale fibre broadband products;
- that the number of premises passed described in each claim can be validated by BT, including the upstream and downstream speeds predicted.

The network being built is an open access, wholesale network. A wide range of service providers are already offering choice and competition across Wales. Small, Wales-based broadband providers are being encouraged to sell retail services by exploiting this major investment.

The project benefits from rigorous governance arrangements. Quarterly programme board meetings which include senior officials from the Welsh Government, funding bodies and BT Openreach including the Managing Director Network Investment, are supplemented by monthly operations board meetings and regular monthly discussions between BT Openreach and the programme Senior Responsible Officer at the Welsh Government. The project has been through a number of gateway reviews, and is subject to both internal and WEFO audits.

There is a joint marketing team established between the Welsh Government and BT whom are responsible for maintaining the central web site where there is an availability post code checker, information about how the network is deployed, where it will be deployed and case studies highlighting how it is already benefiting citizens and businesses. In addition to traditional forms of communication for example leafleting, stickers on cabinets, advertising hoardings extensive use is being made of social media such as Twitter and Facebook. Presentations have been given to key interest groups for example the farming community at the Royal Welsh Show, Enterprise Zone Boards, the WLGA rural forum and many others. Business organisations have been invited to round table briefings and all key milestones.

BT have committed to creating 50 new skilled jobs, 100 new apprenticeships along with providing 900 work experience weeks in Wales, many of them young people and the long term unemployed through joint working with Job Centre Plus. Additionally, BT is protecting over three hundred existing jobs in Wales. Around 114 apprentices are already in post and 225 full time positions have been recruited.

A new project is intended to bring fast fibre broadband to areas not covered by either Superfast Cymru or by telecommunications companies' own roll-out projects.



Public Policy Institute for Wales
Sefydliad Polisi Cyhoeddus i Gymru

Approaches to Strategic Transport Planning

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PPIW Report No. 10

Approaches to Strategic Transport Planning

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Summary

- This report considers what the Welsh Government might learn from the theory and practice of strategic transport planning internationally. The focus is on four key questions:
 - What are the key issues that need to be taken into account in order to provide effective strategic transport planning?
 - Are there comparator countries or regions that Wales might learn from?
 - Are there models or assessment tools that Wales could consider adopting?
 - What scope is there for making use of new technology and new data sources?
- Traditionally transport planning has been reactive or 'problem-oriented'. More recently pro-active, 'objectives-led' approaches have emerged. Both can help frame strategic transport planning, but successful plans are those which: have a clear vision of what the plan is trying to achieve; are capable of being both proactive and reactive; contain a mix of policy instruments; and make appropriate use of forecasting models and options appraisal.
- International examples of best practice appear where a government is able to coordinate transport planning with other aspect of planning such as infrastructure, land use, environment, health, education and social services; and where there is a consistent approach to funding and a broad range of finance, often from devolved sources. The most useful comparators are likely to be at the city-region scale, particularly for the Cardiff/South East Wales City Region (e.g. Copenhagen, in terms of integrated public transport planning).
- Transport models and assessment tools are crucial in helping decision-makers to understand existing transport usage and to predict the impact of policy interventions. There is a range of transport models at the national scale, from relatively complex disaggregate approaches (which can cost several million pounds to set-up and run) to simpler aggregate approaches.
- Open data and open source software, in conjunction with new crowd sourced data and developments in cloud computing, are providing the materials to revolutionise analytical transport planning and to potentially reduce its costs. Although some inroads have been made, this is a new area and the potential benefits are yet to be fully realised. Initiatives are underway to advance the state-of-the-art.

Introduction

The Minister for Economy, Science and Technology commissioned the Public Policy Institute of Wales to provide expert advice on approaches to strategic transport planning. The Minister asked for advice on four main questions:

1. What are the key issues that need to be taken into account in order to provide effective strategic transport planning in Wales?
2. What lessons can Wales learn from approaches to strategic transport planning in comparator countries?
3. What models and transport methods will be most useful to strategic transport planning in Wales?
4. How can Wales make best use of new technology (including GPS) and new data sources (including 'big data') to improve strategic transport planning?

The analysis in this report is based on a review of policy documents and the relevant academic and non-academic literature, with a focus on identifying best practice.

Key Issues in Effective Strategic Transport Planning

Effective strategic transport planning has a number of core features; it should:

- focus on strategy, and not let tactics dominate;
- be capable of being pro-active as well as re-active;
- be a circular rather than a linear process;
- identify the appropriate mix of policy instruments rather than having a predilection to a particular policy; and
- be supported by an appropriate evidence base and by analytical tools (such as forecasting models and assessment methods) that can support effective decision making.

These features are considered below, with the exception of forecasting models and assessment methods which are considered in the relevant section below.

Strategy, tactics and operations

It is important to distinguish initially between the strategic, tactical and operations aspects of transport planning (the STO model championed in transport by van de Velde (1999)). The



strategic (or long-term) function answers the question: what do we want to do? This involves outlining the overall vision for the transport plan and its high level objectives. The tactical (or medium-term) function answers the question: how do we do it? This focuses on determining the policy instruments that will deliver the transport plan. It is not unusual for this stage to dominate the plan – in essence the plan becomes about delivering the policy instruments. This is often the case where the plan is focussed on physical improvements such as building new roads, upgrading the rail network or introducing a new urban public transport system. The operations (or short-term) function is about marshalling the resources to deliver the plan (and can encourage a revisiting of the plan in light of resource constraints).

Pro-active and re-active planning

There are two broad approaches to transport planning: problem-oriented and objectives-led (May, 1997). It is worth noting that these are not mutually exclusive or competing and should be seen as inter-related. Indeed, recent transport planning in Wales has contained examples of both approaches.

Problem-oriented planning

Problem-oriented planning is typically re-active. It is the more traditional, bottom-up approach, often associated with local or devolved planning processes (Adams & Schmuecker, 2005). The problem-oriented approach is also usually associated with the promotion of mobility.

The starting point is the identification of ‘problems’ in the transport system that need to be addressed, around which the plan is then developed. It is typified by Thomson (1977) who, when reflecting on the London transport system in the 1970s, identified seven facets of the urban transportation problem: (1) Traffic movement, (2) Accidents, (3) Peak hour crowding on buses and trains, (4) Off-peak inadequacy of buses and trains, (5) Difficulties for pedestrians, (6) Environmental impact and (7) Parking difficulties.

The risk with this approach is that, in developing a plan around addressing problems, piecemeal or short-term ‘solutions’ emerge. Some argue that the focus on increasing mobility is an example of this. Although in modern history increased mobility (defined as the ease of moving) has usually been correlated with increasing prosperity, this does not have to be the case¹ and there is an argument that greater weight should be placed on accessibility

¹ To illustrate this issue an interesting (but somewhat extreme) parallel might be drawn between Wales and Singapore, with Wales having substantially higher mobility per person but Singapore having substantially higher GDP per person, although given its island state nature there are clearly greater physical barriers to internal mobility in Singapore than Wales, whilst there are also factors in Singapore’s economic success (including the

(defined as the ease of reaching); although this is contested (Ferreira et al., 2012). There can be a 'mobility transition' where increased movements lead to congestion and hence reduced accessibility (Preston, 2007; Zelinsky, 1971). One solution to such a situation would be to provide more transport capacity to reduce congestion – the so called predict and provide approach. However, the problem with such an approach as that induced traffic will lead to the capacity quickly filling-up again. Where the investment is in roads/private transport, reductions in public transport demand and services can make the situation worse – the so-called Downs-Thomson paradox (see also Mogridge, 1990).

Objectives-led planning

Objectives-led planning is a more recent approach and is often seen as being pro-active. It is based around a vision statement and a series of high level objectives. An example is the 1998 New Approach to Appraisal (NATA) and its so called EASIE objectives: (1) Economy, (2) Accessibility, (3) Safety, (4) Integration and (5) Environment (Price, 1997). This approach is identified with top-down planning and high-level jurisdictions (national or supra-national such as the European Commission). It is often associated with an emphasis on accessibility, and more naturally lends itself to integration with other policy areas, with transport seen as facilitating sustainable access to, for example, healthcare, employment, the countryside and tourist sites. This is consistent with the view of transport as a derived demand – in the main people travel in order to engage in various forms of socio-economic activity².

Planning as a circular process

Effective long-term transport planning is a circular process in which monitoring is undertaken to determine how the system is operating with respect to key success indicators relating to the economy, society and the environment. In combination with public consultation and changing budgetary constraints, the outcomes in terms of system performance are fed back to inform the vision and objectives and the appraisal process of the instruments used to deliver the plan. Albeit with slightly different terminology, this is the approach to long-term transportation planning adopted by the US Department of Transportation (Weiner & Rikin, 2005) and the ROAMEF (Rationale, Objectives, Appraisal, Monitoring, Evaluation, Feedback) advocated by the HM Treasury Green and Magenta Books.

tax regime) which would be difficult to replicate elsewhere. Nonetheless, it is clear that high levels of mobility do not necessarily correlate with economic success.

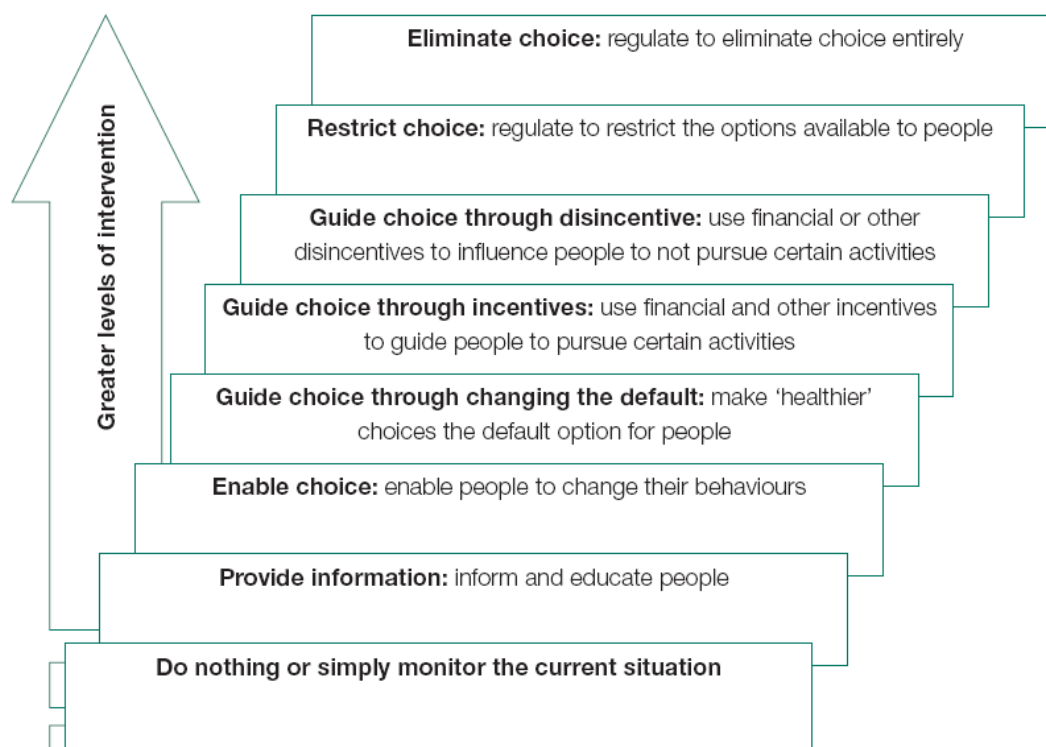
² This is contested by proponents of the new mobility paradigm who argue that a significant element of travel is for travel' sake (Sheller and Urry, 2006).

