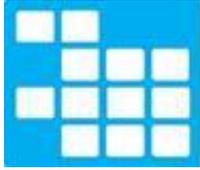


Complete Agenda



north wales economic ambition board
bwrdd uchelgais economaidd gogledd cymru

Meeting

NORTH WALES ECONOMIC AMBITION BOARD

Date and Time

2.30 pm, FRIDAY, 26TH MARCH, 2021

Location

Virtual Meeting - Zoom

Contact Point

Eirian Roberts

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(DISTRIBUTED 18/03/21)

NORTH WALES ECONOMIC AMBITION BOARD

MEMBERSHIP OF THE JOINT COMMITTEE

Voting Members

Councillors

Hugh Evans	Denbighshire County Council
Llinos Medi Huws	Isle of Anglesey County Council
Mark Pritchard	Wrexham County Borough Council
Ian B. Roberts	Flintshire County Council
Dyfrig L. Siencyn	Gwynedd Council
Sam Rowlands	Conwy County Borough Council

Advisers - Non-voting

Dafydd Evans	Grwp Llandrillo Menai
Maria Hinfelaar	Glyndwr University
Yana Williams	Coleg Cambria
Askar Sheibani	Business Delivery Board
Professor Iwan Davies	Bangor University

Chief Officers - Non-voting

Annwen Morgan	Isle of Anglesey County Council
Iwan Davies	Conwy County Borough Council
Colin Everett	Flintshire County Council
Judith Greenhalgh	Denbighshire County Council
Ian Bancroft	Wrexham County Borough Council
Dilwyn Williams	Gwynedd Council

Officers in Attendance

Dafydd L. Edwards	Section 151 Officer
Iwan G. Evans	Monitoring Officer
Alwen Williams	Portfolio Director
Hedd Vaughan Evans	Operations Manager
Nia Medi Williams	Senior Executive Officer

A G E N D A

1. APOLOGIES

To receive any apologies for absence.

2. DECLARATION OF PERSONAL INTEREST

To receive any declarations of personal interest

3. URGENT BUSINESS

To note any items which are urgent business in the opinion of the Chair for consideration.

4. MINUTES OF THE PREVIOUS MEETING

4 - 9

The Chair shall propose that the minutes of the meeting held on 5th February, 2021 be signed as a true record.

5. 2021/22 REVENUE AND CAPITAL BUDGET

10 - 19

Report by Dafydd L. Edwards, Host Authority Statutory Finance Officer.

6. POSITION STATEMENT ON CLIMATE AND ECOLOGICAL CHANGE

20 - 35

Report by Alwen Williams, Portfolio Director.

7. DRAFT NORTH WALES ENERGY STRATEGY

36 - 119

Report by Henry Aron, Energy Programme Manager and Rhys Horan, Welsh Government Energy Service.

8. COMMERCIAL PRINCIPLES FOR THE NORTH WALES GROWTH DEAL

120 - 122

Report by Hedd Vaughan-Evans, Operations Manager.

9. NORTH WALES GROWTH DEAL - PROCUREMENT PRINCIPLES

123 - 133

Report by Hedd Vaughan-Evans, Operations Manager.

NORTH WALES ECONOMIC AMBITION BOARD 5.2.21

Present:

Voting Members - Councillors:- Hugh Evans (Denbighshire Council), Llinos Medi Huws (Isle of Anglesey County Council), Mark Pritchard (Wrexham County Borough Council), Ian B.Roberts (Flintshire Council), Sam Rowlands (Conwy County Borough Council) and Dyfrig L.Siencyn (Gwynedd Council) (Chair).

Advisors – Dafydd Evans (Grŵp Llandrillo Menai), Maria Hinfelaar (Glyndŵr University), Askar Sheibani (Business Delivery Board) and Bryn Jones (Bangor University).

Chief Officers - Nicola Stubbins (Denbighshire Council), Annwen Morgan (Isle of Anglesey County Council), Ian Bancroft (Wrexham County Borough Council), Colin Everett (Flintshire Council), Jane Richardson (Conwy County Borough Council / Chair of the Executive Officers Group) and Dilwyn Williams (Gwynedd Council).

Officers in attendance - Dafydd Edwards (Statutory Finance Officer - Host Authority), Iwan Evans (Monitoring Officer - Host Authority), Alwen Williams (Portfolio Director), Hedd Vaughan-Evans (Operations Manager), Nia Medi Williams (Senior Operational Officer), Sian Pugh (Group Accountant - Corporate and Projects), David Mathews (Land and Property Programme Manager), Stuart Whitfield (Digital Programme Manager), Henry Aron (Energy Programme Manager), Robyn Lovelock (Growth Deal Programme Manager), Kirrie Moore (Digital Connectivity Project Manager), Erin Thomas (Communication and Engagement Officer), Annes Sion (Democracy Team Leader) and Eirian Roberts (Democracy Services Officer).

1. APOLOGIES

Yana Williams (Coleg Cambria), Professor Iwan Davies (Bangor University), Iwan Davies (Conwy County Borough Council) and Judith Greenhalgh (Denbighshire Council).

2. DECLARATION OF PERSONAL INTEREST

Askar Sheibani declared a personal interest in item 7 - Portfolio Highlight Report - as he was a member of the DSP project consortium (the Digital Signalling Processing Centre).

He was not of the opinion that it was a prejudicial interest, and he did not withdraw from the meeting during the discussion on the item.

3. URGENT ITEMS

None to note.

4. MINUTES

The Chair signed the minutes of the previous meeting of the NWEAB held on 11 December 2020 as a true record.

5. REVENUE BUDGET 2020/21: THIRD QUARTER REVIEW (DECEMBER 2020)

The report was submitted by Sian Pugh (Group Accountant - Corporate and Projects).

RESOLVED

To receive and note the NWEAB Joint-Committee's Third Quarter Review for 2020/21.

To receive the Joint-Committee's approval to transfer any underspend in 2020/21 to the earmarked reserve that will be available for future years.

REASONS FOR THE DECISION

It was anticipated that there would be £156,255 of underspend in 2020/21. It was noted that any underspend at the end of the financial year could be transferred to the earmarked reserve fund.

In order to work effectively, the Joint-committee (NWEAB) must be aware of its expenditure situation to date and this year's spending projections against its annual budget.

DISCUSSION

The report was submitted, which provided details of the actual expenditure and income for the third quarter of the 2020/21 financial year, together with a projected full year out-turn against the annual budget.

Details were provided about the background and relevant considerations and the consultations held.

In response to questions, the following was noted:-

- That the underspend had not had any impact on what we should have achieved by now.
- That the balance at the end of the 2020/21 financial year would be higher than projected, mainly due to Covid-19 and the delay in recruiting to jobs. It was intended to present the 2021/22 budget to the Board in March, following a discussion with the Portfolio Director and the Operations Manager to see whether some of this year's underspend needed to be committed in next year's budget. It would be essential to ensure that we had a safety net in the longer-term, as larger sums of money would be spent.
- That there was no right answer in terms of how much reserves should be held in future, and that this needed to be considered in the context of other risks that we would commit to as we move forward, and how much would be included for provisions such as inflation, etc. Consideration would be given to that when the budget would be presented.

The Head of Finance and the team were thanked for their work.

6. FINAL DEAL AGREEMENT

The report was submitted by Alwen Williams, Portfolio Director.

DECISION

To note that the Final Deal Agreement had been completed.

REASONS FOR THE DECISION

In November 2019 the NWEAB and the Welsh and UK Governments agreed the Heads of Terms, with a Final Deal Agreement to be completed in 2020. It was highlighted that the Final Deal Agreement was a declaration of contract between the Partners, UK Government and Welsh Government for the delivery of the North Wales Growth Deal.

In October 2020, the NWEAB recommended the draft Final Deal Agreement and the Final Deal Agreement was presented through the partners' democratic and decision-making processes. The final document was developed jointly by agreement with both Governments. A Final Deal Agreement signing ceremony took place during December 2020. It was outlined to the Board that the Final Deal Agreement had been completed. The agreement was submitted to the Board to report on completing this process.

DISCUSSION

The report, which presented the final version of the Final Deal Agreement, was submitted. It was highlighted that a draft had been submitted back in October and that a ceremony to sign the Agreement had been held in December. It was noted that the report presented the agreement and reported on the completion of the process.

7. PORTFOLIO HIGHLIGHT REPORT

The report was submitted by Hedd Vaughan-Evans

DECISION

To note the Portfolio Highlight Report for February 2021 and the progress made since the completion of the Final Deal Agreement in December 2020.

To delegate the power to the Operations Manager in consultation with the Chair to update the report as noted orally during the Board meeting prior to submitting the Portfolio Highlight Report for February 2021 to Welsh Government and UK Government.

REASONS FOR THE DECISION

In December 2020, the NWEAB and the Welsh and UK Governments agreed the Final Deal Agreement for the North Wales Growth Deal.

It was highlighted that the report provided an update on progress since signing the deal, an overview of the current position of each programme and project within the deal and an updated timetable for delivery. It was stressed that the report focused in particular on the timetable for the consideration of Outline Business Cases by the NWEAB.

DISCUSSION

The report was submitted, noting that it updated the NWEAB on the progress made since completing the Final Deal Agreement. It was added that it focused specifically on a timeline

for the NWEAB to consider the Outline Business Cases. It was stressed that considering and presenting the report to both Governments was one of the requirements to draw down the first instalment of the funding.

The main developments were noted and it was highlighted that three projects had arranged Gateway Reviews, which included Morlais, the Enterprise Engineering and Optics project and the Glynllifon Rural Economy Hub. In relation to the Website and Brand Tender, it was stressed that following a procurement exercise, Tinint had been chosen to develop the new website and brand. It was added that the first meeting with the Company had been held and that a timeframe of 12 weeks was in place, and therefore the work was timely and achievable.

It was noted that a Digital Connectivity Project Manager and a European Funding Project Manager had now been appointed, and an amended staffing structure for the Portfolio Management Office had been agreed with WEFO. It was noted that the final jobs would be advertised in February and March.

Attention was drawn to the AOR Recommendations, noting that the team was working through the nine recommendations. It was stated that a further report on the recommendations would be presented at the next meeting.

Members were guided through the work programmes, and the timetable for all the projects was outlined. It was noted that some projects were being delayed or dependent on cases beyond the control of the NWEAB. It was added that many of the business plans would be approved in 2022-23.

Observations arising from the discussion

- Officers were thanked for the overview noting that the projects were moving ahead consistently. The need to add updates to the report before it was sent to both Governments was noted.
- It was stated that many business plans would be timetabled in June, and it was noted that it must be ensured that everything was not presented at the same time. It was noted that there was a high number of business cases and it was hoped to present them two at a time to the NWEAB as they were technical cases.

8. FUNDING AND BUSINESS CASE PROCESSES

The report was submitted by Hedd Vaughan-Evans.

DECISION

To note the contents of the report.

REASONS FOR THE DECISION

In December, the NWEAB and the Welsh and UK Governments agreed the Final Deal Agreement for the North Wales Growth Deal.

The report provided an overview of the processes agreed by both Governments for the annual funding approval and the approval of individual business cases.

DISCUSSION

The report was submitted noting that it highlighted the relevant processes for approving the project business cases in order to ensure that the funds would be drawn down annually. In terms of the Annual Budget approval process, it was added that a series of key documents would need to be presented to both Governments. It was noted that, after presenting them, both Governments would take the documents through their internal approval processes. The possibility of having to present additional information as part of the process was highlighted, and following approval a Grant Award Letter would be published.

Attention was drawn to the approval process for Project Business Cases, noting that the business cases would need to be developed in accordance with the Welsh Government and HM Treasury guidelines. It was explained that they would be developed in three stages - Strategic Outline Case, Outline Business Case and Full Business Case. It was added that several projects would go straight to the second stage to create an Outline Business Case. The specific purposes for the five cases within the model were highlighted.

It was noted that, although the NWEAB was the decision-making body for the Growth Deal, it was explained that both Governments would review and approve the assurance process for each project. It was explained that the Gateway Reviews were a crucial part of the assurance process and that they were independent reviews that would be arranged by both Governments. As a result of the maturity and existence of the Programme and Portfolio Business Cases, it was noted that the majority of the projects would move on to Stage 2 - Outline Business Case. In approving the Outline Business Case, it was noted that the NWEAB would enable the project to proceed with the necessary procurement activities, and allow the Full Business Case to be developed before it could be approved and then start delivery.

9. ENGAGEMENT WITH THE PRIVATE SECTOR

The report was submitted by Alwen Williams.

DECISION

To endorse the amended Terms of Reference for the Business Delivery Board.