Appropriate mix of policy instruments

It can often be the case that transport plans are dominated by infrastructure projects. In fact the range of policy instruments available is much broader. The Institute for Transport Studies at Leeds University have developed the Knowledgebase on Sustainable Urban Land-Use and Transportation (KONSULT³), which catalogues the range of interventions available. Infrastructure measures are one of six broad groupings, with 64 sub-categories in total. The other five measures are land use measures (6 sub-categories), attitudinal and behavioural measures (7 sub-categories), infrastructure management (18 sub-categories), information provision (10 sub-categories) and pricing (8 sub-categories). Given the large number of potential policy instruments, the challenge is to design an ‘optimal’ package, in which measures reinforce each other and help overcome constraints related to public acceptability and funding (May et al., 2005).

Overall, strategic planning might be seen as focusing on achieving the ‘holy grail’ of integrated and sustainable transport by progressing up the ladder of integration (Preston, 2012) and by using the ladder of interventions to achieve this – see Figures 1 and 2 below.

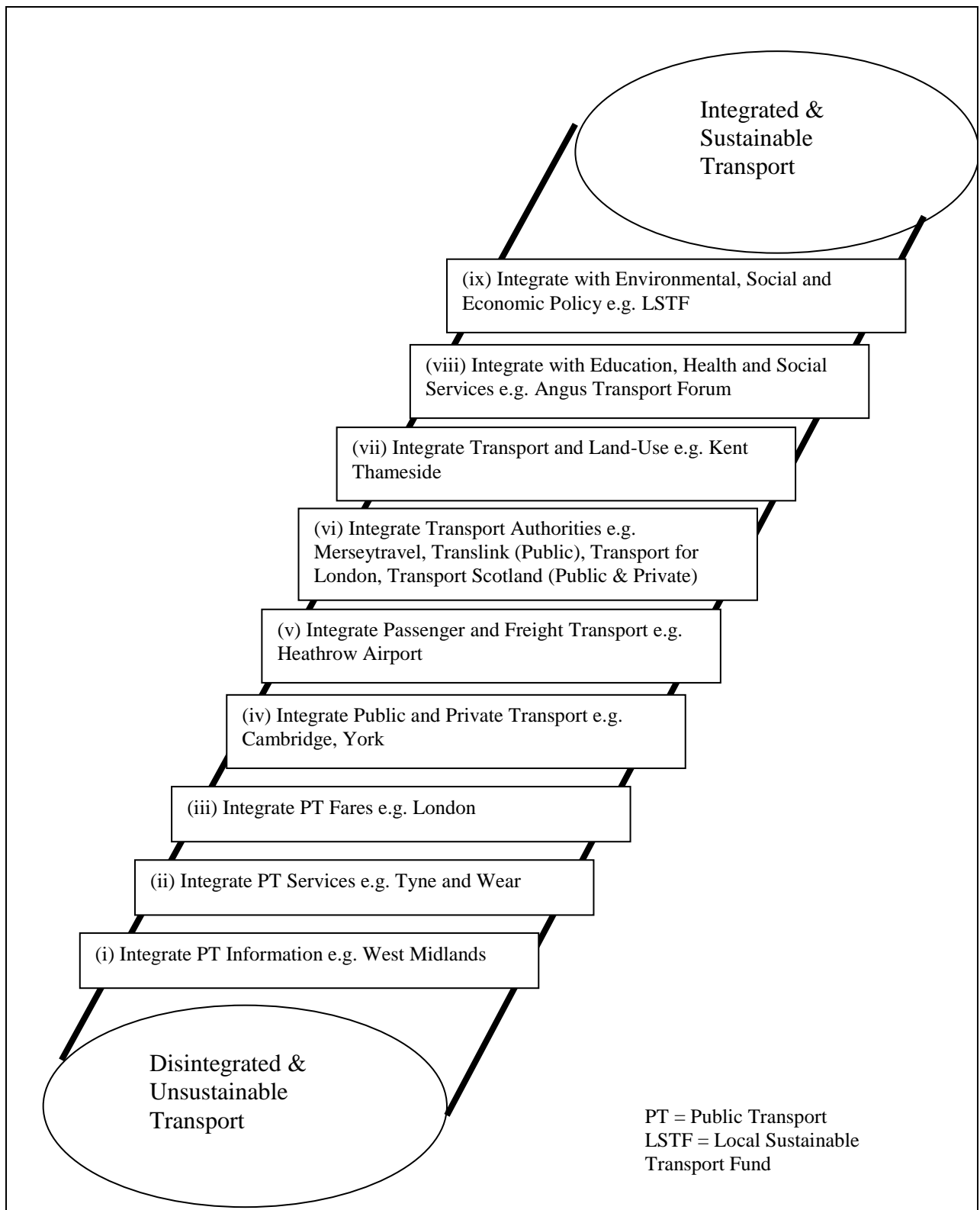
Figure 1: The Ladder of Interventions



Source: DfT, 2011, in Preston, 2012.

³ <http://www.konsult.leeds.ac.uk/>

Figure 2: The Ladders of Integration. Note this indicates possible exemplars in the UK.



Source: Preston, 2012.

Lessons from Strategic Planning in Other Countries

International comparisons of transport planning can be usefully grouped under three main headings: infrastructure planning, national transport planning and urban transport planning. In what follows, the literature on each is considered in turn, with an emphasis on the works of leading experts in these three domains.

Marshall (2012, 2013) has undertaken comprehensive reviews of infrastructure planning, particularly with reference to Europe. His analysis suggests that spatial approaches, like the evidence-based Spatial Planning Reports (Raumordnungsverfahren - RoV) in Germany, used to offer good examples of best practice, but have lost their value as infrastructure utilities have been privatised⁴. He contrasts England's National Policy Statements, which are sectoral-based, unfavourably with Scotland's National Planning Framework, which is spatially based; and he posits that Wales is positioned between the two extremes. The Netherlands is highlighted as representing best practice in terms of National Key Decisions, with this planning approach enabling the strategic development of Schiphol Airport and Europort, Rotterdam as international transport hubs.

In terms of national transport planning, Banister (2002) compares the UK with France, Germany, the Netherlands and the US. He notes a dominant engineering led approach, with the US and UK the most market-led. The most successful national transport plans are those that are integrated with other areas of planning. For example, the Netherlands is seen as having the clearest integration of transport, land-use and environmental policy and planning. This is exemplified by the ABC planning schema which prioritises land-use developments at public transport hubs, although the success of this policy has been questioned by some (Schwanen et al., 2004).

Hull (2011) compares the UK (and London) with Denmark (Copenhagen), Germany (Freiburg), the Netherlands (Amsterdam) and Sweden (Malmö). She highlights the importance of the clarity (and integration) of national rules, the need for structures (and funding sources) to support integrated problem solving at the local level, the coordination of public and private interaction, the engagement with civil society and the monitoring of the effectiveness of interventions. It might be argued that many of these are currently missing in strategic transport planning in Wales.

⁴ Marshall sees this as part of a neo-liberal process of hollowing-out of the state as evidenced by the weakening of national spatial strategies in Denmark, France and the Netherlands. He notes that there has been some subsequent filling-in such as the UK's National Infrastructure Plan (2010), the Wales Infrastructure Investment Plan (2012) and its Project Pipeline update (2014). This process of filling-in has also been associated with devolution (Smyth, 2003).

Evidence with respect to urban transport planning is provided by the work of Rye (2004). As shown by Table 1, he compares Edinburgh with 11 other cities, all but one of which are in Europe. By qualitative assessment (the summation of the pluses and minuses given in the final column of Table 2) he concludes that best practice is best exemplified by Stockholm, followed by Copenhagen and Zurich. He identifies four key success factors: integrated ticketing; funding; existence of a regional body and the comprehensive tendering of public transport operations.

Table 1: Comparative Assessment of Urban Transport

	Madrid	Barcelona	Jonkoping/ Sundsval	Berlin- Brandenburg	Copenhagen	Helsinki	Stockholm	London	Munich	Zurich	Vancouver	NET +
Regional Body	+++	++	+++	+++	++	+++	+++	+++	++	++	++	28
Political Consensus		--	+++	+++		+++	+++	--		+++	--	9
Public Support			+	++			++	++		++		9
Political Champion		++					++	+++				7
Central Govt Steer					++	++						4
Policy in place for many years					++	++	++		++	++		10
Investment in services/ infrastructure	+++	+++	++	+	+++	+++	+++	++	+++	+++	+++	29
Tendering of operations	+	+	+++	++	+++	+++	+++	+++				19
Parking restraint policy					++		++		++	++	+	9
Land-use transport integration	+	+			+++		+++		+++	+++	++	16
Low Fares	+++	+++	++	++			++	+(bus)				13
Integrated ticketing	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	++	32
NET +	14	13	17	16	20	19	28	15	15	20	8	185

+++ = very important factor

++ = moderately important factor

+ = slightly important factor

-- = factor that works against success

Source: Rye, 2004.

Rye argues that Edinburgh would require a doubling of capital funding and a 20% increase in revenue funding if it was to match European best practice. He also notes that network ticketing prices in the best practice cities were at below half the then current levels in Edinburgh. The most successful systems were based on some form of quality contract for integrated public transport plus parking restraint and reallocation of road space. In marked contrast to Edinburgh, 10 cities had seen increasing Public Transport volumes but only three had seen mode shift. Subsequent work on policy transfer has highlighted England and Switzerland as representing best practice with respect to behavioural change instruments

(Rye et al., 2011), particularly instruments associated with the smarter choices agenda (Cairns et al., 2008)⁵.

One common thread to these comparative reviews is the importance of finance and funding, with the ability to raise funds at the local level a critical success factor. There are a number of routes by which this can be done. Hull (op cit.) notes the role of local income and sales taxes, whilst Banister (op cit.) highlights the role of an employer tax in France (Versement Transport), hypothecated fuel taxes in German and land value/development gains taxes in the US. However, any of these fiscal measures would require primary legislation for Wales. On the other hand there are some measures available that can already be used including road user charges, workplace parking levies, community infrastructure levies and developer contributions.

The world leaders in transport planning are those that best integrate transport with infrastructure planning and other connected policy areas (land-use, environment, education, health, social services). This requires Government, at all levels, to provide an important co-ordinating role. There is no obvious single exemplar for Wales at the nation level – instead the emphasis might be on picking and mixing from the range of best practice identified. At the city level, Copenhagen might provide a useful comparator for Cardiff and South East Wales. Copenhagen's five finger suburban rail network has some parallels with the Valleys rail network. Copenhagen's expansion across the Oresund to increase interconnections with Malmo could also provide lessons for the impact of improvements to the Severn Crossings and increased interconnections with the Bristol City Region. Copenhagen's comprehensively tendered bus system, integrated public transport system and transit oriented development might also be beneficially replicated in the Cardiff City Region (Knowles, 2012).

Models and Methods for Strategic Transport Planning

The key methodological tools underpinning the strategic transport planning process are demand forecasting models. These are mathematical models that are used to forecast the impact of transport strategies, and assess the extent to which different strategies meet policy objectives and solve transport problems. Our emphasis here is on demand forecasting models but we will also briefly discuss assessment methods.

⁵ Such measures include personal, workplace, school and station travel plans and marketing measures to encourage active travel (walking and cycling), public transport and carsharing/liftsharing.

Demand forecasting models

Strategic forecasting models may be developed at a variety of spatial scales but for the purposes of this paper we focus on national transport models. As Banister (op cit.) observes these models may be developed at varying degrees of sophistication ranging from complex models, based on a family of behavioural models calibrated, validated and applied using disaggregate (individual or household level) data, to sketch planning tools, based on extrapolation and elasticities and aggregate zonal data, as widely used, for example, in France.

The more sophisticated modes can provide more accurate forecasts, but as models become more complex they also become more costly, with the result that there is a trade-off between the increased accuracy of the forecasts and the increases in cost. The set-up costs of the most complex models would run into several million pounds, with the on-going operating and maintenance costs also being substantial. If use is made of existing data, the operating and maintenance costs can be much lower. For all types of models, increasing availability of big data and open innovation offer the prospect of reducing costs.⁶

For the purposes of this review, three models have been considered:

- 1) the Dutch National Transport Model, which is at the most complex end of the spectrum,
- 2) the UK's National Transport Model, which is significantly simpler, but still reasonably sophisticated, and
- 3) the Infrastructure Transitions Research Consortium's Transport Demand and Capacity Assessment model, which is at the least complex end of the spectrum.

Dutch National Transport Model

The Dutch National Transport Model (Landelijk Model Systeem – LMS) has been established since 1986 (see Daly & Sillaparcharn, 2008; Van der Hoorn & Van Wee, 2013), and is owned by the Centre for Transport and Navigation which is part of Rijkwaterstaat (Public Works Department). The LMS is based on an annual travel survey of around 50,000 individuals and is supplemented by four regional models. It has been used extensively to

⁶ It is worth noting that strategic transport models can assist in attracting funding for transport projects. For example, Transport for South Hampshire (now Solent Transport) commissioned consultants MVA (now Systra) to develop a Sub-Regional Transport Model (SRTM) to cover a conurbation with a population in excess of 1.1 million. Development and operating costs to date have been almost £2 million but the SRTM was used to successfully bid for funding from the Local Sustainable Transport Fund and the Better Bus Area Fund to a value of £22.3 million and has been viewed as a highly cost effective investment by the Local Authorities involved.

examine infrastructure provision (particularly new roads), infrastructure management and road pricing. Some of its key features are that it:

- Models travel behaviour in 1,500 zones, based on individual socio-economic characteristics and accessibility measures;
- Splits the population into 18 age, 2 gender, 6 activity, 10 income, 6 education and 2 student groups giving 25,920 sub-groups overall;
- Accounts for demographic and social change; and
- Incorporates modelling of car purchase and scrappage rates as a function of technological developments and other changes in supply and demand characteristics.

As Daly and Sillaparcharn (op cit.) note, the Dutch National Transport Model has inspired a number of imitators (most notably in Norway, Italy and Sweden). They also note that successfully developing such National Transport Models requires initial momentum, validation (through backcasting), adaptability/extendibility and a firm behavioural basis for the underlying model(s).

UK National Transport Model

The history of National Transport Modelling has been more problematic in the UK than the Netherlands. There has been a long, and relatively successful, history of modelling car ownership and vehicle use. However, attempts to build modelling capacity that covered all modes and gave spatial detail in terms of travel destinations and routes chosen initially faltered⁷. It was only in the late 1990s that the UK Government decided to develop a National Transport Model (NTM) based on existing data such as the National Travel Survey (NTS). However, the sample size of the NTS was (and still is) insufficient to provide detailed spatial forecasts⁸. As a result a largely aggregate approach was developed based on 'artificial' geography.

Given the lack of spatiality in the NTM, specific spatial models have been developed to examine long distance traffic, with a specific focus on new high speed lines and motorway upgrades (see Fox et al., 2012); such models have been developed for HS2 and were used to forecast usage of the Channel Tunnel.

⁷ The Regional Highway Traffic Model (RHTM) was developed to overcome these spatial shortcomings around 1978. However, validation found that it failed to accurately predict traffic changes, in part because intra-zonal travel (which it was not designed to forecast) dominated inter-zonal but also because of data mismatches, particularly between roadside interviews and household interviews.

⁸ From 2013, the NTS applied to England only and involved approximately 16,000 individuals in 7,000 households.

ITRC Transport Capacity and Demand Assessment Model

Although the NTM has some simplifying features it still requires overnight computer runs to generate outputs. As a result, as part of the Infrastructure Transitions Research Consortium (ITRC)⁹, the University of Southampton has developed a Transport Capacity and Demand Assessment Model (TCDAM) that covers the whole of Great Britain (including representation of the 22 Local Authorities in Wales). It is multimodal, covering road, rail, seaports and airport, and provides annual forecasts from 2011 to 2100. It has short run times, is based on open source data and is compatible with a system of systems approach.

A feature of the ITRC modelling suite is the distinction between external factors (scenarios) and internal factors (strategies). Scenarios are related to energy prices (from the Department of Energy and Climate Change), demographics (provided by the University of Leeds, with Welsh growth forecast to be broadly in line with Great Britain, but with losses in some areas such as Flintshire) and macro-economic forecasts (provided by the University of Cambridge). Strategies are related to three main policy areas: demand management, capacity provision and technological provision.

Some examples of the outputs from the ITRC model are annexed.

Assessment methods

In this section we have focused on a range of transport models but it should be recognised that these are not ends in themselves but are used to assess different planning interventions. There are two broad approaches to assessment. Cost-benefit analysis, widely applied in the UK (typically using the Department for Transport's web based Transport Analysis Guidance (WebTAG¹⁰)), is a quantitative approach in which the impacts (positive and negative) of different interventions are monetised and a benefit:cost ratio is generated. Multi-criteria analysis (MCA) can be a more qualitative approach (of which the Welsh Government's WelTAG could be seen as a version) which uses a mixture of monetary, physical and semantic units of account. Banister (op cit.) notes that MCA is widely used in countries such as the Netherlands and Germany (see also Grant-Muller et al., 2001). There have been a number of international reviews of transport appraisal (e.g. Morisugi and Hayashi (2000), DfT (2007), International Transport Forum (2001)), with the WebTAG system widely acknowledged as being world leading. By contrast, WelTAG seems light on quantification and does not provide value for money assessments. It seems to lack both a sound scientific basis and an underlying evidence base.

⁹ <http://www.itrc.org.uk/>

¹⁰ <https://www.gov.uk/transport-analysis-guidance-webtag>

The Use of New Technology and Data Sources

Data has been a major constraint in strategic transport planning and has been a point of failure in some attempts to make advances (such as the RHTM in the 1970s). However, there have been a number of recent advances, under the banner of big data, that offer the promise of richer transport data sets in the future (see also POST, 2014). Traditional/static sources of data include inductive loops, Automatic Number Plate Recognition (ANPR) cameras and microwave sensors, whilst bluetooth sensors have also been used in recent work (Lees-Miller et al., 2013). New probe (also referred to as mobile) data are provided by enabled wireless networks, GPS and smart phones.

Data fusion and filtering techniques, used in conjunction with microsimulation traffic model, can provide real time visualisation of traffic on arterials and at key junctions (see Box et al., 2014 for an application in Southampton). Visualisation of data (including in three dimensions) has been enhanced by developments in Geographical Information Systems, the take-up of which has been facilitated by open access source code and related developments in what has become known as neo-geography (Hudson-Smith et al., 2009). This includes the use of crowd sourced social media data (such as Twitter) to provide a rich picture of traffic conditions.

There are also possibilities of combining the automated data described above with manually collected data from traffic and travel surveys and counts, the Census Journey to Work data, MoT car usage data etc. An example is the work of Martin et al. (2009). Using Census data on night-time resident populations, in combination with data on employment, education, travel etc., they have developed a 24/7 representation of the population. The application to Southampton shows how the suburbs are most heavily populated at night but lose their population to major employment and education centres in the morning peak. A feature of the Southampton area is the relatively dispersed nature of the daytime population albeit with some concentrations in the city centre and the docks area, and around the major University and hospital sites.

Similar initiatives are being championed by bodies such as the Highways Agency and Transport for London. There was a time when the Welsh Office, in combination with the Highways Agency, was an important player in Intelligent Transport Systems, with the M4 a test bed for advanced traffic management. This comparative advantage appears to have been lost with devolution, with the Department for Transport concentrating its data collection and modelling on England. However, the Transport Systems Catapult, and its proposed

National Transport System Modelling Facility, offers an opportunity to revive work in this area, building on the modelling work (based on the macrosimulation model SATURN) used to examine routings for a relief road to the south of Newport. The University of Southampton is an academic partner of the Transport Systems Catapult, representing the South of England, although it is observed that the Catapult does not have regional partners for Wales or for the North West and South West of England.

Collaborations with Universities offer the prospect of advances in the areas of new technology and big data. For example, the Economic and Social Research Centre (ESRC) has established a big data network, and has initiatives on urban data (at Glasgow University) and consumer data (at the University of Leeds) that are doing work in the transport sector.

Overall, some in-roads have been made in maximising the benefits that 'big data' offer, although to date Wales has not been at the forefront of these endeavours, but this is a new area and initiatives are underway to advance the state-of-the-art. The prize is that 'big data' offer the prospect of cheaper and better transport planning models.

Conclusions

The development of strategic transport plans is necessarily an iterative process. Wales has had a first iteration of this process using a blend of problem-oriented and objectives-led approaches. A systematic application of an objectives-led approach (in which problems are defined in terms of the failure to meet outcomes) can help frame policy. However, experience from Scotland suggests that one should beware of 'objective fatigue', where successive Ministers have focused on fine-tuning the objective(s) rather than delivering the plan (Docherty et al., 2007).

Although there are few good comparators for Wales at the national level, there may be some at the City region scale (for example, Copenhagen). At both national and sub-national levels, Wales can learn from best practice in Europe and elsewhere, especially concerning funding, finance and policy integration.

Transport models, and related assessment methodologies, can assist in forecasting and appraising the outcomes of policy instruments and in designing the 'optimal' package of instruments that make up the strategic plan. Learning by doing can be an expensive way to implement a transport plan but conversely one should beware of 'paralysis by analysis' – having such an onerous assessment process that little is delivered on the ground. However, an approach that can assess, in broad terms, the value for money and other impacts of the

national transport systems is urgently needed, along with a more scientific approach to planning and the evidence base to underpin it.