To delegate the right to the Portfolio Director in consultation with the Chair to complete the Terms of Reference and to agree on a public name for the Board.

To endorse that current Business Delivery Board members, in collaboration with the NWEAB Chair and the Portfolio Director, and to work together to appoint a permanent Chair for the group.

REASONS FOR THE DECISION

It had been agreed by members of the Business Delivery Group and the Portfolio Management Office, at their meeting held 12 January 2021, that it was timely and appropriate to look at the terms of reference of the Business Delivery Group.

The Business Delivery Group had been established as a Sub-group of the North Wales Economic Ambition Board. Approving the Board's draft Terms of Reference together with the Board's membership were Joint-Committee matters.

DISCUSSION

The report was submitted and it was noted that work had been done to build the relationship with the Private Sector over the past 12 months. It was added that the Business Delivery Group and the Portfolio Management Office had agreed that it was timely and appropriate to look at the terms of reference of the Business Delivery Group.

It was noted that the draft Terms of Reference had been developed jointly between the Ambition Board, the Portfolio Management Office and representatives of the private sector. It was added that the current membership, led by the interim Chair, would recruit and appoint new members to represent all the sectors covered by the Growth Deal. Once the membership was agreed, it was noted that the Chair could nominate who would serve for a term of two years. It was stressed that there would be more collaboration between the Group and the NWEAB but that it would remain an advisory body.

Observations arising from the discussion:

- It was noted that establishing the Terms of Reference was a part of GA2 and that it was in line with the expectations of both Governments.
- It was agreed that the Portfolio Director in consultation with the Chair would complete the Terms of Reference and agree on a public name for the Board.

10. EXCLUSION OF PRESS AND PUBLIC

Agreed to exclude the press and public from the meeting during the discussion on the item due to the likely disclosure of exempt information as defined in paragraph 14, Schedule 12A of the Local Government Act 1972 - Information about the financial or business transactions of any specific person (including the authority that retains that information).

There is an acknowledged public interest in openness in relation to the use of public resources and related financial issues. It is also acknowledged that there are occasions, in order to protect the financial interests that matters related to commercial information need to be discussed without being publicised. The report deals specifically with financial and business matters and related discussions. Publication of such commercially sensitive information could adversely affect the interests of the bodies and the Councils. This would be contrary to the wider public interest of securing the best overall outcome. For these reasons, I am satisfied that the matter was closed for the public interest.

11. PROJECT BASELINE REVIEW - January 2021

DECISION

To note the baseline report for every programme.

REASONS FOR THE DECISION

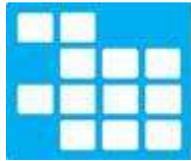
It was noted that the NWEAB needed to be updated on the position of each programme and project within the North Wales Growth Deal.

DISCUSSION

The report was discussed.

Agenda Item 5

North Wales Economic Ambition Board: 26/03/2021



north wales economic ambition board
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REPORT TO THE NORTH WALES ECONOMIC AMBITION BOARD

26/03/2021

Title: 2021/22 Revenue and Capital Budget

Author: Dafydd L Edwards, Host Authority Statutory Finance Officer

1. Purpose of the Report

1.1 The purpose of this report is to propose the North Wales Economic Ambition Board's (NWEAB) Revenue and Capital Budget for 2021/22.

2. Decision Sought

The Board is asked to:-

2.1 Approve the 2021/22 Revenue Budget as presented in Appendix 1. This includes the one-off virements of £415,000 in the revenue budget to be funded from the earmarked reserve.

2.2 Approve the Capital Budget for 2021/22 to 2025/26 as presented in Appendix 2.

2.3 Fund the Gateway Reviews (Assurance) for the NWEAB and Project Sponsor led projects.

2.4 Formally request all six local authorities to cooperate in using their funding flexibility to release revenue funding for the NWEAB. This will mean exchanging the funding designated to the Growth Deal against other capital projects within their capital programmes and ensuring the equivalent value revenue funding is available for the Growth Deal to fund their revenue-type items.

2.5 Request the Portfolio Management Office to review the project costs during the year as more information becomes available, further to unforeseen costs now identified in the revenue budget. This review to consider the option of funding part of this expenditure from the individual project's capital budget.

3. Reasons for the Decision

- 3.1 To set out the proposed revenue budget per expenditure heading and the corresponding funding streams for the year.
- 3.2 To set out the proposed capital budget per project and the corresponding capital funding for 2021/22 to 2025/26.
- 3.3 In order to operate effectively within the funding available, the NWEAB requires an annual budget to be approved.
- 3.4 To authorise the Portfolio Director to incur expenditure in accordance with the approved budget.

4. Background and Relevant Considerations

- 4.1 The revenue budget is in a similar format to previous years, with "Projects" included as an additional heading this year.
- 4.2 The Award of Funding Letter for the North Wales Growth Deal grant was received from Welsh Government in February 2021, and the first instalment of £16m was received on 12 March 2021. As a result, a capital budget has been included to provide the expenditure profile for the project expenditure over the next five years.

Revenue Budget

Portfolio Management Office - £1,612,840

- 4.3 The budget for the Portfolio Management Office is based on 21 full time posts, and in addition to the standard budgets such as training, travel and meetings, budgets have been included for Communications and Public Relations, Portfolio and Programme Development and Procurement and Transport external support.

Accountable Body Support Services - £175,710

- 4.4 The Accountable Body provides the support services required to facilitate the work of the Joint Committee, and the budget for 2021/22 includes Finance Services Support, Legal, Corporate Support and Information Technology.
- 4.5 The scope of the services offered, charging mechanisms and estimated costs will be agreed with each department.

Joint Committee

4.6 External Legal Support - £18,000

This includes a budget for external legal support required for specialised work in relation to governance and policy issues.

4.7 External Financial Fees - £10,000

This budget will mainly cover the input from the external Treasury Advisory on the capital funding of the projects.

4.8 External Audit Fee – £11,000

From 2021/22, the Joint Committee will be classed as a “larger relevant body” and the Accounts and Audit Wales (Amendment) Regulations 2018 require a full statement of accounts to be produced. These accounts will be subject to an annual audit by Gwynedd Council’s External Auditors, and an estimated budget based on similar larger Joint Committee has been used.

4.9 Business Delivery Board - £20,000

The NWEAB on 5 February 2021 approved that the reformed Business Delivery Board operated in a voluntary capacity with the £20,000 budget historically allocated for Chair remuneration, would be allocated to the work of the reformed Board in 2021/22.

Projects

4.10 The budget figures are estimated figures based on the most current information available, and include costs which had not been previously foreseen to be part of the revenue budget. They will need to be reviewed during the year as more information becomes available, with the option of funding part of this expenditure from the individual project's capital budget considered.

4.11 Project Business Case Development - £250,000

All of the individual 21 projects will require a Business Case that is approved by the NWEAB. The NWEAB will be responsible for funding the business cases for the NWEAB led projects, and this will involve extensive specialised work from external companies. In addition to the £250,000 that is budgeted for 2021/22, a further £250,000 is likely to be needed in the following years in order to complete this work.

4.12 External Legal Support - £100,000

This includes a budget for external legal support required for specialised work involving the project business cases.

4.13 Assurance - £100,000

This includes a budget for the Government Gateway Reviews for the NWEAB and Project Sponsor led projects.

4.14 Interest - £678,020

The interest contributions received from partners will be set aside to fund the average cost of borrowing associated with funding the capital budget over the deal's lifespan.

Funding Contributions

4.15 Partner Contributions – (£400,000)

In accordance with Governance Agreement 2 (GA2), the 2021/22 Budget includes a contribution of £50,000 from the six local authorities and £25,000 from the four advisors, to give a total contribution of £400,000. The partner contributions have remained the same from 2020/21, with no inflationary increases applied reflecting what has been previously agreed as basis for the individual partners to set their budgets for 2021/22. However, the partner contributions might need to increase in

future budgets to reflect the salary, national insurance and pension inflation in line with clause 15.4.3 of the GA2.

4.16 Local Authorities' Supplementary Contributions – (£240,000)

Again, in accordance with GA2, the budget includes £40,000 from the six local authorities to give a total contribution of £240,000. The Regional Engagement Team budget of £42,290 is funded from these contributions.

4.17 Partner Interest Contributions – (£678,020)

The partner interest contributions of £678,020 reflect the figures presented to the Board in October 2020. Following the UK Government's announcement in the Chancellor's budget on 3 March 2021 with regard to bringing forward the funding from 15 to 10 years, the interest calculations will be re-calculated once further information is available from Welsh Government. For future years, contributions will be reviewed to reflect cost of borrowing, revised capital programme profile and business rates yield lifespan.

4.18 European Social Fund (ESF) Priority 5 funding – (£858,120)

The ESF funding contributes towards the employee expenditure, and the estimated funding for 2021/22 is £858,120.

4.19 North Wales Growth Deal grant – (£384,430)

Although the North Wales Growth Deal grant is a capital grant, 1.5%, which equates to £3.6m of the North Wales Growth Deal grant has been allocated to fund the revenue expenditure of the Portfolio Management Office. This flexibility can be achieved in the same way that local authorities have flexibility to manage the funding of their own capital programmes. A draft copy of the Growth Deal's Financial Arrangements letter has been received from Welsh Government, and when formalised, this will provide the NWEAB with the necessary assurance in terms of the funding flexibility. This may involve all six individual local authorities, allocating the funding designated to the Growth Deal against other capital projects within their capital programmes to ensure that the equivalent value revenue funding is available for the Growth Deal to fund their revenue-type items.

4.20 Earmarked Reserve – (£415,000)

In addition to the Base Budget, one-off virements to be funded from the earmarked reserve are required in the year. This will mainly fund the website, branding and communications strategy; portfolio and programme development; procurement and transport external support; project business case development for the NWEAB led projects and the Government Gateway Reviews for all the projects.

4.21 The third quarter review estimated a balance of £654,000 in the earmarked reserve at 31 March 2021. After using £415,000 of this balance to fund the one-off virements in 2021/22, £239,000 will be available to fund one-off costs in future years.

Capital Budget

4.22 The capital budget shows the expenditure profile for the 21 projects over the period 2021/22 to 2025/26. It's based on the latest projects' timescale, and will be reviewed during the year as the business cases are approved. It shows as a total of £236.4m as 1.5% has been top-sliced to fund the revenue budget.

4.23 At the time of writing it is assumed that the funding will be received over 10 years and matched by Welsh Government. £135m of the grant funding will be available to fund the expenditure as it occurs. The remaining £101m will be funded through borrowing in the first instance, then repaid with the grant received in 2025/26 to 2029/30.

4.24 With capital projects, there is always a risk of overspending, and controls will be put in place to limit overspending costs on specific projects. For regional projects, the Portfolio Management Office would be responsible for controlling expenditure and ensuring sufficient contingency budgets are included in the project business cases. Overspend would be a matter for the project sponsor to deal with in relation to their own projects.

5. Governance Context

- 5.1 The Annual Budget is required to be prepared by the accountable body and agreed by the NWEAB Joint Committee.
- 5.2 The proposed budget for 2021/22 has been prepared based on the roles, activities and responsibilities identified to date, with the expectation that the level of resources allocated is continually reviewed and updated as the projects move forward and more information is available.
- 5.3 Regular budget monitoring reports will be presented to the Portfolio Management Office staff and the Executive Group. A further detailed review will also be undertaken at the end of September 2021 and December 2021 and presented to the Economic Ambition Board, with any issues highlighted and appropriate action taken.

6. Consultations Undertaken

- 6.1 Appendices 1 and 2, and the information within this report was presented to the Executive Group on 12 March 2021.
- 6.2 A draft version of this report was shared with the six local authorities statutory finance officers with the view to seeking agreement on exchange of the capital/revenue financing.

7. Appendices

- Appendix 1 – 2021/22 Economic Ambition Board Revenue Budget.
- Appendix 2 – 2021/22 Economic Ambition Board Capital Budget.

STATUTORY OFFICERS' RESPONSE:

- i. **Monitoring Officer – Accountable Body:**
No observations to act in relation to propriety.
- ii. **Statutory Finance Officer – Accountable Body:**
Author of this report.