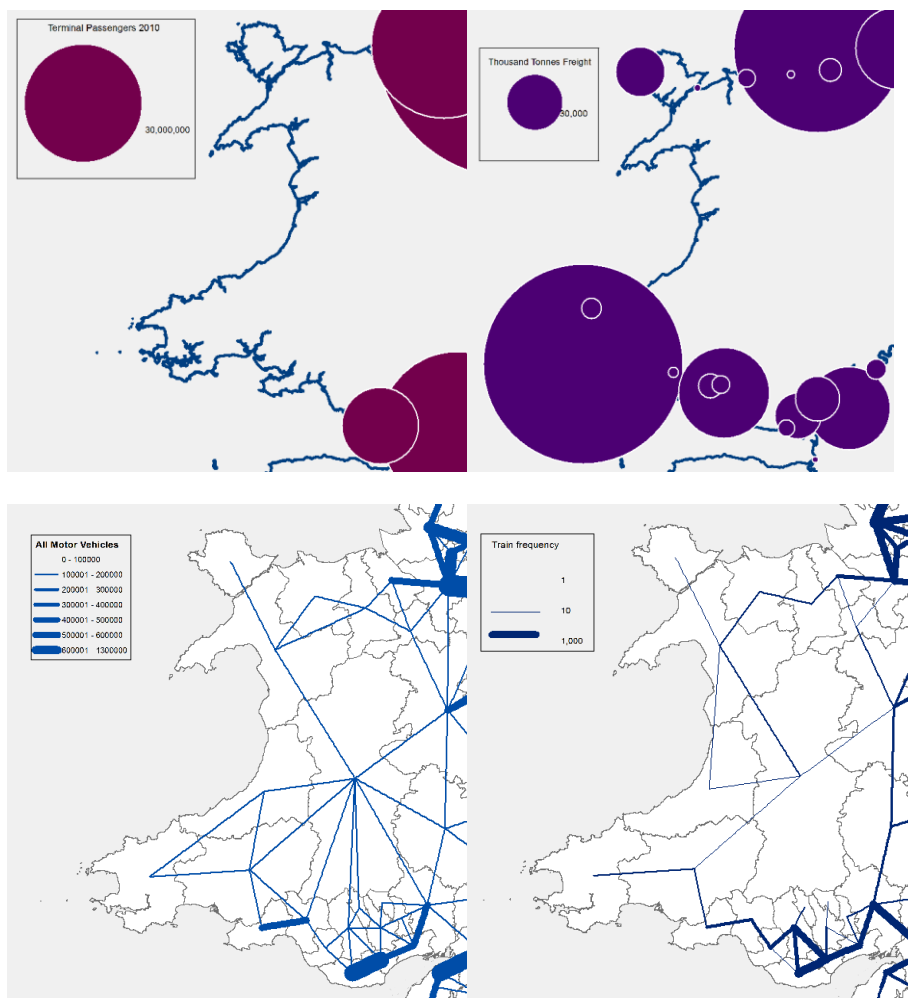
We would argue that there are strategic modelling and appraisal tools that could be developed for Wales at relatively low cost and which could help justify the funding of transport projects. Developments in big data and open innovation can offer ways to enhance these tools. Partnerships between Government and Universities will be one way of delivering this, along with other collaborations including with the private sector and third parties such as the Transport Systems Catapult.



Annex: Sample Outputs from the ITRC TCDAM Model

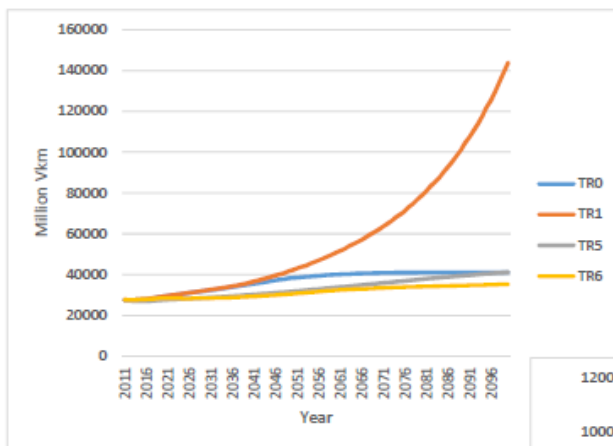
Outputs of the ITRC TCDAM

The Transport Capacity and Demand Assessment Model (TCDAM) is detailed in Blainey et al. (2012). Some of the baseline results for Wales are illustrated below. In terms of air travel, the usage of Cardiff Airport is dwarfed by Bristol (top left), whilst in terms of seaports the South Wales coast has a number of important terminals, but is dominated by Milford Haven (top right). For road transport, the network map (which is topologically transformed) highlights the greatest levels of demand in North East and South East Wales, although the Severn also appears as a major barrier to movement (bottom left). Rail movements are dominated by South East Wales but the Severn appears as less of a barrier (bottom right)

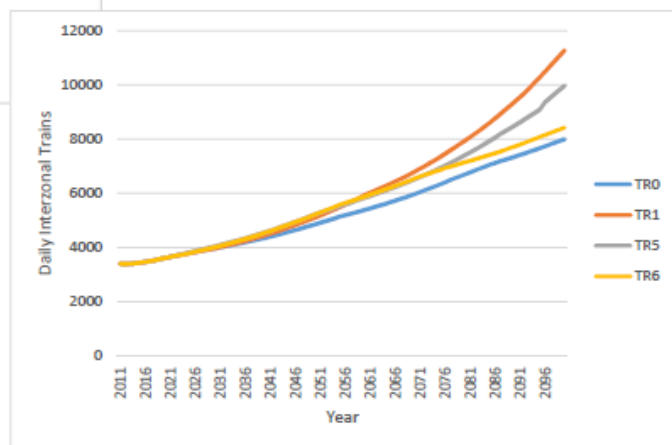


Demand Forecasts for Road and Rail Usage in Wales

Some runs of the TCDAM have been undertaken specifically for Wales and are illustrated below. For road (top left), infrastructure provision (TR1) leads to exponential growth suggesting Say's law is applying – supply is creating its own demand. Demand management (TR6) and technological promotion (TR5) can keep demand below a business as usual strategy (TR0), although there is some catch up by the end of the century. For rail (bottom right), all forms of intervention lead to higher usage than the business as usual approach, although in the second half of the century major infrastructure enhancement are required as capacity becomes fully utilised. Note for both roads and rail this analysis refers purely to Wales, demand could be constrained by bottlenecks existing over the border in England.



TR0: Decline and Decay
 TR1: Predict and Provide
 TR5: Connected Grid
 TR6: Smarter Choices



References

- Adams, J. and Schmuecker, K. (2005) **Devolution in Practice 2006: Public policy differences within the UK**. IPPR, Newcastle.
- Banister, D. (2002) **Transport Planning**. Second Edition. Spon, London. Especially Chapter 7: Overseas Experience.
- Blainey SP, Preston JM & McLeod F (2012) **A Long Term Capacity and Demand Assessment Model for the UK Transport System**, European Transport Conference, Glasgow.
- Box, S., Blainey, S., Chen, X. and Munro, S. (2014) Fine grained traffic state estimation and visualisation. **Proceedings of the Institution of Civil Engineers: Civil Engineering**, 167, 9-16.
- Cairns, S., Sloman, L., Newson, C., Anable, J., Kirkbride, A. and Goodwin, P. (2008). Smarter Choices: Assessing the Potential to Achieve Traffic Reduction. *Transport Reviews*, 28, 5, 593-618.
- Daly, A. and Sillaparcharn, P. (2008) **National Models**. Chapter 25 in Hensher, D.A. and Button, K. (Eds) **Handbook of Transport Modelling**. Second Edition. Elsevier, Oxford.
- DfT (Department for Transport) (2007) **The NATA Refresh: Reviewing the New Approach to Appraisal**. DfT, London.
- DfT (2011) **Creating Growth, Cutting Carbon. Making Sustainable Local Transport Happen**. January. DfT, London.
- Docherty, I., Shaw, J. and Gray, D. (2007) Transport Strategy in Scotland since Devolution. **Public Money and Management**, 27, 141-148.
- Ferreira, A., Beukers, E and Te Brömmelstroet, M. (2012) Accessibility is gold, mobility is not: A proposal for the improvement of transport-related Dutch Cost-Benefit Analysis, **Environment and Planning B: Planning and Design**, 39, 683-697.
- Fox, J., Patrungi, B. and Daly, A. (2012) **Comparison of the Long Distance Model and PLANET Long Distance**. RAND Technical Report 12012-HS2. http://www.rand.org/pubs/technical_reports/TR1202.html
- Grant-Muller, S. M., Mackie, P., Nellthorp, J., and Pearman, A. (2001) Economic Appraisal of European Transport Projects: the state-of-the-art revisited. **Transport Reviews**, 21, 2, 237-261.

Hudson-Smith, A., Crooks, A., Gibin, M., Milton, R. and Batty, M. (2009) NeoGeography and Web 2.0: concepts, tools and applications. **Journal of Location Based Services**, 3, 2, 118–145.

Hull, A. (2011) **Transport Matters. Integrated approaches to planning city-regions.** Routledge, Abingdon. Especially Chapter 7: Integrated territorial planning in practice: case studies.

International Transport Forum (2011) **Improving the Practice of Transport Project Appraisal.** Roundtable Report 149. OECD, Paris.

Knowles, R. (2012) Transit oriented development in Copenhagen: from the Finger Plan to Ørestad. **Journal of Transport Geography**, 22, 251 – 261.

Lees-Miller, J., Box, S. and Wilson R. E. (2013) **Hidden Markov Models for Vehicle Tracking with Bluetooth.** Transportation Research Board, Washington DC, USA, 13-3032 TRB Highway Traffic Monitoring Committee (ABJ35).

Marshall, T. (2012) The Remodelling of Decision Making on Major Infrastructure in Britain. **Planning Practice and Research**, 28, 1, 122-140.

Marshall, T. (2013) **Planning Major Infrastructure. A critical analysis.** Routledge, London.

Martin, D., Cockings, S. and Leung, S. (2009) **Population 24/7: Building Time Specific Population Grid Models.** European Forum for Geostatistics Conference. The Hague.

May, A.D. (1997) **Transport Policy.** In O’Flaherty, C. (Ed) (1997) **Transport Planning and Traffic Engineering.** Arnold, London, 42-79.

May, A.D., Kelly, C. and Shepherd, S. (2005) **Integrated Transport Strategies.** In Hensher, D. and Button, K. (Eds) **Handbook of Transport Strategy, Policy and Institutions.** Elsevier, London.

Mogridge, M. (1990) **Travel in Towns: Jam yesterday, jam today, jam tomorrow.** Macmillan, London.

Morisugi, H. and Hayashi, Y. (Eds) (2000) International Comparison of the Evaluation Process of Transport Projects. Special Issue of **Transport Policy**, 7, 1.