Expenditure	Base Budget (£)	One-off virements (£)	Total Budget (£)
Portfolio Management Office			
Employee Expenditure (Pay, N.I. & Superannuation)	1,230,550		1,230,550
Advertising and Assessment of Candidates		5,000	5,000
Travel and Subsistence	7,500		7,500
Training	7,500	10,000	17,500
Engagement and Meetings	7,500		7,500
Communications and Public Relations	30,000	50,000	80,000
Supplies and Services	10,000	10,000	20,000
Regional Engagement Team (RET)	42,290		42,290
Premises	17,500		17,500
Insurance	10,000		10,000
Portfolio and Programme Development		95,000	95,000
Procurement and Transport external support		80,000	80,000
Programme Management Office Total	1,362,840	250,000	1,612,840
Accountable Body Support Services			
Finance Services Support	98,110		98,110
Legal (includes Monitoring Officer)	25,490		25,490
Corporate Support	37,110		37,110
Information Technology	15,000		15,000
Accountable Body Support Services Total	175,710		175,710
Joint Committee			
External Legal Support	18,000		18,000
External Financial Fees	10,000		10,000
External Audit Fee	11,000		11,000
Business Delivery Board	20,000		20,000
Joint Committee Total	59,000		59,000
Projects			
Project Business Case Development	145,000	105,000	250,000
External Legal Support	100,000		100,000
Assurance	40,000	60,000	100,000
Interest	678,020		678,020
Projects Total	963,020	165,000	1,128,020
Total Expenditure	2,560,570	415,000	2,975,570

	Base Budget	One-off virements	Total Budget
Income	(£)	(£)	(£)
Funding Contributions			
Partner Contributions			
Conwy County Borough Council	(50,000)		(50,000)
Denbighshire County Council	(50,000)		(50,000)
Flintshire County Council	(50,000)		(50,000)
Gwynedd Council	(50,000)		(50,000)
Isle of Anglesey County Council	(50,000)		(50,000)
Wrexham County Borough Council	(50,000)		(50,000)
Bangor University	(25,000)		(25,000)
Wrexham Glyndwr University	(25,000)		(25,000)
Coleg Cambria	(25,000)		(25,000)
Grŵp Llandrillo Menai	(25,000)		(25,000)
Local Authorities' Supplementary Contributions			
Conwy County Borough Council	(40,000)		(40,000)
Denbighshire County Council	(40,000)		(40,000)
Flintshire County Council	(40,000)		(40,000)
Gwynedd Council	(40,000)		(40,000)
Isle of Anglesey County Council	(40,000)		(40,000)
Wrexham County Borough Council	(40,000)		(40,000)
Partner Interest Contributions			
Conwy County Borough Council	(78,010)		(78,010)
Denbighshire County Council	(64,000)		(64,000)
Flintshire County Council	(104,000)		(104,000)
Gwynedd Council	(82,670)		(82,670)
Isle of Anglesey County Council	(46,670)		(46,670)
Wrexham County Borough Council	(90,670)		(90,670)
Bangor University	(93,330)		(93,330)
Wrexham Glyndwr University	(34,000)		(34,000)
Coleg Cambria	(34,670)		(34,670)
Grŵp Llandrillo Menai	(50,000)		(50,000)
Other			
European Social Fund (ESF) Priority 5 funding	(858,120)		(858,120)
North Wales Growth Deal grant	(384,430)		(384,430)
Earmarked Reserve		(415,000)	(415,000) *
Total Income	(2,560,570)	(415,000)	(2,975,570)
Net Budget	0	0	0

* This would leave an estimated balance of £239,000 in the earmarked reserve (based on the underspend reported in the Third Quarter Review).

2021/22 Economic Ambition Board Capital Budget.

Appendix 2

Programme	Project	Project Sponsor	2021/22 (£m)	2022/23 (£m)	2023/24 (£m)	2024/25 (£m)	2025/26 (£m)	Total (£m)
Digital	Digital Signal Processing Centre (DSP)	Bangor University	1.72	0.99	0.25	0.00	0.00	2.96
Digital	Competitive Connectivity - full fibre at key sites	NWEAB	0.00	3.45	3.25	0.00	0.00	6.70
Digital	Connected Corridor	NWEAB	0.99	1.18	0.00	0.00	0.00	2.17
Digital	Connected Campus	NWEAB	0.00	3.94	5.90	5.91	4.93	20.68
Digital	Connecting the last few percentage	NWEAB	0.99	2.95	0.00	0.00	0.00	3.94
Low carbon energy	Morlais	Menter Môn	2.46	4.93	1.48	0.00	0.00	8.87
Low carbon energy	Low Carbon Energy Centre of Excellence	Bangor University	0.00	4.74	6.71	5.23	4.00	20.68
Low carbon energy	Traswfynydd Power Station	Cwmni Egino	0.00	4.92	9.85	4.93	0.00	19.70
Low carbon energy	Transport Decarbonisation	NWEAB	1.97	3.94	3.94	1.38	0.00	11.23
Low carbon energy	Smart Local Energy	NWEAB	0.00	3.94	7.88	7.88	4.93	24.63
Land and property	Holyhead Gateway	Stena Line	0.00	11.33	13.78	9.36	0.00	34.47
Land and property	Warren Hall Strategic Site	NWEAB	0.00	0.49	0.99	5.91	7.38	14.77
Land and property	Former North Wales Hospital, Denbigh	NWEAB	0.99	0.99	0.98	0.98	0.00	3.94
Land and property	Bodelwyddan Strategic Site	NWEAB	0.49	0.99	5.41	2.96	0.00	9.85
Land and property	Parc Bryn Cegin Strategic Site	NWEAB	0.25	2.70	2.96	0.00	0.00	5.91
Land and property	Wrexham Gateway	NWEAB	0.00	4.03	4.93	0.00	0.00	8.96
Innovation in High Value Manufacturing	Centre of Environmental Biotechnology (CEB)	Bangor University	0.00	1.48	1.48	0.00	0.00	2.96
Innovation in High Value Manufacturing	Enterprise Engineering & Optics Centre	Glyndŵr University	8.28	1.57	0.00	0.00	0.00	9.85
Agri-food and tourism	Glynllifon Rural Economy Hub	Grŵp Llandrillo Menai	0.49	4.68	4.68	0.00	0.00	9.85
Agri-food and tourism	The Llysfasi Net Zero Farm	Coleg Cambira	0.00	4.92	4.93	0.00	0.00	9.85
Agri-food and tourism	Tourism Academy	Grŵp Llandrillo Menai	0.00	1.48	1.48	1.47	0.00	4.43
Programme Total			18.63	69.64	80.88	46.01	21.24	236.40
Capital Funding								
North Wales Growth Deal Grant			18.63	46.15	24.51	24.52	21.24	135.05
Borrowing*				23.49	56.37	21.49		101.35
Total Capital Funding			18.63	69.64	80.88	46.01	21.24	236.40

* The borrowing will be re-paid with the grant received in 2025/26 to 2029/30.



REPORT TO THE NORTH WALES ECONOMIC AMBITION BOARD

26 MARCH, 2021

TITLE: *Position Statement on Climate and Ecological Change*

AUTHOR: *Alwen Williams, Portfolio Director*

1. PURPOSE OF THE REPORT

- 1.1. To present a proposed position for the North Wales Growth Deal relating to climate and ecological change.

2. DECISION SOUGHT

- 2.1. To adopt the proposed position statement as set out in section 5.1 on how the Growth Deal projects will deliver against regional, Welsh Government and UK Government aspirations on climate and ecological change.
- 2.2. To note that all Growth Deal projects will need to set out to what degree they will deliver against the position statement and any relevant mitigations as part of the business case approval process.
- 2.3. To delegate to the Portfolio Director, authority to determine the appropriate means of implementation and measurement across the portfolio and to note that this will require external expertise to be commissioned to support the Portfolio Management Office.

3. REASONS FOR THE DECISION

- 3.1. Without a clear position from the Board on climate and ecological change, opportunities to shape project business cases may be lost. This could inadvertently result in Growth Deal projects increasing regional carbon emissions and biodiversity loss.

4. BACKGROUND AND RELEVANT CONSIDERATIONS

- 4.1. The Welsh Government and UK Government have made firm commitments to tackling climate change and reducing all greenhouse gas emissions to net zero. The UK target is to bring all greenhouse gas emissions to net zero by 2050 with a reduction to 61% of 1990 levels by 2030. The Welsh Government target is also to achieve net zero by 2050 but with an aspiration to deliver sooner and working towards a net zero public sector in Wales by 2030.
- 4.2. All six Local Authorities in North Wales have either declared a climate emergency or made commitments to being carbon neutral by 2030.
- 4.3. Across the UK, the private sector is also making significant commitments on reaching net zero. Examples include large supermarket chains like Tesco and Sainsbury's, insurance companies like Aviva, telecoms providers like BT and housing developer Barratt Developments. Locally, a number of prominent North Wales companies have made similar commitments include the housing association Adra and Airbus, who are one of the founding members of Mission Possible, a group working to decarbonise the industries most reliant on fossil fuels.

- 4.4. The approved Portfolio Business Case recognised that delivery of Growth Deal projects over the next 15 years presents an opportunity for the NWEAB to position North Wales for longer-term prosperity through consideration of the impact of climate change and biodiversity loss on the built and natural environment.
- 4.4. The HM Treasury Green Book provides guidance on how to appraise and evaluate projects. The Green Book suggests undertaking emissions analysis and natural capital' impact assessments, however they are not mandatory and may not provide the information the Board need to make a full and informed decision.

5. PROPOSED POSITION STATEMENT AND RATIONALE

5.1. Proposed Position Statement

The North Wales Economic Ambition Board commits to the national drive towards sustainable development, net zero emissions and mitigation of biodiversity loss. It is also determined to maximise regional training and employment opportunities that will underpin prosperity in a low carbon economy.

To drive these ambitions, all Growth Deal projects will aim to:

- **deliver to net zero operational carbon;**
- **deliver 40% less embodied carbon**
- **deliver a 10% net benefit for biodiversity.**

Projects will be encouraged to deliver above these aspirations. Where projects are unable to deliver against one of the aspirations above, projects sponsors will be required to set out a clear justification and mitigation strategy for the Board to consider. The Portfolio Management Office will work with project sponsors to deliver the best affordable solution for each project.

Rationale

- 5.2. Operational carbon refers to the amount of carbon emitted during the operational or in-use phase of a building or asset. Examples would be the lighting, heating and maintenance of a building and the design, location, orientation and operation of a building can significantly affect the levels of operational carbon emitted. Net zero operational buildings are highly energy efficient with all remaining energy from onsite and/or offsite renewable sources. The World Green Building Council has set the challenge organisations to reach net zero in operation for all assets under their direct control by 2030.
- 5.3. However, operational emissions are typically only a proportion of the total emissions generated by an infrastructure project. Other emissions are generated through material sourcing and processing, transport and construction as well emissions generated from demolition and waste at the end of life. Focusing solely on operational emissions will miss 'easy wins' mitigating emissions at other life cycle stages and miss local supply chain opportunities (e.g. local material sourcing with lower transport miles). Embodied carbon is the term used to reflect all these elements. The World Green Building Council has set the challenge for all new buildings, infrastructure and renovations to have at least 40% less embodied carbon by 2030. The diagram below provides a visual depiction of this pathway.

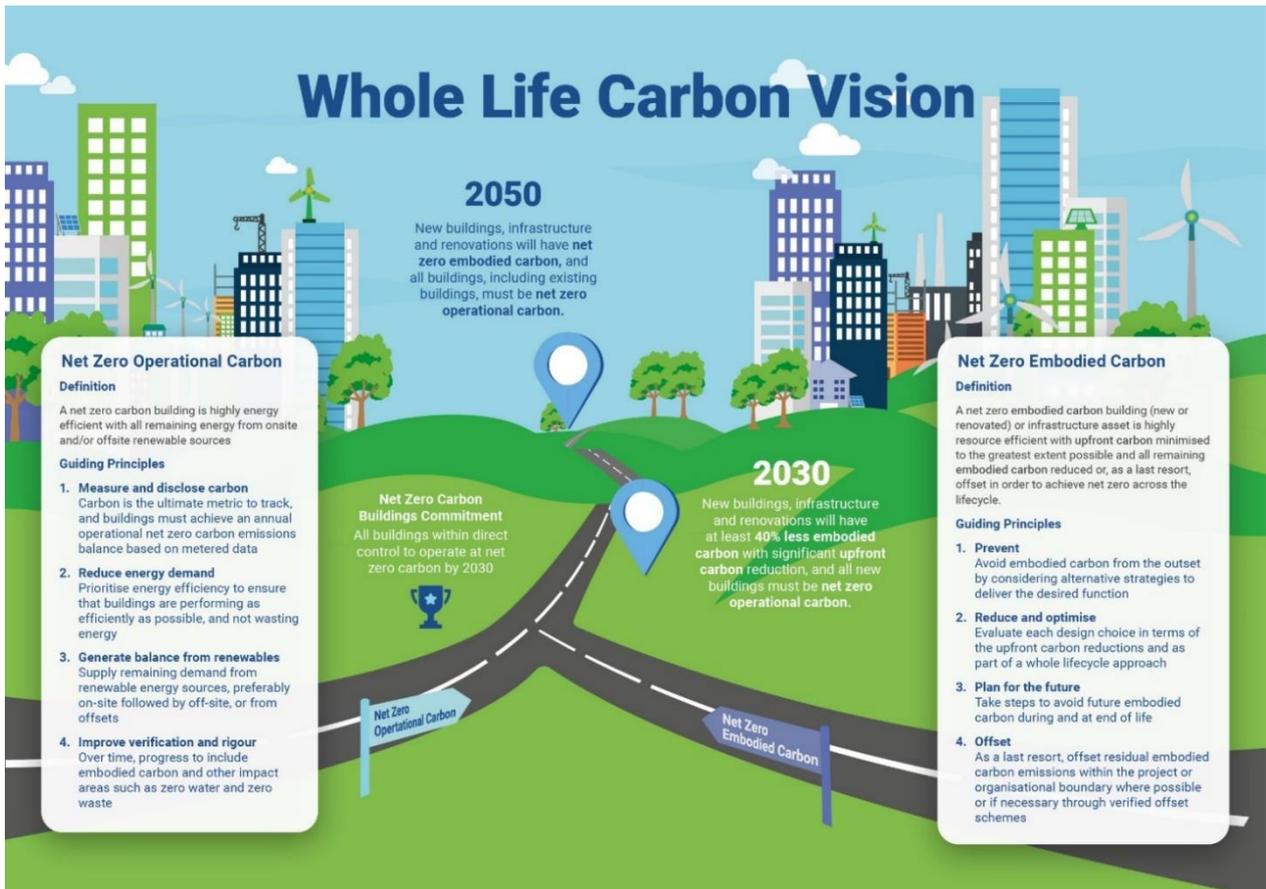


Figure 1: 'Whole Life Carbon Vision' infographic World Green Building Council

5.4. Planning authorities are already required to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity. While there are no set targets in Wales at this time, DEFRA have set a target for all new development sites in England to demonstrate a 10% increase in biodiversity on or near development sites. This target was set following substantial engagement and consultation with stakeholders and a robust business case analysis of implications. The diagram below provides an illustration of how net gain proposals might work in practice.

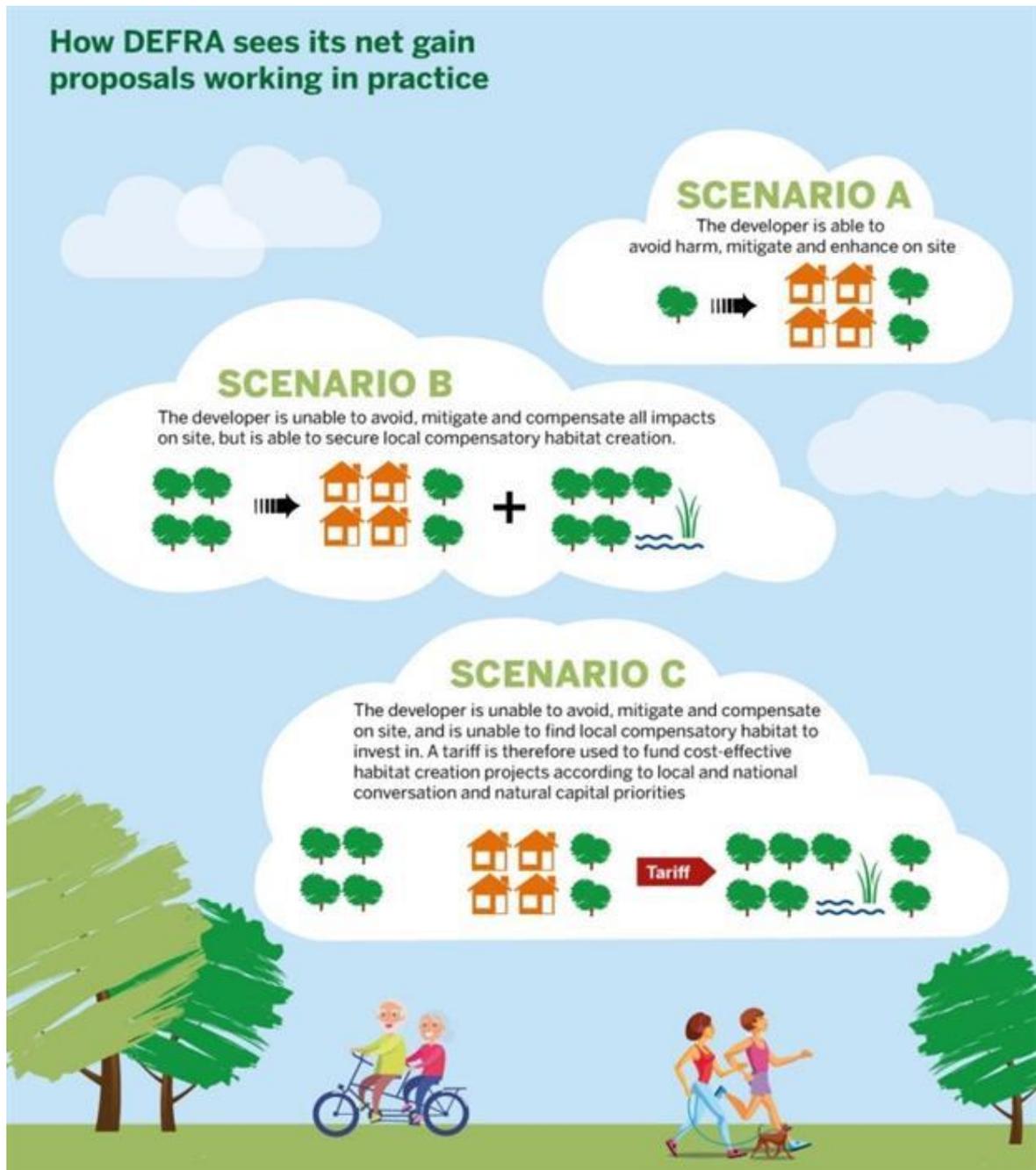


Figure 2: DEFRA Biodiversity Net Gain scenarios

6. IMPLEMENTATION

- 6.1. The North Wales Economic Ambition Board recognises the challenges of transitioning to a low carbon economy and that it may not be feasible for some of the most mature and well-defined projects within the Growth Deal to deliver on all these aspirations.
- 6.2. For concept projects or those at early stage of development, the aspirations within the position statement can be embedded into the business case development process at the outset. For those well-developed projects seeking OBC approval, the Portfolio Management Office will work with project sponsors to deliver the best affordable solution recognising the challenges and costs associated with scope changes at the later stages of project development. The diagram below provides a visual overview of how the Portfolio Management Office will work with projects of differing maturity levels to deliver against the position statement.

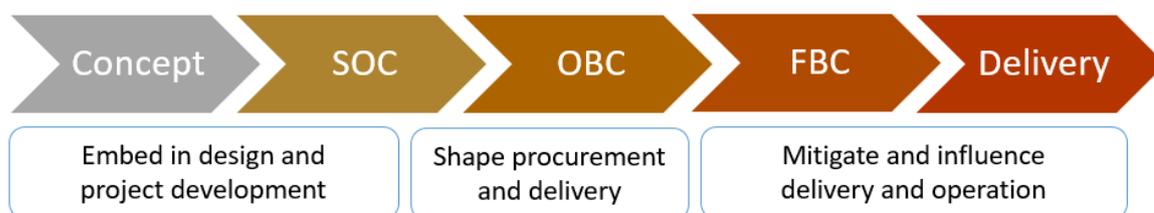


Figure 3: Project Maturity Pathway

- 6.3. There are a number of potential assessments that could be undertaken as part of the business case development process to help assess the impact of projects, including natural capital assessments, biodiversity net gain assessments and environmental impact assessments. The Portfolio Management Office will work with external experts to develop a proportional implementation process to allow the Board to make an informed decision on project business cases.

7. LEGAL IMPLICATIONS

- 7.1. There are no direct legal implications arising from this decision.

8. FINANCIAL AND RESOURCE IMPLICATIONS

- 8.1. The work to determine the appropriate means of implementation and measurement across the portfolio will be met through the existing Portfolio Management Office resources and budget.
- 8.2. Delivering on the aspirations set out in the position statement may have financial implications for Growth Deal projects, which could result in the need for project sponsors to secure additional funding, to adapt or reduce the scope of projects. Confirming a Portfolio position on this as early as possible will minimise additional costs incurred.
- 8.3. The Portfolio Management Office will work with project sponsors to deliver the best affordable solution for each project. This could include support to identify and secure additional funding sources, which is increasingly available for activities supporting the proposed position statement.

9. IMPACT ON EQUALITIES

- 9.1. The Well Being of Future Generations (Wales) Act 2015 requires public bodies in Wales to think about the long-term impact of their decisions, to work better with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change. These proposed position statement is line with these aspirations and result in a positive impact for all residents and communities in North Wales.

10. CONSULTATIONS UNDERTAKEN

- 10.1. The paper and the proposed position statement were discussed with the Executive Officer Group (Portfolio Board) on 12 February and 12 March, 2021.

APPENDICES:

Appendix 1 Background Information (Technical Report)

STATUTORY OFFICERS RESPONSE:

i. Monitoring Officer – Host Authority:

“The Final Deal Agreement highlights the low carbon programme as a consistent theme. As referred to in the report the Boards duties under the provisions of the Well Being of Future Generations (Wales) Act 2015 are also relevant to this agenda. It is important therefore that that the Board takes steps to establish how it intends to bring these matter together in the Programmes.”

ii. Statutory Finance Officer (the Host Authority’s Section 151 Officer):

“Part 8.2 of this report explains that “delivering on these [environmental] aspirations may have financial implications for Growth Deal projects”, and that there’s a risk that affordability of the commitment sought here could mean “reducing projects’ scope”. Further, before making these environmental commitments their priority, members might wish to consider other aims, e.g. social & cultural goals, and the likely total cost thereof within the projects’ cost envelope. However, I agree with part 8.3 of the report that we must work “to deliver the best affordable solution for each project.”

North Wales Economic Ambition Board

Emissions and Biodiversity – technical annex



See Appendix A for a glossary of key terms

1. Background

The North Wales Growth Deal has been signed at a time when countries globally are grappling with the need to dramatically cut greenhouse gas (GHG) emissions and address widespread biodiversity loss.¹ While UK and Welsh Government strategies and guidelines (e.g. HM Treasury Green Book) are being rapidly updated, political pressure for more urgent decarbonisation and reversal of biodiversity loss continues to grow and is likely to intensify this year through Joe Biden’s climate summit and the UK hosting COP26 in November. The UK’s Sixth Carbon Budget² emphasises urgent progress on decarbonisation across all sectors of the economy and sets out clear pathways by sector.

There are substantial opportunities for North Wales and the Growth Deal in this changing landscape, particularly around green energy production, low carbon manufacturing and the circular economy, food production and tourism.

However, a key risk identified by the Portfolio Management Office (PMO) is that Growth Deal projects could inadvertently *increase* regional carbon emissions and biodiversity loss, despite all local authority councils in the region making commitment to avoid doing so.³ While the Green Book that guides project development *suggests* undertaking emissions analysis⁴ and natural capital’ impact assessments⁵, these are largely voluntary and may not provide the information the PMO and North Wales Economic Ambition Board (NWEAB) needs to make a full and informed decision. The consequence of proceeding without this information may mean Growth Deal projects risk making it harder for individual councils and national governments to deliver on their 2030 net zero and biodiversity commitments and potentially expose the Board to the following:

- Reputational risk: if the public consider the Growth Deal is not adequately preparing the region for a low carbon future and adequately mitigating biodiversity loss, there may be a public backlash.
- Legacy risk: if Growth Deal infrastructure is not fit for our low-carbon future, the consequences will be felt for 30 - 100+ years (the lifetime of the infrastructure).
- Potential funding risk: if donor Governments consider NWEAB and the PMO are not adequately accounting for climate and biodiversity in our project assurance processes, they may pull funding.
- Strategic risk: if we do not provide opportunities through our projects for our region to develop expertise in low carbon, ecologically sound operations (e.g. low carbon construction methods) we may perpetuate existing inequalities between North Wales and comparable regions elsewhere in the UK who are delivering projects using these approaches / standards.