POST (Parliamentary Office of Science and Technology) (2014) **Big and Open Data in Transport.** <http://www.parliament.uk/briefing-papers/POST-PN-472/big-and-open-data-in-transport>



- Preston, J. (2007). **Transport: The movement of goods and people**. In Douglas, I., Huggett, R. and Perkins, C. (Eds) **Companion Encyclopaedia of Geography**. Volume 1, 199-212. Routledge, London
- Preston, J. (2012) **Integration for Seamless Transport**. Paper to International Transport Forum, May
- Price, M. (1999) A New Approach to the Appraisal of Road Projects. **Journal of Transport Economics and Policy**, 33, 2, 221-226
- Rye, T. (2004) **Best Practice in Sustainable Transport Policy Implementation: Lessons from Continental Europe for Scotland**. World Conference on Transport Research, Istanbul.
- Rye, T., Welsch, J., Plevnik, A. and de Tommasi, R. (2011). First Steps Towards Cross National Transfer in Integrating Mobility Management and Land Use Planning the EU and Switzerland. **Transport Policy**, 18, 533-543.
- Schwanen, T., Dijst, M. and Dieleman, F.M. (2004) Policies for Urban Form and their Impact on Travel: The Netherlands Experience. **Urban Studies**, 41, 3, 579-603.
- Sheller, M., and Urry, J. (2006) The New Mobilities Paradigm. **Environment and Planning A**, 38, 2, 207–226.
- Smyth, A. (2003) **Devolution and Sustainable Transport**. In Docherty, I. and Shaw, J. (Eds) **A New Deal for Transport**. Blackwell, Oxford.
- Thomson, J. M. (1977) **Great Cities and Their Traffic**. Victor Gollancz, London.
- Van der Hoorn, T. and van Wee, B. (2013). **Transportation models and their application**. In van Wee, B., Annema, J.A. and Banister, D. (Eds). **The Transport System and Transport Policy: An Introduction**. Edward Elgar, Cheltenham.
- Van de Velde, D. (1999) Organisational Forms and Entrepreneurship in Public Transport. Part 1: Classifying Organisational Forms. **Transport Policy**, 6, 147-157.
- Weiner, E. and Rikin, E.S. (2005) **Long-term Planning**. In Hensher, D. and Button, K. (Eds) **Handbook of Transport Strategy, Policy and Institutions**. Elsevier, London.
- Zelinsky, W. (1971) The Hypothesis of the Mobility Transition. **Geographical Review**, 61 (2), 219–49.

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Public Policy Institute for Wales
Sefydliad Polisi Cyhoeddus i Gymru

Regulation and Financing of Bus Services

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PPIW Report No. 9

Regulation and financing of bus services

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Summary

- The bus industry in Wales is characterised by declining demand, relatively high subsidies and low levels of user satisfaction. In its current form the industry is unlikely to deliver a high quality, integrated public transport or to be able to contribute fully to the development of the Welsh economy.
- The overall impact of deregulation has been negative. Fares have increased whilst operator costs have gone down. Wales pays higher subsidies than the rest of Great Britain outside of London without any noticeable added benefit, and the lack of competition in some areas makes it likely that some subsidy leaks into operator profits.
- The wider application of quality partnerships/contracts could increase service quality and demand for the same level of subsidy (or possibly less). It may also help to prevent leakage. However, quality contracts would be likely to face intense opposition from operators. There would be significant transitional and boundary problems and contracts would need to be rolled out over a period of years to permit a dispersed pattern of procurement and subsequent renewals.
- A Statutory Quality Partnership approach could lead to improvements but it would be difficult to deliver the priority measures that bus transport needs in order to compete effectively with car use. The greatest gains would be expected in urban areas and on inter-urban routes. For rural areas, flexible public transport services, integrated with the transport service provision for education, healthcare and social services, could be beneficial.
- Operators have an incentive to participate in quality partnerships because improved quality tends to increase profitability. But the incentives for local authorities to participate are much weaker. Profit sharing with operators might make schemes more attractive for councils but will be difficult to implement because of information asymmetries.

Introduction

The Minister for Economy, Science and Technology commissioned the Public Policy Institute for Wales to provide an independent expert analysis of the regulation and financing of bus services in Wales. The Minister asked for independent advice on four key issues:

1. What has been the impact of deregulation on bus services in Wales?
2. What are the advantages and disadvantages of the Welsh Government's current approach to working with bus operators?
3. What alternative approaches could be considered and what impact would they have on services and the pattern of subsidy?
4. What can the Welsh Government do to improve the effectiveness of quality partnerships?

The analysis in this report is based on a review of policy documents and the relevant academic and non-academic literature plus economic modelling of comparative performance of the Welsh bus market since deregulation¹.

The Impact of Bus Deregulation

The 1985 Transport Act

The current approach to regulating bus services in Wales dates back nearly thirty years to the 1985 Transport Act which:

- Abolished the system of Road Service Licences that had existed since 1930, opening up the commercial market to any company that had appropriate operator, driver and vehicle licenses and registered its services in a manner proscribed by the Traffic Commissioner;
- Made provision for tendering of socially necessary services²; and

¹ The database for the economic modelling was developed with assistance of Dr Jinan Piao.

² Wales has a higher than average proportion of socially necessary services. By 2007/8, they comprised 34% of its services, compared to around 20% in the rest of Great Britain. Due to funding constraints the figure currently stands at around 28%.

- Led to the corporatisation and subsequent privatisation of publicly owned bus companies, including National Bus Company (NBC) subsidiaries owned by central Government and the Municipals owned by local government.

In Wales, the Act resulted in the privatisation of the three NBC subsidiaries and most Municipals. South Wales Transport, covering south west Wales, was acquired by the predecessor of First Group in 1987. National Welsh, covering south east Wales, was also privatised in 1987. Crosville Cymru, in north and mid Wales, was bought by the predecessor to the Arriva Group in 1989. Most Municipals were privatised including Cynon Valley (1992), Inter Valley (1989), Islwyn (2010) and Taff Ely (1988). Only two (in Cardiff and Newport) now remain in public ownership.

The Welsh bus market since deregulation

Our analysis highlights five key trends in the bus market in Wales since deregulation³:

1. **Demand has decreased** - The number of bus trips per head has declined by 39% (33% after allowing for population growth). Ridership increases in the early years of deregulation were followed by a strong secular decline, though it should be noted that the average trip length in Wales is longer than the Great Britain average (estimated at 10 km by the Ministerial Advisory Group (2009) compared to 6km for rest of Great Britain) and the drop off in demand lessened from 2002 onwards.
2. **Supply has increased** - Vehicle kilometres have increased by 22%. The greatest increases were seen in the early years of deregulation, when a number of minibus services were introduced. The rate of growth was less marked from the mid-1990s.
3. **Fares have risen** - Receipts per bus trip, including concessionary fare reimbursements, have increased by 33% in real terms.
4. **Operating costs have fallen** - Costs per vehicle kilometre, including depreciation, have decreased by 19%. The large reductions in costs took place prior to 2000 when they amounted to around 50%.
5. **Subsidy has increased** - Excluding Fuel Duty Rebate/Bus Services Operators Grant, subsidy has increased by 117% in real terms⁴. However, the overall figure masks

³ Unless otherwise stated this analysis covers 1985/6 (the year before deregulation) to 2012/13 (the latest year for which data are available)

⁴ Up to 2010/11 which is the last year for which published data are currently available

important differences between revenue support (down 7%) and concessionary fares reimbursement (up 363%)⁵.

Modelling the impact of deregulation

To determine whether these changes in bus services in Wales are the result of deregulation it is necessary to try to assess what would have happened if the reforms had not been introduced (the 'counterfactual'). Using an approach developed by Preston and Almutairi (2013) based on bus demand forecasting models, we assessed the extent to which demand for services is influenced by fare levels, services and income levels. We then estimated three kinds of benefits: consumer surplus (benefits to bus users); producer surplus (benefits to bus operators); and changes in welfare (the sum of the consumer and producer surpluses). We analysed the data for London and for the rest of Great Britain⁶ and compared these to the Welsh bus market.

Outside of London – The analysis suggests that outside of London bus demand is inelastic to fares and services but is sensitive to income levels⁷. The model estimated that, other things being equal, deregulation had reduced demand by 4.7% in the short run and 12.2% in the long run. Deregulation did not benefit consumers and overall it was strongly welfare negative (though the extent of this depends on the assumptions that are made about the counterfactual) – see Table 1⁸.

London - The bus market in London is more sensitive to fares and services than elsewhere in Great Britain (reflecting competition from rail) but it is less elastic with respect to income⁹. Adjustments to deregulation are more rapid in London than the rest of Great Britain, with

⁵ A national free concessionary scheme was introduced in Wales in April 2002. Expressed in terms of out-turn prices, reimbursement jumped from £14 million (2001/2) to £30 million (2002/3) in one year, but has since increased steadily to £67 million by 2010/11. Estimated to be £73.2 million in 2013/14. Recent agreements have set this to be £67.75 million in 2014/15 and £69.75 million in 2015/16 (Local Transport Today, 651, 11-24 July, 2014, p3).

⁶ Comparisons with London are interesting because its bus services were governed by the 1984 London Regional Transport Act which led to a different approach to deregulation involving the gradual introduction of comprehensive competitive tendering on a route by route basis over a ten year period.

⁷ Outside London, the fares elasticity was estimated at -0.12 in the short run and -0.34 in the long run (which means that if fares were increased by 10% demand would fall by 1.2% in the short run (in that year) and by 3.4% in long run (around 10 years in this instance)), with 99% of change estimated to take place within 10 years. Service elasticity was estimated at 0.13 in the short run and 0.36 in the long run, whilst income elasticity was found to be -0.63 in the short run and -1.70 in the long run.

⁸ The results shown in Table 1 refer to the period 1985/6 to 2009/10 and include the impact of subsidy changes. In order to keep the analysis straightforward, it is assumed that external effects (e.g. on the environment) are negligible and that subsidies can be raised with cost. In reality, one might expect that the shadow price of public funds is around 1.2 (Dodgson and Topham, 1987). In such cases, a subsidy of £100 million, although being a transfer between Government and operators, would also impose a deadweight loss on society of £20 million.

⁹ Fares elasticity was found to be -0.43 in the short run and -0.93 in the long run. Service elasticity was 0.32 in the short run and 0.68 in the long run, whilst the corresponding figures for income elasticity are -0.45 and -0.96.

99% of change occurring in around seven years. Privatisation of London Buses Limited in the early 1990s reduced demand by 6.2% in the short run and 12.8% in the long run. There was a secular time trend of 2.0% growth per annum – substantially higher than in the rest of the country, where the growth trend was 1.1% per annum. The model suggests that deregulation in London benefits both users and operators.¹⁰

Table 1: Welfare Results of Regulatory Reforms Under Different Counterfactual Assumptions (£ Million, 1985/6 to 2009/10, 2008/9 prices)

	London		Outside London	
	Constant	Trend	Constant	Trend
Change in Consumer Surplus	+399	+451	-24,044	-16,299
Change in Producer Surplus	+3,516	+2,676	+11,778	+12,630
Change in Welfare	+3,915	+3,127	-12,266	-3,669

Note: the constant assumption assumes that the situation in 1985/6 is maintained in perpetuity – in other words the year before deregulation is taken as the baseline. The trend assumption assumes that historic trends in terms of subsidy (increasing), costs (increasing) and demand (declining) are maintained.

Wales – The analysis indicates that the Welsh bus market is similar to that which operates in the rest of Great Britain outside of London. In the period immediately after deregulation there was a small net benefit to society¹¹. However, since the early 1990s there were persistent net dis-benefits to society except for a brief period from 2000 to 2002 after which concessionary fares were introduced (Figure 1). This reflects a lack of competition in parts of the market. The bus industry in Wales was relatively concentrated prior to deregulation. In the late 1980s there was competition between the NBC, Municipal and independent sectors. However, this reduced over time, partly due to a series of bankruptcies, though there have been sporadic examples of competition since then, most notably between Cardiff Buses and the 2Travel Group in 2004.