The UK Climate Commission’s Sixth Carbon Budget published in December 2020 states “The UK needs to increase its ambition on climate change adaptation, as it is not prepared even for the 1.5-2°C world”. For

¹ See Appendix B – UK and Welsh Government commitments

² Climate Change Commission (2020) [UK’s 6th Carbon Budget](#)

³ See Appendix C – Summary of Council and Partner positions regarding climate and ecological emergency

⁴ HM Treasury’s Green Book provides specific guidance on how analysts should quantify and value energy use and emissions of greenhouse gases (GHGs). It is intended to aid the assessment of proposals that have a direct impact on energy use and supply as well as those with an indirect impact through planning, land use change, construction or the introduction of new products that use energy.

⁵ HM Treasury’s Green Book proposes an Enabling a Natural Capital analysis for identification of costs and benefits early in project development.

North Wales, climate change will be experienced as sea level rise (predicted as 38cm in Llandudno by 2080), storms, precipitation and flooding, temperature extremes, and increased pests and diseases impacting on food supply and biodiversity.⁶ These changes are anticipated to have the greatest impacts on infrastructure (flooding, degradation), public water supply (contamination, shortages), land management, ecosystems and agriculture (e.g. soil loss, storm damage to crops, livestock) - with impacts interacting to cause unprecedented damage.⁷

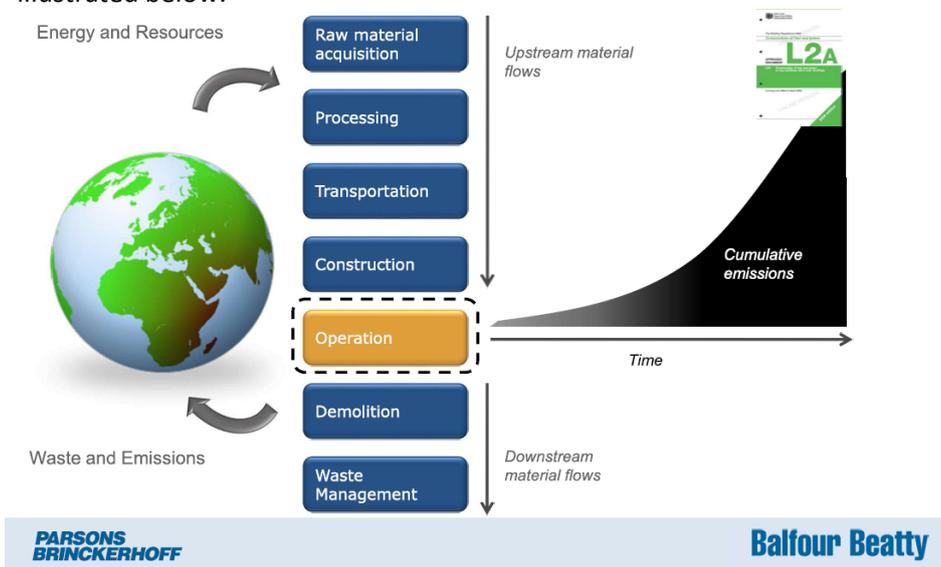
HM Treasury’s 2021 report on ‘The Economics of Biodiversity’ expresses the risk clearly: “We are facing a global crisis. We are totally dependent upon the natural world. It supplies us with every oxygen-laden breath we take and every mouthful of food we eat. But we are currently damaging it so profoundly that many of its natural systems are now on the verge of breakdown.”⁸ For a given ecosystem, communities with robust biodiversity are likely to be better able to adapt to climate change and climate variability than impoverished ones.

1.1. Greenhouse gas (including carbon) emissions

Pathways for the action required have been developed sector by sector internationally⁹ and for the UK¹⁰ with work underway to reflect those pathways for Wales and North Wales. However, action must be taken region by region, town by town and project by project to meet targets and ‘stay on’ the pathways described.

In particular, most Growth Deal projects have a substantial infrastructure element. The built environment is responsible for almost 40% of the global energy and process-related CO2 emissions, which continue to increase.¹¹

The Green Book emissions guidance describes how policy and project interactions in one sector can impact on emissions in other sectors e.g. how planning decisions may impact on transport emissions as well as emissions from buildings. However, the guidance is less clear on how to manage through the business case development and appraisal process a project that drives emissions across sectors throughout the ‘whole life’ of the project – illustrated below.



⁶ [Prosperity for All: Climate Conscious Wales A climate change adaptation plan for Wales – Technical Annex](#)

⁷ Committee On Climate Change (2020) ‘[Interacting Risks In Infrastructure And The Built And Natural Environments – Confidential](#)’ Project No.: 70051310, April 2020

⁸ [The Economics of Biodiversity: The Dasgupta Review](#). HM Treasury, February 2021.

⁹ [Climate Action Pathways | UNFCCC](#)

¹⁰ [Sixth Carbon Budget - Climate Change Committee \(theccc.org.uk\)](#)

¹¹ UNEP 2019 [Global Status Report for Buildings and Construction Sector](#)

During this life cycle, the greatest opportunities for emissions reduction come from the materials acquisition and processing stages and the operational phase.

- i. **Operational emissions are typically only a portion of total emissions generated by an infrastructure project**, as illustrated in Figure 2 (operational emissions in light and dark grey). Other emissions are generated through materials sourcing and processing, transport and construction (dark purple) and through emissions during the use of the building (e.g. emissions from HFC blown insulation; in light purple). Further emissions are generated from demolition and waste at end of life, not captured in the diagram below. Focusing solely on operational emissions will miss ‘easy wins’ mitigating emissions at other life cycle stages and miss local supply chain opportunities (e.g. local material sourcing with lower transport miles).

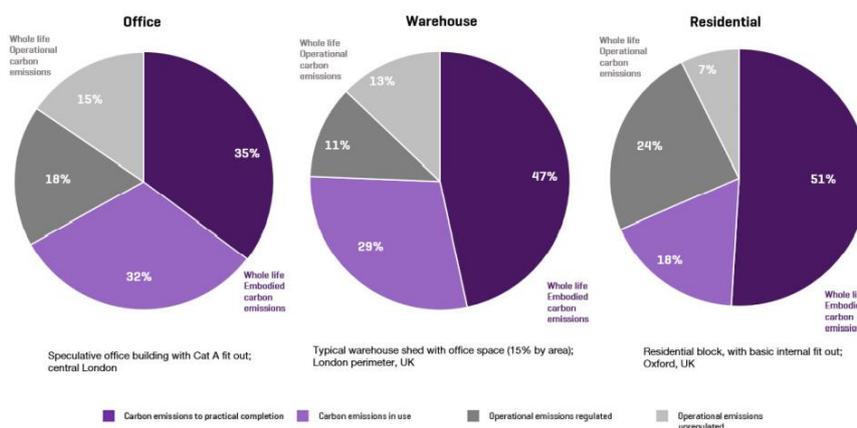


Figure 1: Total whole life carbon emissions breakdown for different building types © Sturgis Carbon Profiling; [From RICS Whole Life Emissions Analysis](#)

- ii. **Achieving net zero in operational emissions only may not offer the best value for money pathway.** External expertise is needed to confirm the most appropriate assessment methodology, but the well-known BREEAM framework provides a useful example, particularly as many project partners have delivered projects to BREEAM Good to Excellent standards previously (see Appendix D). However, BREEAM Very Good to Excellent rating only delivers a 22% reduction in operations emissions on average, with additional cost <1%, recoverable over 5-10 years. A BREEAM Outstanding rating potentially only delivers a 66% reduction in operations emissions, with additional costs around 10%, and costs recoverable over 25 years. This approach could lead to considerable expenditure but not realise the ambition of net zero in operations, while missing the ‘easy wins’ described above.

BREEAM is used here as an example as costs and outcomes have been studied over time and for different structures, but their position on emissions is still emerging¹² and it seems alternatives approaches might deliver the ambition of the Portfolio Board more cost effectively and provide a better framework for analysis. External expertise will be required to confirm best practice in this area, but options include:

- PassiveHouse – e.g. [UK’s First Non-domestic PassiveHouse building](#)
- [CEEQUAL for Infrastructure](#) - e.g. [Colwyn Bay Waterfront](#)

To address the driving risk of inadvertently increasing emissions across the portfolio, it is likely that a Whole Life Emissions analysis (see Figure 1) will be needed for all projects to provide understanding of emissions sources and options for mitigation. This can be provided by application of the RICS standard.¹³

¹² BREEAM’s approach to Net Zero <https://sway.office.com/JL0etxldfQUPj12k?ref=Link>

¹³ <https://www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the-built-environment-november-2017.pdf>

1.2 Biodiversity

A paper released in early February 2021 by the UK National Infrastructure Commission¹⁴ informed by the Dasgupta Review 'The Economics of Biodiversity'¹⁵ finds that development for housing and infrastructure (particularly transport and utilities infrastructure) is causing habitat loss, fragmentation and degradation. It links this finding to the dramatic decline of natural capital in the UK – a 13 per cent decline in average species abundance since 1970, and 15 per cent of species threatened with extinction. This position is in line with DEFRA findings that regulatory compensation habitat creation schemes over recent years have unreliable outcomes,¹⁶ a finding they have drawn on to launch a more ambitious policy of 10% biodiversity net gain from all development schemes through the scenarios outlined in Figure 1.

Also released in February 2021, the Planning Policy Wales 11 guidance strengthens the commitment towards 'net benefit for biodiversity': Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development *should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity*.

Climate change and biodiversity enhancement are inextricably linked:

- Communities with robust biodiversity are likely to be better able to adapt to climate change and climate variability than impoverished ones.
- Enhancing the biodiversity of a site can mitigate or offset emissions of greenhouse gas emissions leading to climate change.

2. Factors to consider regarding the proposed position statement

All North Wales local authority councils have made commitments to working towards net zero and addressing biodiversity loss, as have many Growth Deal partners. Several North Wales council leaders have also committed publicly to ensuring climate change and biodiversity loss is a priority for NWEAB and that Growth Deal decisions consider these issues.

Factors to consider in agreeing a position statement should include:

- The extent of our control and influence
 - Tackling operational and embodied emissions and meeting biodiversity net gain standards is within our control.
- Our commitment in the Proposition Document "to achieve sustainable, balanced and inclusive economic growth".
 - Emissions reduction and reversal of biodiversity loss are key elements of sustainability, as captured in the Well-being of Future Generations Act: "development which meets the needs of the present without compromising the ability of future generations to meet their own needs."
 - Other regions also racing to tackle this issue and building expertise in low carbon technologies across regional supply chains - a delay for North Wales could expand inequalities between our region and elsewhere in the UK, and limit long-term employment prospects for regional workers (e.g. low carbon construction methods / agriculture, approaches to reducing energy/emissions while expanding digital capacity, or boosting regional capacity in biodiversity enhancement).

¹⁴ National Infrastructure Commission (2021) '[Natural Capital And Environmental Net Gain: A Discussion Paper](#)'

¹⁵ [The Economics of Biodiversity: The Dasgupta Review](#). HM Treasury, February 2021.

¹⁶ DEFRA: Business Case for Biodiversity Net Gain (2019) compensation habitat creation schemes have a reported success rates that range from 0% (where success is defined as fully ecologically functioning habitats) to 74% in long-term, well-established offsetting schemes. Other studies have found lower success rates of between 6 and 20%
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839610/net-gain-ia.pdf

- Widespread and growing public recognition that sustainability requires ambitious and focused action on energy use, emissions and biodiversity enhancement across all sectors.
 - UK and Welsh Government Manufacturing Manifestos prioritise the issue e.g. one of three key outcomes from Wales Manufacturing Plan: ““a green economy which demands high levels of circularity, where resources are kept in use adding economic value and where waste is avoided. This economy is integral to a low carbon society, so we need to invest in low-carbon and climate resilient infrastructure, renewable energy projects, whole system thinking/design and sustainable homes.”
 - Private sector partners such as Airbus founding Mission Possible (Jan 2021) committing industries reliant on fossil fuels to net zero; increasing recognition by large food companies (e.g. Nestle) of their supply chain reliance on biodiversity.
- Funding is increasingly focused on and available for work in this area:
 - E.g. An ambitious new scheme developing a net zero industrial zone in South Wales will benefit from nearly £20 million UK government funding and could create 5,000 new jobs, announced March 2021 <https://businessnewswales.com/20-million-funding-for-south-wales-green-cluster/>
- Commitments from similar agencies in our region, particularly the Northern Powerhouse and other regional/city growth deals.
 - Some UK local authorities (e.g. Brighton and Hove, London boroughs) already require a Whole Life Emissions Analysis approach
 - [West Yorkshire Combined Authority](#) is tackling these same questions.

3 Risks, opportunities, costs and benefits

Key risks of not taking this action include

- Reputational risk: if the public consider the Growth Deal is not adequately preparing the region for a low carbon future and adequately mitigating biodiversity loss, there may be a public backlash.
- Legacy risk: if Growth Deal infrastructure is not fit for our low-carbon future, the consequences will be felt for 30 - 100+ years (the lifetime of the infrastructure) i.e. white elephants soon after construction.
- Potential funding risk: if donor Governments consider NWEAB and the PMO are not adequately accounting for climate and biodiversity in our project assurance processes, they may pull funding.
- Strategic risk: if we do not provide opportunities for our region to develop expertise in low carbon, ecologically sound operations (e.g. low carbon construction methods) we may perpetuate existing inequalities between North Wales and comparable regions elsewhere in the UK who are delivering projects using these approaches / standards.

Risks and potential implications from proceeding

- Potential cost increase could make projects unaffordable for project sponsors resulting in a need to reduce the scope of the project or secure additional funding. Additional costs could be offset against savings over time.
- The scope and overall number of projects to be delivered through the Growth Deal may have to be reduced to enable any additional funding requirements to be met. This could reduce the overall impact of the Growth Deal (e.g. reduced number of jobs).
- There may be a delay in project development timetables to enable projects to meet the ask from the NWEAB.
- The market may not be able to deliver on our aspirations. For example, the sector may not be able to deliver the construction phase in a net-zero way.

Key benefits and opportunities from proceeding

- The opportunity to play a leading role in the transition to a low carbon future, providing an exemplar for other regions to visit and learn from.
- By combining energy efficiency measures and low and zero carbon (LZC) technologies substantial savings can be made over the project lifetime e.g. 44% savings in carbon emissions can be achieved for just 0.26% increase in capital cost, with payback over 10 years.
- Investment in biodiversity enhancement attracts funding that is increasingly available from water companies, carbon brokers, equity bond developers etc. looking to offset their emissions.
- Taking meaningful, ambitious action on these two issues reinforces core values of North Wales around engaging with the natural world, authenticity, pride in our legacy.
- Fully embracing a low carbon, sustainable future will put North Wales ahead of other regions for jobs, skills, resilience – strengthening opportunities for future generations
- One strategy for reducing emissions will be to localise supply chains to minimise transport costs, increasing opportunities for local contracts, local material suppliers etc. driving innovation.

Indicative costs and resource implications

- Additional cost for the PMO would include support identifying the most appropriate tools for analysis based on experience of other councils (who are also exploring this in parallel) – approx. £5k
- Additional cost for project sponsors (including NWEAB) would include
 - Consultant costs for conducting the emissions and biodiversity analysis. Some analysis would be required anyway as part of permitting, so this cost is likely to be incremental (£2-5k).
 - Costs of designing solutions to minimise and mitigate emissions and biodiversity impacts (variable by project).

Appendix A:

Glossary of key terms

Greenhouse gas emissions	A greenhouse gas (“GHG”) is an atmospheric gas which absorbs heat and warms the planet. The main ones are water vapour (H ₂ O), carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (NO ₂), ozone (O ₃), chlorofluorocarbons and hydrofluorocarbons. Carbon dioxide is the most common GHG that is emitted due to human activity. GHGs collectively can be expressed as a single number using the term “carbon dioxide equivalent” (CO ₂ e). ¹⁷
Carbon dioxide emissions	Carbon dioxide emissions or CO ₂ emissions are emissions stemming from the burning of fossil fuels and the manufacture of cement; they include carbon dioxide produced during consumption of solid, liquid, and gas fuels as well as gas flaring. Carbon dioxide (CO ₂) is a colourless, odourless and non-poisonous gas formed by combustion of carbon and in the respiration of living organisms and is considered a greenhouse gas.
Embodied carbon	Embodied carbon is the total greenhouse gas (GHG) emissions (often simplified to “carbon”) generated to produce a built asset. This includes emissions caused by extraction, manufacture/processing, transportation and assembly of every product and element in an asset. In some cases, (depending on the boundary of an assessment), it may also include the maintenance, replacement, deconstruction, disposal and end-of-life aspects of the materials and systems that make up the asset. It excludes operational emissions of the asset. ¹⁸
Operational carbon emissions	Operational carbon is the term used to describe the emissions of carbon dioxide and other global warming gases during the in-use operation of a building. Emissions arise from energy consuming activities including heating, cooling, ventilation and lighting of the building, so called ‘regulated’ emissions under Part L of the Building Regulations, and other, currently ‘unregulated’ emissions, including appliance use and small power plug loads such as IT.
Natural capital assessment	<p>A natural capital approach involves thinking of nature as an asset, or set of assets that benefit people (see figure below). The ability of natural capital assets to provide goods and services is determined by their quality, quantity and location. Understanding nature as an asset which provides flows of services to deliver benefits provides us with a framework to manage it well to deliver for society’s needs. Decision makers can more easily consider how investment in environmental assets contributes to wider societal aims and trade-offs which affect the quality or quality of assets. The framework also helps to better understand how policies can have unintended effects on the environment which result in impacts on people and businesses.</p> <p>NATURAL CAPITAL IN ACTION</p> <p>The diagram illustrates the flow from natural capital stocks to monetary flows. It starts with 'Ecosystem or land cover type' (Woodland) leading to 'Biophysical structure or process' (Trees), which leads to 'Supporting services' (Water storage), then 'Final services' (Flow regulation), then 'Benefits' (Lower flood risk), and finally 'Values' (Reduced damage). Below this flow are three categories: 'NATURAL CAPITAL STOCKS' (Natural capital accounts), 'PHYSICAL FLOWS' (Ecosystem services assessment), and 'MONETARY FLOWS' (Ecosystem services valuation).</p>

¹⁷ <https://law.gov.wales/environment/energy-and-climate-change/Greenhousegasemissions/?lang=en#/environment/energy-and-climate-change/Greenhousegasemissions/?tab=overview&lang=en>

¹⁸ <https://www.ukgbc.org/sites/default/files/UK-GBC%20EC%20Developing%20Client%20Brief.pdf>

Biodiversity	<p>Biodiversity is defined as ‘the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part’.¹⁹ Biodiversity:</p> <ul style="list-style-type: none"> • is core to the ecological condition and quality of ecosystems that support the services and benefits provided to people • underpins the resilience of ecosystems to shocks and can provide insurance value. <p>As set out in The Dasgupta Review on the Economics of Biodiversity, a HM Treasury led review, natural capital should be actively managed and invested in like any other asset by managing the overall stock of assets and maintaining biodiversity in our portfolio of natural capital.²⁰ Because of these multiple roles, the value of biodiversity can be overlooked even in natural capital assessments.²¹</p>
<p>Net benefit for biodiversity (Wales)</p> <p>Biodiversity net gain (England)</p>	<p>Biodiversity net gains are conservation activities designed to deliver biodiversity benefits in compensation for losses in a measurable way using tools such as the Biodiversity metric 2.0. To show ‘net benefit for biodiversity’ (biodiversity net gain) developers will be required to assess potential development sites against a standardised biodiversity metric to quantify how biodiversity net gains shall be achieved. Biodiversity net gain must then be delivered through either onsite mitigation, local compensatory habitat creation or other means.</p> <p>The February 2021 update to Planning Policy Wales states: Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide <i>a net benefit for biodiversity</i>. In doing so planning authorities must also take account of and promote the resilience of ecosystems, in particular considering the diversity between and within ecosystems; the connections between and within ecosystems; the scale of ecosystems; the condition of ecosystems including their structure and functioning; and the adaptability of ecosystems.</p>

¹⁹ UN Convention on Biological Diversity

²⁰ Dasgupta, P (2021), The Economics of Biodiversity: The Dasgupta Review. HM Treasury

²¹ Department for Environment, Food & Rural Affairs (2020), Enabling a Natural Capital Approach. Part of the Green Book

Growth Deal Climate Change FAQs

Is this paper about agreeing a regional position on climate change?

No, this paper is about agreeing a position for the delivery of the Growth Deal projects only.

What are we trying to achieve?

We are seeking to achieve the best affordable solution for each project in terms of minimising emissions and biodiversity impacts, in support of national and global efforts to tackle climate and ecological change. Simply put, we are looking for our projects to deliver the most energy efficient assets or buildings possible, to minimise the carbon footprint of construction and to have a positive impact on biodiversity.

What is operational carbon?

Operational carbon is the amount of carbon dioxide emitted through the running or operational use of a building or asset. For example, lighting, heating and maintenance.

Net zero operational buildings are highly energy efficient with all remaining energy from onsite and/or offsite renewable sources.

What is embodied carbon?

Embodied carbon is a term that captures all the carbon emitted throughout the life of a building or asset. In addition to operating carbon, this includes emissions from sourcing materials, processing, transport and construction as well as emissions generated from demolition and waste at the end of life.

What is biodiversity net gain?

Biodiversity Net Gain is “an approach to development that leaves biodiversity in a better state than before.” When applying biodiversity net gain principles, developers are encouraged to bring forward schemes that provide an overall increase in natural habitat and ecological features on-site, in nearby sites or through ‘offsets’ (i.e. paying to improve biodiversity somewhere else).

What is net benefit for biodiversity?

This means the same as biodiversity net gain, but is the term used in Wales.

Why are we trying to reduce emissions and increase biodiversity?

As the levels of carbon dioxide and other greenhouse gases increase, more heat is “trapped” in the earth's atmosphere and global temperatures rise. This ‘global warming’ is causing significant changes in the timing and length of the seasons as well as frequency of extreme weather – flooding, droughts, hurricanes, and wildfires. The effects of climate change on North Wales will include rising sea levels and impacts on agriculture and infrastructure due to increases in extreme weather. Communities with robust biodiversity are likely to be better able to adapt to climate change and climate variability than impoverished ones.

What will be the impact on projects?

At this stage this is unknown. While there are potential implications in terms of cost and scope, there are also significant opportunities. It is recognised that projects are at different stages of development. Projects at an early stage of development will be able to embed the position statement in the design and development of those proposals. Other, more mature projects may not be able to meet all the aspirations without significant additional cost. In these instances, the Portfolio Management Office will work with project sponsors to achieve the best affordable solution for the project.

How will the NWEAB consider this position statement when making decisions?

The Portfolio Director will work with external specialists to put in place the necessary process to underpin this position statement. The NWEAB members will be provided with the necessary information to make an informed decision on project business cases having considered the economic, social and environmental impact of projects on North Wales.



REPORT TO THE NORTH WALES ECONOMIC AMBITION BOARD

26 MARCH, 2021

TITLE: *Draft North Wales Energy Strategy*

AUTHORS: *Henry Aron (Energy Programme Manager)*
Rhys Horan (Welsh Government Energy Service)

1. PURPOSE OF THE REPORT

- 1.1. To present the draft North Wales Energy Strategy for endorsement, gain support for proposed next steps and to demonstrate alignment with the regional commitment to the climate challenge.

2. DECISION SOUGHT

- 2.1. That the North Wales Economic Ambition Board endorse the draft North Wales Energy Strategy and confirm their support for the commencement of preparatory work on the action plan.
- 2.2. That the North Wales Economic Ambition Board agree to receive a further report on the draft action plan.

3. REASONS FOR THE DECISION

- 3.1. The current strategy provides a high-level vision, priority areas, energy modelling and economic analysis which shall inform the development of the proposed action plan.

4. BACKGROUND AND RELEVANT CONSIDERATIONS

- 4.1. The Welsh Government Energy Service (WGES), Local Authorities, North Wales Economic Ambition Board (NWEAB), Welsh Government (WG) and partners have collaborated to prepare the current draft of the North Wales Energy Strategy.
- 4.2. Energy strategies have been prepared in all four regions of Wales and already exist in many regions of England.
- 4.3. The NWEAB Low Carbon Energy Programme Board (previously the NWEAB Energy Sub-Group) has been engaged in the development of the strategy from the outset and has reviewed the most recent draft.
- 4.4. The draft energy strategy (hereafter 'the strategy') was shared with the NWEAB Executive Officers Group on the 12 February, 2021 and received broad support. The strategy was also shared with the Regional Chief Executives Forum on the 26 February, 2021 and is now presented to the NWEAB for endorsement.