¹⁰ There is a high degree of confidence in the findings because the results are not affected greatly by the assumptions which are made about the counterfactual.

¹¹ Based on present values using a test discount rate of 3.5% and 2012/13 prices.

Expressed in 2008/9 prices in order to be consistent with Table 1, the loss of consumer surplus in Wales up to 2009/10 is estimated at £629 million (which represents 2.6% of the outside London total). The increase in producer surplus is estimated at £9 million. Overall the welfare loss in Wales is computed as £620 million (5.1% of the outside London total). With a population of 3.0 million, Wales has 5.7% of the Great Britain population outside London (52.2 million).

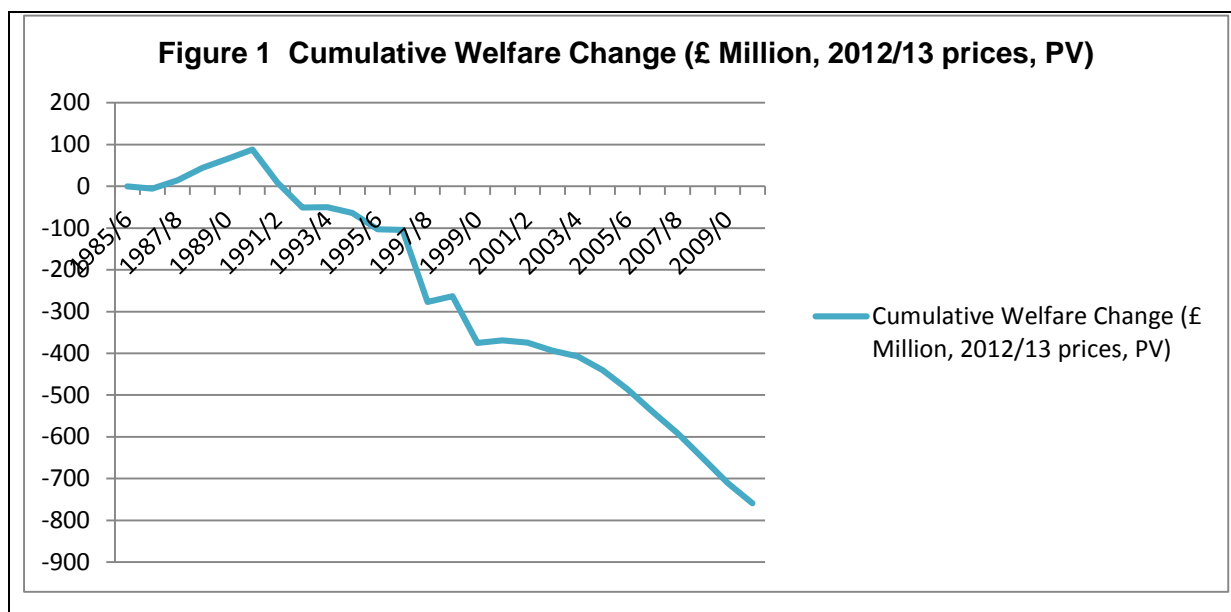


Table 2 summarises the differences between the performance of the bus market in London, the rest of Great Britain and in Wales. It shows that in London bus demand and supply have increased, whilst real operating costs have decreased. There have been substantial increases in real fares and subsidy levels and overall the population is better off by almost £600 per person. By contrast, outside London supply has increased, real operating costs have decreased and demand has declined. There have been substantial increases in real fares and, in Wales, in subsidy. Outside of London, the tax payer is worse off by an average of more than £200 per head.

We estimate that in 2008/9 the mean subsidy (concessionary fares and revenue support) per capita in Wales was around £34 (in 2012/13 prices) compared to £29 in the rest of Great Britain. In London it was around £131. The number of annual local bus trips per capita in Wales (41.6) was some 30% lower than Great Britain outside London (59.3) meaning that the subsidy per bus trip was 67% higher in Wales.

Table 2: The Impacts of Bus Deregulation (1985/6 to 2009/10)

	Change in Passenger numbers	Bus Km	Fares	Operating Costs	Subsidy	Welfare Change per Capita (£) (2012/13 prices)
London	+95%	+82%	+28%	-28% (2008/9)	+84% (2008/9)	+£585
Outside London	-35%	+18%	+47%	-16%	+5% (2008/9)	-£268
Wales	-29%	+32%	+35%	-22%	+123% (2008/9)	-£233

The data suggest that the overall impact of deregulation in Wales has been negative, though slightly less so than in the rest of Great Britain outside London due, in part, to higher levels of subsidisation. Bus user satisfaction appears to be lower in Wales. Surveys in November/December 2010 indicated an overall satisfaction score of 81% in Wales (Statistics for Wales, 2011). By contrast, comparable surveys in England in November 2009 indicated satisfaction levels ranging from 84% (Greater Manchester) to 92% (Brighton) (Passengerfocus, 2010).

The Welsh Government's Approach

Ministerial statements and actions indicate a desire to ensure concessionary fare reimbursement rates represent value for money and that subsidy does not leak into operator profits. Economic modelling comparing the existing arrangements in Wales with a perfectly planned market confirms that this is a problem. It estimates that a significant element of subsidy (£22 million – or around 18%) is captured as supernormal profit in the base situation (over and above an assumed 5% 'normal' return on expenditure)¹² – see Table 3. The

¹² The analysis is based on a negative exponential model of bus demand with a fare elasticity of -0.34 and a service elasticity of 0.36, so as to be consistent with the rest of Great Britain model described earlier. The model form assumes (absolute) fare elasticities increase proportionally with fares, service elasticities decrease proportionally with service levels and that consumer surplus is directly proportional to demand. It should also be noted that this simple model does not take into account competition from other modes. In Wales local rail fares are often lower than competing bus fares. The presence of competing rail services can exert downwards pressure on bus fares – this is believed to be a factor in the Cardiff area. Table 3 includes consideration of Bus Service Operators Grant so that total subsidy is estimated in the base at £125 million.

analysis suggests that the bus industry in Wales is making a return on expenditure of around 18%.

Table 3: Welfare Assessment of the Bus Industry in Wales (2010/11 data)

	Receipts (Pence/ Passenger km)	Vehicle Kms (Million)	Passenger Kms (Million)	Welfare (£ Million)	Excess¹³ Profit (£ Million)
Base	13.0	123	1230	492	22
Welfare Maximisation at Subsidy Constraint	4.9 (-62%)	130 (+8%)	1550 (+26%)	592 (+20%)	0 (-100%)
Profit Maximisation	38.2 (+194%)	74 (-40%)	501 (-59%)	105 (-79%)	77 (+250%)

What constitutes an excess profit and how it should be measured has been hotly debated by experts and by the industry (White, 2001, Competition Commission, 2011). But it seems likely that operators in Wales are earning monopoly rents and were the Welsh Government to eliminate supernormal profits and pursue an objective of maximising welfare there would be clear benefits – mainly in the form of fare reductions but also some service increases.

We estimate that a perfectly planned system would involve an increase in demand of around 25% and an increase in welfare of 20%. By contrast, if subsidies were withdrawn, leaving the market to be supplied by profit maximising local monopolists, fares could increase by approximately 300% and services could reduce by 40%. There would be large increases in profits and large reductions in welfare (down around 80%). These estimates are indicative rather than definitive but are broadly consistent with the findings of the Competition Commission (op cit.) which estimated that the bus industry outside London was earning monopoly rents in the order of £150 to £300 million per annum. Our data suggest that Wales might account for between 7.5% and 15% of this.

Economic analysis can also be used to assess the impact of changes in reimbursement rates. A shift from 73.59% to 64% is equivalent to moving from an arc fares elasticity of around -0.36¹⁴ to one of around -0.56 (or -0.47 if the rate is 68%). There are problems of comparability but the 64% reimbursement rate is not inconsistent with the overview of fares

¹³ Over and above an assumed 5% 'normal' return on expenditure

¹⁴ If fares are made free (i.e. reduced by 100%), a reimbursement rate of 73.59% assumes demand grows by around 36% ($((1/0.7359) - 1) \times 100\%$). The elasticity is thus -0.36 (36/-100).

elasticities produced for the DfT by ITS (2010) and illustrated by Table 4. However, the implied (absolute) elasticity for the reimbursement rate of 68% may be at the lowest end of the plausible range, whilst the implied elasticity at the reimbursement rate of 73.59% is clearly out of range and likely to have been generous to operators. This suggests that the Welsh Government could adjust the reimbursement rate without unduly affecting usage; but there would be value in undertaking work to determine the most appropriate fares elasticity for the Welsh bus market.

Table 4: Overview of Fares Elasticities

	Central estimate	Reasonable range
Metropolitan	-0.5	-0.45 to -0.55
Other Urban	-0.5	-0.45 to -0.55
Rural	-0.65	-0.6 to -0.7

Source: ITS, 2010.

By 2011/12, Concessionary Fare Reimbursement in Wales had reached £70 million, with 650,000 passes in circulation representing an 85% take-up. Some 50 million concessionary bus journeys were being made in Wales in 2011 – 40% of the total (Ministerial Statement, 17 January 2013). Concessionary fares schemes of this type may represent good politics (as there is a clear constituency of gainers) but bad policy. Studies in Scotland have indicated that usage of schemes is greatest amongst the relatively young and wealthy elderly (Rye & Scotney, 2004). They have been shown to generate a large proportion of new trips (Baker & White, 2010) rather than a substantial modal transfer from car use. However, concessionary fares can be beneficial in terms of social inclusion and KPMG (2014) suggests that concessionary bus fares may have social benefits, in part, through promoting volunteering as well as increased physical activity. It suggests that for every £1 spent on concessionary fares, there may be £2.87 of social benefits. Nonetheless, we would suggest that there may be scope for more targeted use of subsidy (for example, by means testing or some form of minimum charge) that would provide better returns. Other groups might also be offered discounts at a national scale, most notably young adults. Alternatively (or additionally), a National Travelcard system, like that operated in Switzerland, could be developed as a way of offering discounts to frequent travellers. ITSO compliant Smartcards offer an appropriate technological platform, with large scope for added value services.

Alternative Approaches

International evidence offers a range of alternative ways of organising the bus market, many of which have been examined in detail by the International Conferences in Competition and Ownership in Land Passenger Transport.¹⁵ These include:

- Comprehensive tendering at a route level (as happens in Copenhagen or London) or by area (as is the case in Adelaide);
- Network management contracts (as widely practiced in France);
- Performance based contracts (such as the Public Transport Operations Model recently introduced in New Zealand);
- Statutory and Voluntary Quality Partnerships, including those using the Qualifying Agreements provisions of the 2008 Local Transport Act and the Office of Fair Trading Block Exemptions (as in Oxford);
- Quality Networks (as used, for example, in St Albans);
- Flexible Transport Services; and
- Community Bus Partnerships (as trialled in South Yorkshire and Leicestershire)¹⁶.

We suggest that two of these - Statutory Quality Partnerships (SQPs) and Flexible Transport Services (FTS) – are particularly worth exploring because they are the options for which the most empirical British evidence is available and they also illustrate generic solutions for urban and rural bus markets respectively.