- 4.5. The overall aim of this strategy is to illustrate a potential pathway for decarbonising the energy system whilst ensuring that the region maximises the economic benefits from the transition to a low carbon economy.
- 4.6. This transition provides significant economic recovery and growth opportunities (see **appendix 1**). Even before COVID-19, the UK Government expected the low carbon economy to grow four times faster than the rest of the economy. Following publication of the recent UK Government Energy White Paper and Ten Point Plan for a Green Industrial Revolution, the potential opportunities for the economy are now even greater.
- 4.7. The strategy (see **appendix 2**) demonstrates a strong strategic case for a future smart energy system in North Wales and shows strong alignment with the developing Growth Deal Smart Local Energy Project and broader Low Carbon Energy Programme, which will be key early vehicle for delivering on the strategy. The strategy also aligns with priorities for investment within the emerging Regional Economic Framework.
- 4.8. Accessing the investment required to deliver on the proposed vision will be a significant challenge and the proposed next step of developing an action plan will begin the process of identifying the regional interventions and asks required to deliver the vision.
- 4.9. Other regions have utilised their strategy to make the case for further investment within their regions (e.g. Cardiff Capital Region have endorsed their Energy Strategy and have used the strategy as the basis for a 'levelling up' prospectus to UK Government).
- 4.10. Whilst the economic drivers for engaging in the energy system are clear, there are also significant climate change drivers for delivering this future energy system. It is estimated that the energy system in North Wales (through both sectoral energy generation and consumption) is responsible for circa 70% of all greenhouse gas emissions. Therefore, delivering the energy vision, will make a significant contribution to tackling climate change.
- 4.11. The strategy will complement and support work already underway across each local authority and public sector body to decarbonise their organisational (internal) emissions. The strategy will help support accessing funding sources to achieve these ambitions.
- 4.12. The strategy is underpinned by five core principles which strongly align with the objectives for the NWEAB low carbon programme:
- becoming a leader on low carbon energy generation
 - collaboration
 - taking a whole system multi vector view
 - embracing a net zero carbon economy
 - future proofing and innovation
- 4.13. The strategy is structured in five chapters, Vision; Priorities; Energy system, energy use and emissions; The future of energy and the economy; Next Steps.

VISION

- 4.14 Chapter 1 provides the vision which been prepared following various stakeholder contributions over the past year. The vision states:

‘Delivering maximum local economic, social, ecological and wellbeing benefits from transitioning to a net zero economy and becoming a net exporter of low carbon electricity through cross-border and regional cooperation’.

PRIORITIES

4.15 Chapter 2 describes four priorities which have been generated from workshops, stakeholder engagement and a review of key policy documents. The priorities identified were:

- To harness the abundance of local low carbon resource to become a green powerhouse and diversify the energy mix
- To become a world-leader in offshore wind and marine technologies
- To improve the energy efficiency of the region’s housing and accelerate the decarbonisation of North Wales’ building stock
- To achieve a shift to lower carbon transport

ENERGY SYSTEM, ENERGY USE AND EMISSIONS

4.16. Chapter 3 provides useful background data and information on the current energy system.

4.17. North Wales already generates the equivalent of 82% of its electricity consumption from local renewable energy sources.

4.18. To achieve the energy vision and targets for net zero by 2050, North Wales emissions across road transport, commercial and industrial emissions and domestic heat and power will need to reduce by 55% by 2035 (versus a business as usual reduction of 22%).

4.19. This chapter highlights the significant challenge facing the region to achieve such a reduction and illustrates one possible Energy System Vision scenario e.g. 67,000 homes to move from fossil fuel heating, 260,000 electric cars, 2.8GW of offshore wind, 310MW of onshore wind, 1 GW tidal lagoon etc. (NB there are multiple scenarios which could achieve the vision).

4.20. There are multiple scenarios which will emerge as technologies develop and with greater clarity on policy and funding arrangements.

ECONOMIC IMPACT

4.21. Chapter 4 details the economic impacts of achieving the energy system vision. These have been assessed in terms of job creation, gross value added (GVA) and the investment (or spending) required for the energy transition, in comparison to a business as usual scenario.

4.22. The economic analysis demonstrates that approximately £15 billion of investment is needed to achieve the energy system vision between now and 2035. This investment is expected to come from multiple sources including both the private and public sectors.

4.23. In terms of jobs, the energy system vision scenario is estimated to require an additional 24,400 net jobs to deliver the accelerated deployment of renewable electricity generation technologies and the enhanced levels of energy efficiency. These additional jobs are associated with around £2.4 billion more GVA (discounted at 3.5% over the period 2020-2035).

PROPOSED NEXT STEPS

4.24. Chapter 5 of the strategy proposes the following next steps:

- Development of Action plan – with support from WGES, the action plan will translate the challenge into deliverable interventions, led by a cross sector steering or task and finish group. The process will enable the region to identify those areas where there is genuine scope for collective interventions and those areas that will require others to lead (e.g. UK Government, Welsh Government, Ofgem, SPEN, Transport for Wales etc.). There will be areas where the region may only wish to influence and/or monitor.
- Governance – NWEAB, WG and WGES to agree proportionate governance for the strategy to ensure that effective reporting, future monitoring arrangements, and coordination capacity is in place. In most English regions, the Local Enterprise Partnership (LEP), have led on the development of the regional energy strategies due to the strong economic growth opportunities and cross-sector nature of most of the likely interventions.
- Wider communication of strategy – with support from WGES, build support for the strategy amongst broader stakeholders.

4.25. WG has confirmed WGES will be available to support the proposed next steps and provide coordination capacity. Early work in other regions has estimated that approximately 25 days of WGES officer resource together with approximately 13 days of regional/NWEAB resource will be required to develop the initial draft of the action plan over a period to be agreed. This will need to be supplemented by the involvement and contributions from a wide range of important stakeholders such as the private sector, SP Energy Networks, Wales and West Utilities, Registered Social Landlords, Transport for Wales etc.

SUMMARY

4.26. The NWEAB Low Carbon Energy Programme Board has been instrumental in the development of the strategy, providing robust and constructive challenge.

4.27. The NWEAB Executive Officer Group and Regional Chief Executives Forum have provided their support for the proposed next steps.

4.28. The strategy has strong alignment with climate change, economic growth, and COVID-19 economic recovery ambitions. Whilst the scale of the challenge is significant, the economic opportunities presented to the region are huge.

4.29. The strategy will help inform and support local public sector decarbonisation plans (e.g. by helping understand and unlock grid infrastructure, attract innovation solutions and funding etc).

4.30. The action plan will enable the region to better understand and identify a range of regional interventions required to deliver the vision. WGES resource will be available to develop the action plan.

4.31. The strategy and action plan will help to inform and support future funding bids across priority areas into UK Government, Welsh Government, UK Research and Innovation (UKRI) and others (e.g. distribution network operators). The strategy has already been extremely important in providing regional level intelligence to inform the Growth Deal Low Carbon Energy Programme Business Case.

5. FINANCIAL IMPLICATIONS

5.1. No financial risks to note.

6. LEGAL IMPLICATIONS

6.1. No Legal Implications to note.

7. STAFFING IMPLICATIONS

7.1. Welsh Government has confirmed that the Welsh Government Energy Service (WGES) will be available to support the proposed next steps and provide coordination capacity. Early work in other regions has estimated that approximately 25 days of WGES officer resource together with approximately 13 days of NWEAB resource is likely to be required to develop the initial draft of the action plan over a period to be agreed. NWEAB staff input to the action plan is not expected to impact upon delivery of the Growth Deal Programme.

8. IMPACT ON EQUALITIES

8.1. No impact on equalities to note.

9. CONSULTATIONS UNDERTAKEN

9.1. The Low Carbon Energy Programme Board, the Executive Board and the Regional Chief Executives Forum have endorsed the strategy ahead of submission to the NWEAB. A wide variety of stakeholder groups and organisations were engaged in the development of the strategy.

APPENDICES:

Appendix 1	Infographic on North Wales Energy Strategy
Appendix 2	Regional Energy Strategy

STATUTORY OFFICERS RESPONSE:

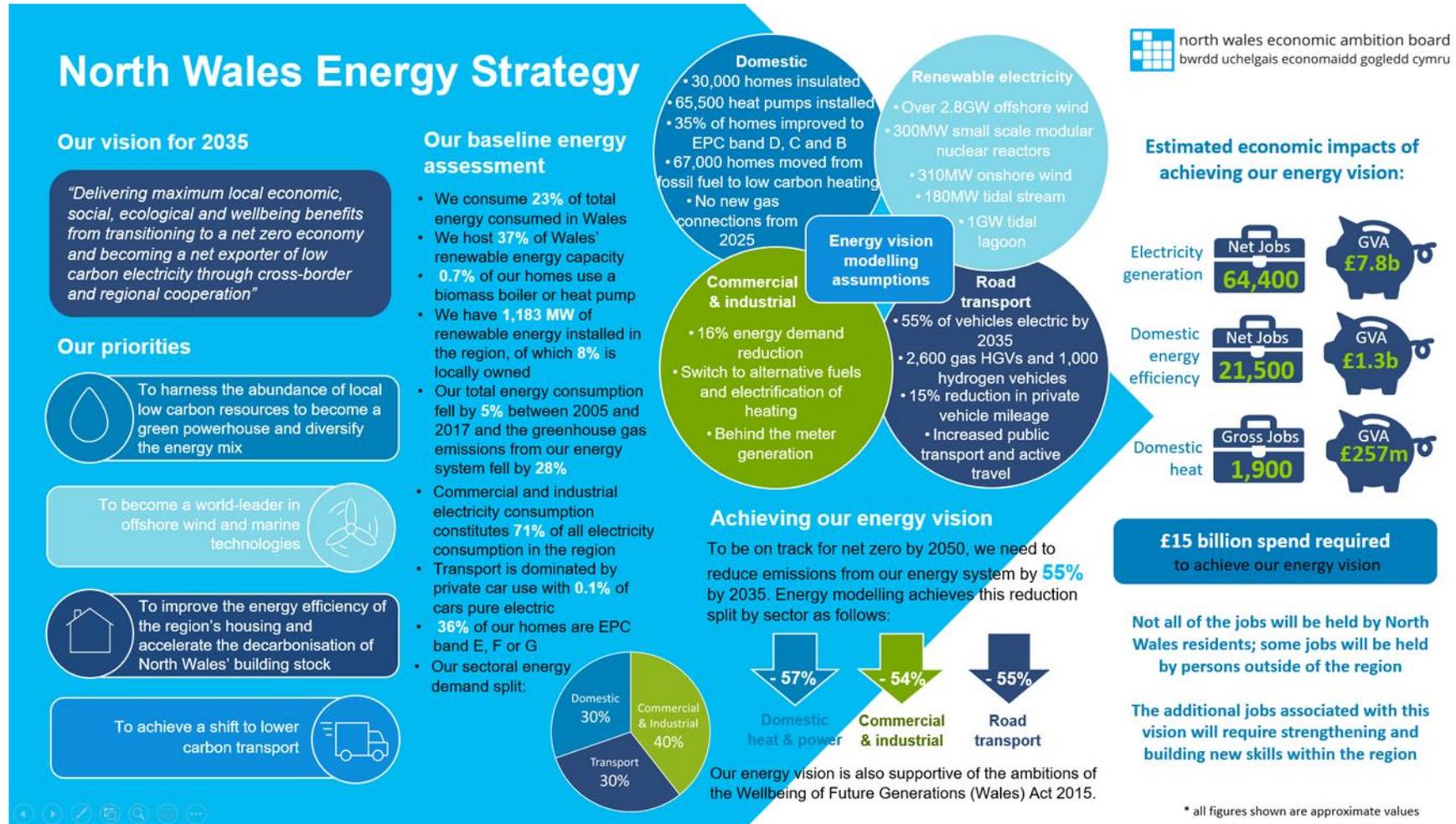
i. Monitoring Officer – Host Authority:

“This Strategy is a document which supports the Growth Vision and Agreement and facilitates their implementation. It is a document which the Economic Ambition Board can approve.”

ii. Statutory Finance Officer (the Host Authority’s Section 151 Officer):

“I welcome the draft North Wales Energy Strategy presented here. There is no request for new funding or any additional commitment. Hence, NWEAB are expected to implement the Strategy within their current resources.”

APPENDIX 1 – Summary infographic on North Wales Energy Strategy



North Wales Energy Strategy



Funded by:

Llywodraeth Cymru
Welsh Government



With Support from:

north wales economic ambition board
bwrdd uchelgais economaidd gogledd cymru



Prepared by:

Gwasanaeth Ynni
Energy Service

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Executive Summary

Executive summary

The North Wales Economic Ambition Board welcomed support from Welsh Government to develop a regional energy strategy. As such, the Welsh Government Energy Service drafted this strategy with support and input from the NWEAB, Welsh Government, and regional stakeholders.

The overall objective of this strategy is to develop a strategic pathway identifying key interventions to deliver on the region's ambitions for decarbonising its energy system and ensure the region benefits from the transition. An Energy Vision scenario has been modelled to set out a potential decarbonisation route that will put the region on track to achieve a net zero energy system by 2050.

Our vision for North Wales is:

Delivering maximum local economic, social, ecological and wellbeing benefits from transitioning to a net zero economy and becoming a net exporter of low carbon electricity through cross-border and regional cooperation.