Quality Partnerships

SQPs were introduced by the 2000 Transport Act to overcome some of the shortcomings of Voluntary Quality Partnerships, in particular the free rider problem whereby a low quality operator could benefit, at low cost, from investments in a high quality network (Whelan et al., 2001). Davison and Knowles (2006) and Wall and McDonald (2007) provide reviews of Voluntary Quality Partnerships, whilst their evolution towards SQPs has been reviewed by Rye and Wretstrand (2013). Initial take-up was slow, with only Dundee and Sheffield

¹⁵ See: <http://www.thredbo-conference-series.org/>

¹⁶ These build on the success of Community Rail Partnerships in increasing demand for rural public transport through the voluntary sector 'sponsoring' routes and providing marketing and information, maintenance of bus stops and shelters etc. (Local Transport Today, 646, May 2014). Such partnerships could evolve into micro-franchising arrangements

introducing SQPs in the first phase. In part, this was due to operator concerns about falling foul of the 1998 Competition Act. Some of these issues were addressed by the 2008 Local Transport Act which stimulated a second phase of SQPs in Barnsley, Bristol, Greater Manchester, Merseyside, Nottingham and the West Midlands. Some of the results of this second phase are summarised in Table 5 which shows that these SQPs have led to modest patronage growth (often against a background of falling demand) and, being commercial services, have not led to major increases in subsidy. Although there may have been some increases in concessionary fare support, this is likely to have been offset by reduced requirements for revenue support for subsidised services. In essence, SQPs have permitted an evolution of services in a few markets but have not led to revolutionary change. We will discuss some of the reasons later in this report.

Table 5: Results of Second Phase of SQPs

	SQPS1	SQPS2	SQPS3	SQPS4
Results	6% year on year increase in patronage and reliability Improved vehicle quality	Cut journey times Improved vehicle quality Improved network	1% increase in passengers in first year (decline previously) Improved vehicle quality	17% increase in main operator's passengers over 4 years
Problems	Initial opposition from operator Operator forced to run sub-standard buses at one point	Lack of political buy-in Still some duplicative competition	Legal process lengthy – needed even for minor changes to scheme	Initial opposition from operator Few resources to monitor
Benefits as expected?	Largely; also stopped politicians removing bus priority	Yes	Significantly more – levered in extra investment and service	Largely as expected
More planned?	No – seen as one-off infrastructure investment Future seen as VPAs	No; this SQP is to deal with a very specific problem location	Yes, at least seven in metropolitan area	Yes, at least three more routes

Source: Rye and Wretstrand, 2013.

Flexible Transport Services

Quality Partnerships are largely, but not exclusively, an urban phenomenon. For rural services, Flexible Transport Services (FTS) have often been suggested as an alternative to conventional bus services. They are flexible in that they can provide a door to door service, may be booked in advance (by telephone or, increasingly, by the internet), and utilise a range of vehicles (including those primarily used for education, health care and social services). They also use volunteer drivers. However, of nine schemes in Scotland reviewed

by Velaga et al. (2012), three have ceased operating, and the longest lived have relied on strong government support.

A key issue with FTS is whether they provide value for money. There are two broad types of assessment: needs based and welfare based approaches. A needs based approach typically measures need in terms of accessibility to key facilities and a cost effectiveness measure of the cost of support per unit of accessibility is determined. An example, based on Havant is shown by Table 6. The council favoured an average measure, in which case option 4 is chosen with a cost of £5,110 per accessibility point. An alternative approach would be to use a marginal measure, in which case option 2 is chosen, as a gain of 1% in accessibility is achieved at a cost saving of £27,000 – a Pareto improvement on the base situation. An important issue here is the extent to which the commercial network provides a base level of accessibility and hence the extent to which tendered services enhance accessibility.

Table 6: Needs Based Approach

Option	Cost (C) (£k pa)	Accessibility Score (A) (%)	Cost change relative to base	Accessibility Score relative to base	Cost divided by Accessibility Score (C/A)	Cost saving divided by Accessibility Score change
Base	520	86	-	-	6.05	-
1	500	88	-20	+2	5.68	+10
2	493	87	-27	+1	5.66	+27
3	442	85	-78	-1	5.20	-78
4	430	84	-90	-2	5.11	-45
5	579	90	+59	+4	6.43	-14.75

Source: HCC, 2007.

The alternative is a welfare based approach in which the cost of support per passenger is compared with benefits achieved. In practice, this may manifest itself in a maximum subsidy payment per passenger but with little attention paid to the possible benefits of different services. However, work undertaken by Oxfordshire County Council in 2002, indicates that few FTS services would be under the maximum subsidy per passenger threshold that was in

use at the time (£3.50), although conventional services can operate with subsidy rates below this level (Table 7).

In 2010/11, the mean receipts per passenger in Wales (including concessionary fares reimbursement) were £1.38. However the mean concessionary fare reimbursement was estimated at £0.62 per passenger (or £1.44 per concession). Similarly, the mean cash fare was £0.76 per passenger (or £1.33 per fare paying passenger). This suggests that the mean trip length per concessionary journey is slightly longer than that per fare paying journey. Overall, mean subsidy per passenger in Wales (excluding BSOG) was estimated at £0.88, well below the suggested threshold given above.

Table 7: Welfare Based Approach

Scheme	Vehicle type	Vehicle access	Route Flexibility	Journey Timing	Passenger Fare per single journey	Annual Usage (000)	Subsidy per passenger (£)
A	Minibus	Low Floor	Fixed	Every three hours, 6 days per week	25p	11.9	4.70
B	Minibus	Low Floor	Fully demand responsive	Hourly, 6 days a week	50p	48.1	5.10
C	Mini and Midi Bus	Low Floor	Fixed with deviation and demand responsive	Hourly, 6 days a week	71p	37.7	9.90
D	Midi Bus	Low Floor	Mainly demand responsive	4 times per day, 6 days per week	71p	5.5	10.70
E	Midi Bus	Low Floor	Mainly fixed	4 times per day, 6 days per week	92p	3.0	17.00
F	Taxi	High Floor	Fully demand responsive	6 times per day, 7 days per week	150p	1.9	9.70
G	Midi Bus	Low Floor	Fixed with deviations	Hourly, 6 days per week	60p	23.4	4.60
H	Single Deck	High Floor	Fixed	Hourly, 6 days per week	112p	65.7	0.67
I	Single Deck	High Floor	Fixed	Hourly, Mon – Sat daytime, less frequent in evening & Sunday	119p	323.3	0.55

Source: OCC, 2002.

Effective Quality Partnerships

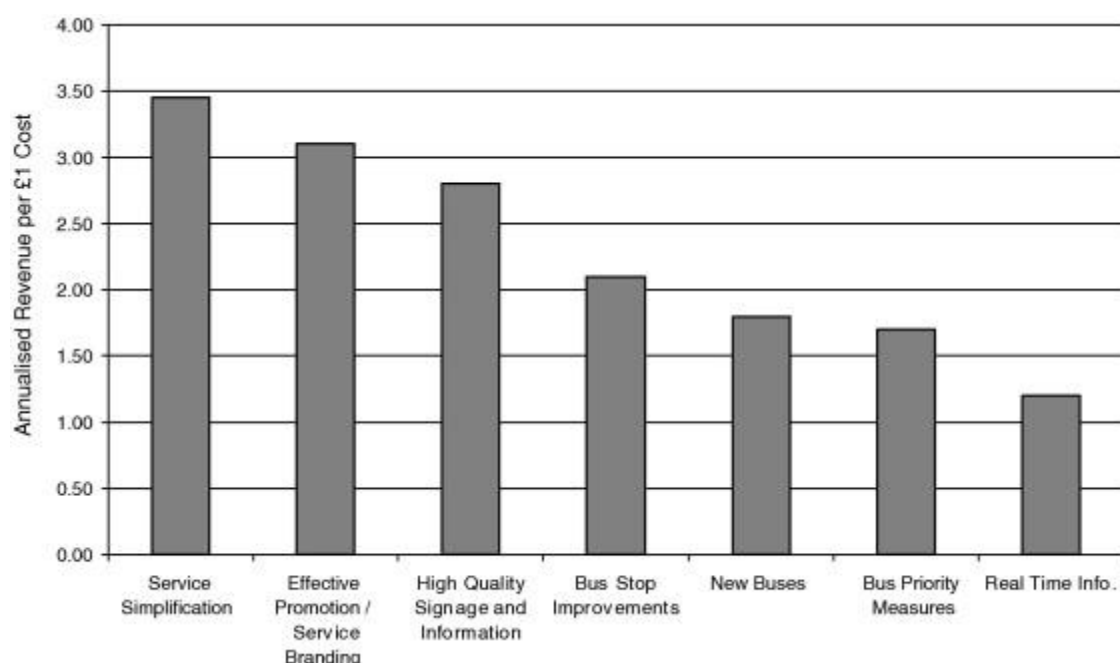
Economic modelling indicates that quality partnerships can increase benefits to society and enhance the profitability of operators (Preston, 2004, 2008). However, where an operator has a local monopoly they will be incentivised to charge higher fares and provide lower service frequencies than the optimal (Glaister, 2001), as appears to be the case in Wales. Where competition does occur, it will tend to be small group in nature, resulting in too much service, paid for by too high fares (Evans, 1987).

Local authorities are unable to set limits on commercial fares or regulate commercial service frequencies, as this would 'inhibit competition' contrary to the 1985 Transport Act, whilst operators were not able to fix fares and service levels, as this was contrary to the 1998 Competition Act. The 2008 Local Transport Act removed some of these constraints. The , best example is Oxford where joint ticketing arrangements have been introduced, timetables co-ordinated, new larger buses introduced and service levels in the City Centre have reduced by 14%, whilst patronage has continued to increase. However, Oxford is unique in that there were two equally sized and resourced operators in the City (Go-Ahead Group and Stagecoach) for whom collaboration was clearly preferable to continued competition. It does not seem that there are similar examples in Wales.

Thus quality partnerships can deliver improved quality but not necessarily accompanied by improved prices or by improved service quantity. There is, though, a further problem. A key improvement in quality relates to bus priority and the resultant increases in bus speeds. Where priority is provided through new road infrastructure, this has a high capital cost, which falls on the local authority. Where priority is provided by reallocation of road space away from motorists, this has a lower capital cost but can have a high political cost as a result of the disaffected motorists that may be created. Understandably, councils will be reluctant to bear these costs, particularly when much of the benefit will accrue in increased profits to the operators. Profit sharing arrangements could overcome some of these problems but information asymmetries would make such arrangements very difficult to formulate. The group structure of the largest bus operators, along with the large proportion of common costs and revenues, make it very difficult to calculate the profitability of an individual route.

TAS (2002) have illustrated a range of value for money fixes that can improve bus services (see Figure 2).

Figure 2: Bus Service Improvements

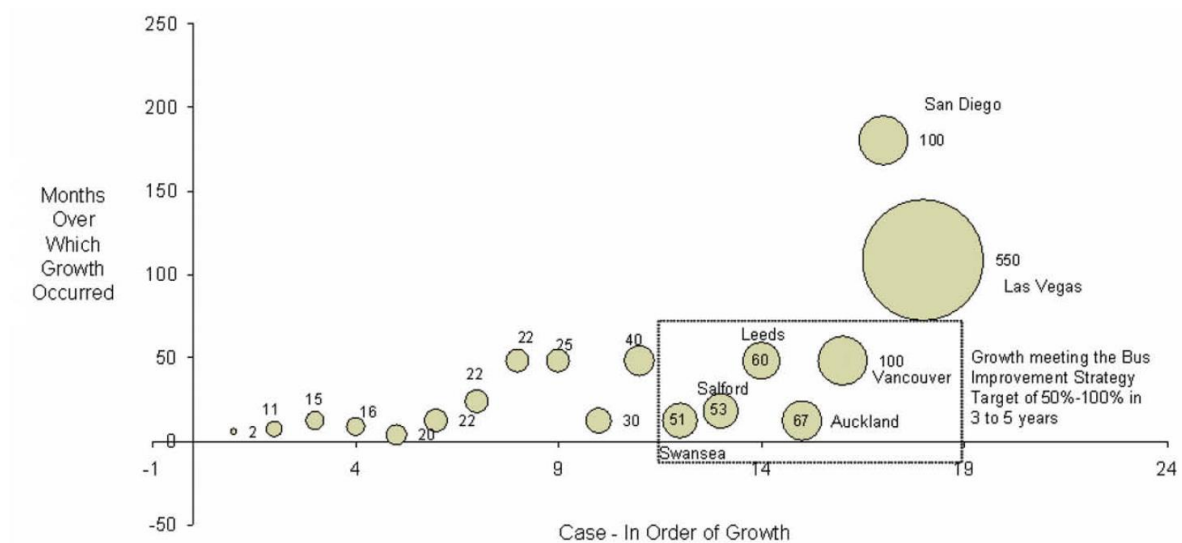


Source: TAS (2002) in Currie and Wallis (2008).

Quality partnerships between operators and local authorities can relatively easily deliver services simplifications, promotions, branding, high quality signage, information and bus stop improvements. However, the more capital-intensive investments such as new buses and, particularly, bus priority measures are more problematic. Nonetheless, Dong and Nelson (2012) have shown that bus rapid transit has been successful worldwide in growing the market. This point is reinforced by the work of Chatterjee (2011) who has illustrated how the Crawley – Horley bus rapid transit system has led to a sustained increase in bus use. Currie and Wallis (2008) have also shown how systems that have had the greatest growth have done so with the use of priority. This is illustrated by Figure 3, where one of the exemplars is the frt scheme in Swansea. Both the North East Wales and the South East Wales Transport Task Forces have highlighted the importance of bus rapid transit to fill a gap between conventional rail and bus services, highlighting routes such as the Pontypridd to Pontypool mid valleys link. Work by KPMG for Greener Journeys has established that bus priority schemes can represent good value for money, with a typical Benefit Cost Ratio of around 3.3 when wider economic impacts (including access to jobs) are taken into account¹⁷. This is broadly double the return found by TAS in Figure 2.

¹⁷ <http://www.greenerjourneys.com/2014/07/buses-drive-jobs-economic-prosperity-reveals-landmark-report/>

Figure 3: Bus Improvement Schemes (% Bus Market Growth and Time Period Over Which Growth Took Place)



Source: Currie and Wallis (2008)

Work on monitoring the Better Bus Area Fund has shown that quality improvements such as real time information, wifi, next stop indicators and low floor buses are becoming the expectation (Song et al., 2014). Although they will shore up existing usage, they are unlikely to attract new users. Harder measures may be required such as journey time savings, reliability improvements, service frequency enhancements and fare reductions.

Conclusions

The current bus industry structure in Wales is characterised by declining demand, relatively high levels of subsidy and low levels of bus user satisfaction. This is unlikely to deliver the high quality, integrated public transport to which the Welsh Government aspires.

A Statutory Quality Partnership approach could produce some improvements but there would be difficulties delivering the priority measures that bus transport needs in order to compete effectively with car use.

A nationwide devolved Quality Contract for local buses in Wales would have a number of advantages. This approach has succeeded in London, although the market there is very different to that in Wales. It would be consistent with the approach for rail, and would allow bus-rail integration. It would be capable of delivering the networks to which the North East and South East Wales Transport Task Forces aspire.

However, there are also a number of barriers to overcome. The 2000 Transport Act and 2008 Local Transport Act gave local authorities the powers to introduce Quality Contracts but to date none have done so. Furthermore, the Welsh Government does not have these powers (and would require primary legislation to have them) but it does have co-ordination powers, although co-ordinating all 22 Unitary Authorities to deliver Quality Contracts would be difficult. Furthermore, compared to Transport for London or the Passenger Transport Executives, Wales has little institutional capacity to design and procure quality contracts. However, this tactical level planning could be contracted out to consulting firms such as AECOM and Arup who are partly performing this type of planning role for the Transport Task Forces.

Quality contracts would face intense opposition from operators, who might move to more entrenched profit maximising strategies. Alternatively, in such circumstances operators might take a more permissible stance on quality partnerships. Transitional and boundary problems for a nationwide scheme would be significant, with contracts needing to be rolled out over a period of a few years, so as to permit a dispersed pattern of procurement and subsequent renewals. There would also be issues in terms of determining the nature of the contracts themselves. Following London, this would probably be best delivered as relatively short (three years) contracts at a route level, but with block bids permitted. This could encourage the development of Welsh based SMEs.

There should probably be gross cost contracts with Government taking the revenue risk but with operators incentivised through a performance management regime to ensure reliable, punctual and high quality services, as in London. Timetables and fare levels and structures would be specified by the Welsh Government following consultation with all relevant stakeholders. Bidders would be required to provide vehicles and depots. The risk to the Government would be minimised by the rolling nature of the procurement programme, whilst it would simplify arrangements for concessionary fare reimbursement, as the Government in essence would be reimbursing itself. Such a system would be able to increase bus patronage by up to 25% with existing subsidy levels and existing levels of quality. Where quality can also be increased, for example through greater provision of bus priority, then greater increases in demand would be possible, although this would require capital investments. Only by a radical reform of this sort will the Welsh bus industry be revived and contribute fully to the development of the Welsh economy.

References

- Baker, S. and White, P. (2010) **Impacts of free concessionary travel: case study of an English rural region.** *Transport Policy*, 17, 1, 20-26.
- Chatterjee, K. (2011) **Modelling the dynamics of bus use in a changing travel environment using panel data.** *Transportation*, 38, 487-509.
- Competition Commission (2011) **Local Bus Services Market Investigation. Provisional Findings Report.** Competition Commission, London. May. http://www.competition-commission.org.uk/inquiries/ref2010/localbus/pdf/local_uses_provisional_findings_report.pdf
- Currie, G. and Wallis, I. (2008) **Effective ways to grow urban bus markets – a synthesis of evidence.** *Journal of Transport Geography*, 16, 6, 419-429.
- Davison, L.J. and Knowles, R.D (2006) **Bus quality partnerships, modal shift and traffic decongestion.** *Journal of Transport Geography*, 14, 3, 177-194.
- Deng, T. and Nelson, J. (2011) **Recent Developments in Bus Rapid Transit: A Review of the Literature.** *Transport Reviews*, 31, 1, 69-96.
- Dodgson, J.S and Topham, N. (1987) **Shadow Price of Public Funds: A Survey.** In Glaister, S. (Ed) *Transport Subsidy.* Policy Journals, Newbury.
- Evans, A. (1987) **A Theoretical Comparison of Competition with Other Economic Regimes.** *Journal of Transport Economics and Policy*, 21, 7-36.
- Glaister, S. (2001) **The Economic Assessment of Local Transport Subsidies in Large Cities.** In Grayling, T. (Ed) *Any More Fares?* IPPR, London.
- Hampshire County Council (HCC) (2007) **Review of Transport in the Community.** HCC, Winchester.
- Institute for Transport Studies (2010) **Concessionary Fares Synergy Paper.** Mimeo, University of Leeds.
- KPMG (2014) **The Costs and Benefits of Concessionary Bus Travel for Older and Disabled Persons in Britain.** Report for Greener Journeys, London.
<http://www.greenerjourneys.com/wp-content/uploads/2014/09/Concessionary-travel-costs-and-benefits-September-2014.pdf>
- Ministerial Advisory Group (MAG) (2009) **Phase 2 Report on Transport.** 11/12 December. Cardiff.

Oxfordshire County Council (OCC) (2002) **Best Practice Guides: Rural Bus Service**.
OCC, Oxford.

Passengerfocus (2010) **Bus Passenger Survey. July**.

<http://www.passengerfocus.org.uk/research/publications/bus-passenger-survey-full-report-july-2010>

Preston, J. and Almutairi, T. (2014) **Evaluating the Long Term Impacts of Transport Policy: The Case of Bus Deregulation Revisited**. 13th International Conference on Competition and Ownership in Land Passenger Transport. Forthcoming in Research in Transportation Economics.

Preston, J. (2004) **The Deregulation and Privatisation of Public Transport: Twenty Years On**. Transport Research Foundation (TRF) Lecture. Oxford.

Preston, J. (2005) **Tendering of Services**. In Button, K. and Hensher, D. (Eds) Handbook of Transport Strategy, Policy and Institutions. Elsevier, Oxford. 65-82.

Preston, J. (2008) **Competition in Transit Markets**. *Research in Transportation Economics*. 23, 75-84.

Rye, T. and Scotney, D. (2004) **The Factors Influencing Future Concessionary Bus Patronage in Scotland and their Implications for Elsewhere**. *Transport Policy*, 11, 133-140.

Rye, T. and Wretsand, A. (2013) **Converging Structures? Recent regulatory change in bus-based public transport in Sweden and England**. 13th International Conference on Competition and Ownership in Land Passenger Transport, Oxford.

Song, Y., Preston, J. and Hickford, A. (2014) **Delivering Sustainable Public Transport: The Case of the Better Bus Area Fund**. *Research in Transportation Economics*.
Forthcoming.

Statistics for Wales (2011) **Welsh Bus Passenger Survey 2010**. Statistical Bulletin 65/2011. <http://wales.gov.uk/statistics-and-research/welsh-bus-passenger-survey/?lang=en>

TAS Partnership (2002). Appendix C: **United Kingdom Experience in Bus Service Improvements**. In Booz Allen Hamilton. Metropolitan Bus Plan: Cost Effective Improvement Measures. Department of Infrastructure, Victoria, Australia.

Velaga, N.R., Nelson, J.D., Wright, S.D. and Farrington, J.H. (2012) **The Potential Role of Flexible Transport Services in Enhancing Rural Public Transport Service Provision**. *Journal of Public Transportation*, 15, 1, 111-131.



Wall, G. and McDonald, M. (2007) **Improving bus service quality and information in Winchester**. *Transport Policy*, 14, 2, 165-179.

Whelan, G.A., Toner, J.P., Mackie, P.J. and Preston, J.M. (2001) **Modelling Quality Bus Partnerships**. World Conference on Transport Research, July 22-27, Seoul, Korea.

White, P. (2001) **Local Bus Industry Profitability and the Role of Longer-distance Services**. In Grayling, T. (Ed) *Any More Fares?* IPPR, London.



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