Our priorities for achieving this vision are:

1. To harness the abundance of local low carbon resource to become a green powerhouse and diversify the energy mix
2. To become a world-leader in offshore wind and marine technologies
3. To improve the energy efficiency of the region's housing and accelerate the decarbonisation of North Wales' building stock
4. To achieve a shift to lower carbon transport



The baseline energy assessment sets out the current energy use and generation in the region:

- North Wales currently consumes just under a quarter of all energy consumed in Wales, slightly higher than its 22% share of the population;
- Between 2005 and 2017, total energy consumption fell by ~5%, The associated greenhouse gas emissions have fallen by ~28% from 2005 to 2017;
- At 39%, commercial and industrial consumption represents the largest proportion of the region's energy use by sector, compared with 30% domestic and 30% transport;

- Commercial and industrial electricity consumption constitutes 71% of all electricity consumption in the region, nearly 10% higher than the Great Britain average;
- North Wales currently generates the equivalent of 82% of its electricity consumption from renewable sources located in the region;
- North Wales currently hosts over a third of Wales' renewable energy capacity, with 726MW of offshore wind, 98MW of onshore wind and 224MW of solar PV;
- Of the 1,183MW of renewable energy installed capacity in the region, 95MW (8%) is locally owned;
- North Wales has the second highest deployment of renewable heat installations in Wales. However, just 0.7% of homes have a heat pump or biomass boiler.
- The average EPC rating is D and 36% of homes are rated as EPC band E, F or G and there is an above average proportion of homes off the gas grid;
- 25,000 homes, 8% of all homes in the region, are currently heated by oil, LPG, coal or other solid fuels
- Transport in the region is dominated by private car use with ~0.1% of cars being pure electric, compared with an average of 0.6% of vehicles across Great Britain.

Note on scope: this baseline assessment and strategy focusses on the energy system only, covering power, heat and transport. It does not include greenhouse gas emissions or sequestration from non-energy related activity such as land use.

Achieving our energy vision for North Wales: to meet Welsh Government targets, and to be on track for net zero by 2050, North Wales needs to reduce emissions from its energy system by 55% by 2035, split by sector in the pathway modelled as follows:

- 57% reduction in domestic heat and power emissions;
- 54% reduction in commercial and industrial emissions;
- 55% reduction in road transport emissions.



Figure 1: Summary of the Energy Vision's emission reductions by sector. Source: WGES analysis

The energy vision scenario modelling assumes a significant shift away from business as usual across these three sectors by 2035. The assumptions of the modelled future vision include:

Domestic:

- 35% of all homes improved from EPC band G, F and E to D, C and B;
- 65,500 heat pumps installed;
- 30,000 houses fitted with internal or external wall insulation;
- 67,000 homes currently heated by fossil fuels to move to low carbon heating;
- No new gas connections for homes from 2025.

Commercial and industrial:

- A significant energy efficiency programme to reduce energy demand by 16%;
- A switch to alternative fuels, including hydrogen (from about 2032) and electrification of heating;
- Decarbonising the electricity network through renewables and behind the meter renewable generation.

Road transport:

- 55% of vehicles driven in North Wales in 2035 are electric, equivalent to 7,000 more electric vehicles per year by the mid-2020s, peaking at 40,000 per year in the 2030s. This is to be facilitated by the deployment of 2,000 public EV chargers;
- 2,600 gas HGVs and 1,000 hydrogen vehicles;
- A 15% reduction in private vehicle mileage by 2035;
- A slowing of the growth in total number of vehicles on the road, facilitated by increased use of public transport and active travel.

Renewable electricity generation:

- Over 2.8GW of offshore wind installed;
- 1GW tidal lagoon installed;
- 300MW of small scale modular nuclear reactors installed;
- 180MW of tidal stream installed;
- 310MW of onshore wind installed.

These assumptions summarise the level of action required between 2020 and 2035 to be on track to achieve net zero by 2050. The energy modelling focuses on known decarbonisation technologies and actions that could be implemented by 2035 in order to demonstrate a potential decarbonisation route. The scenario is not intended to be prescriptive. There are a number of potential pathways to achieve energy system transformation, including new opportunities from technology innovation that will certainly emerge as the transformation takes place. The rapid evolution of technologies and pathways means that there are some major uncertainties and varying opinions about the precise route forward. What is clear is that different pathways all must achieve significant decarbonisation; should less action be achieved

in any of the areas summarized above, other sectors will need to compensate with higher action to achieve the same results.

The level of transformation described by the energy modelling actions is significant. More importantly, the modelling demonstrates the potential to be on a net zero pathway by using known and proven technologies and underscores the critical role of short- and medium-term action. Innovation will be essential to compliment this action and to develop technologies, skills, and practices that continue to achieve decarbonisation beyond 2035.

The economic impacts of achieving the energy system vision have been assessed in terms of job creation, gross value added (GVA) and the investment (or spending) required for the energy transition, in comparison to business as usual. The economic analysis demonstrates that approximately £11 billion of additional investment is needed to achieve the energy efficiency, electricity generation, and heat aspirations described in the energy vision between now and 2035. This represents approximately £732 million per year and will need to be financed from a range of sources including the private sector, households, and national and local government. This investment is 250% more than is expected to be spent in the corresponding sectors under a business as usual scenario.

The energy system vision (ESV) scenario is estimated to result in an additional 24,400 net jobs, with an associated increase in GVA of nearly £2.4 billion, associated with the delivery of accelerated deployment of renewable electricity generation technologies and enhanced levels of energy efficiency. In addition, it is estimated that there will be over 1,200 more gross jobs associated with the provision of low-carbon heating technologies in the ESV scenario than the BAU scenario, associated with £192 million of GVA.

When considering the job figures presented its important to reflect on where these jobs will be located. The methodology focuses on direct jobs, a greater proportion of which are considered likely to be located in the region than indirect or induced jobs. However, we are unable to comment on the specific location of the jobs estimated; a portion of the jobs are likely to be located in North Wales and a portion may be held by persons residing outside of the region. The experience of Wales to date has been that many electricity generation jobs are held by those living outside of the region. This contrasts with energy efficiency jobs which are often held by local residents who provide services to the surrounding area. In order help North Wales benefit from jobs associated with future local electricity generation it will be important to first understand the reasons for any lack in local jobs and then to develop a policy response.

Note: please refer to the economic modelling chapter for details on data sources and limitations.

Table 0. Estimated difference in jobs, GVA and investment between the energy vision scenario and business as usual, from 2020 to 2035

Energy vision scenario for:	Jobs**	GVA	Investment required
Electricity generation*	17,700 (net) (+38%)	£1.9b (+34%)	£ 9.3b (+824%)
Domestic heat	1,200 (gross) (+188%)	£192m (+298%)	£301m (+187%)
Domestic energy efficiency***	6,600 (net) (+45%)	£397m (+45%)	£1.4b (+45%)
Total additional investment required to achieve the energy vision scenario			£11b
<p>* Electricity generation jobs figures were calculated using direct job intensity indicators. Direct jobs are typically more likely to be held by residents local to an energy site. However, jobs related to manufacturing may be located outside of the region. Likewise, some jobs may be held by persons residing outside of the region who travel into the region to undertake these jobs. As such, it is not possible to comment on the geographic location of these jobs. The perceived experience of Wales to date is that many of the long term operational and maintenance jobs associated with these technologies are held by persons outside of the region who travel into Wales to perform their duties. In order help the region benefit from jobs associated with future local electricity generation it will be important to first understand the reasons for any lack in local jobs and then to develop a policy response.</p> <p>**Impact on jobs is presented as either net or gross jobs depending on the available data.</p> <p>***Data on the percentage change in jobs and GVA for domestic energy efficiency is unavailable.</p>			

Green recovery from the Covid-19 pandemic: this strategy has been finalised in the midst of the COVID-19 pandemic. At the time of writing, the true economic and societal costs of the pandemic for North Wales are not fully clear.

As we move from the immediate emergency response to considering our options for economic recovery, this energy strategy has the potential to play a significant role in helping North Wales to recover and rebuild sustainably. It sets out a pathway for accelerating the shift to a decarbonised energy system in the region and demonstrates the potential for achieving far greater local economic benefits than could be achieved by returning to business as usual.

Next steps: There are three key next steps to help this strategy come to life and to create action: developing the governance structure, socialising the strategy throughout the region and developing an action plan.

Acknowledgement: We would like to thank all of the stakeholders who made valuable contributions to this work through their participation in workshops, completing surveys, providing data, and additional communication on the phone and by e-mail.

DRAFT

Acronyms and abbreviations

ASHP	Air Source Heat Pump
BEIS	The Department for Business, Energy, and Industrial Strategy
CCC	Committee on Climate Change
CHP	Combined Heat and Power
CO₂	Carbon dioxide
CO₂e	Carbon dioxide equivalent
CITB	Construction Industry Training Board
DNO	District Network Operator
DEFRA	Department for Environment, Food & Rural Affairs
DNS	Development of National Significance
ECO3	The Energy Company Obligation phase 3
EPC	Energy Performance Certificate
EV	Electric Vehicle
GSHP	Ground Source Heat Pump
GW	Gigawatt
GWh	Gigawatt hour
HGV	Heavy Goods Vehicle
HHP	Hybrid Heat Pump
kt	kiloton
kWh	Kilowatt hour
LPG	Liquid petroleum gas
MCS	Micro-generation Certification Scheme
MW	Megawatt
NAEI	National Atmospheric Emissions Inventory
NRW	Natural Resource Wales
PV	Photovoltaic
RHI	Renewable Heat Incentive
SME	Small and medium-sized enterprises
TWh	Terawatt hour
ULEV	Ultra Low Emissions Vehicle
WGES	Welsh Government Energy Service
WHQS	Welsh Housing Quality Standard
WPD	Western Power Distribution
ZILF	Zero Interest Loan Finance

Introduction

Introduction and Background

Regional energy strategy overview

The North Wales Economic Ambition Board welcomed support from Welsh Government to develop a regional energy strategy. As such, the Welsh Government Energy Service drafted this strategy with support and input from the NWEAB, Welsh Government, and a number of regional partners and stakeholders¹.

The Welsh Government Energy Service (WGES) supports the public sector and communities to generate benefit for Wales from the transition to a low carbon economy. Support is provided to develop and implement large scale energy efficiency and renewable energy projects as well as wider advice to achieve targets for decarbonisation.

The Welsh Government declared a climate emergency in 2019 and set a target to reduce 95% of greenhouse gas emissions by 2050 relative to 1990. Achieving this target will require substantial transformation of our energy system and will result in radical changes in the technologies we use to heat our homes, to travel and to generate electricity. Transitioning to a modern, decarbonised energy system fit for the twenty-first century poses plenty of challenges, but it also has the potential to bring great benefit, both for the environment and for the economic and social wellbeing of our communities.

This work seeks to provide a strategic direction for the future of a decarbonised energy system including heat, power and transport within North Wales. It will define steps to begin to overcome the challenges we face. Furthermore, while the energy transition has the potential to bring benefits to our communities, maximising this benefit requires reflection on past experience and would also benefit from an increased strategic focus.

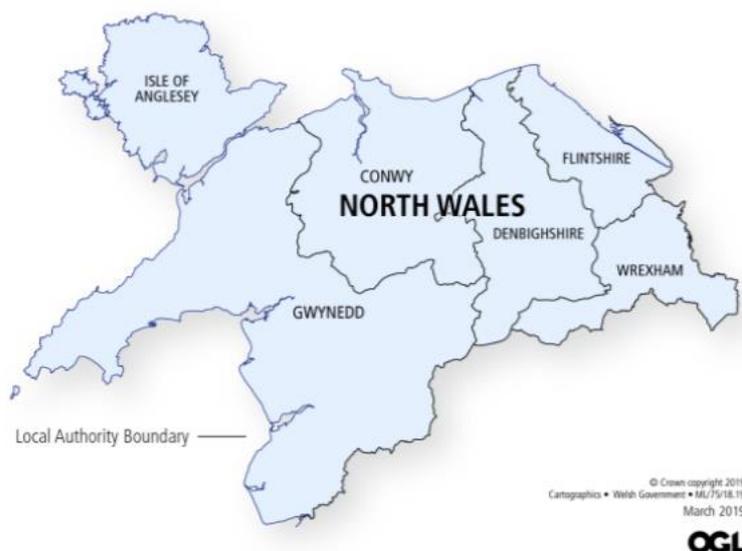


Figure 2: Map of North Wales' local authority boundaries (Source: OGL, March 2019)

¹ See full list in Appendix.

In this work, North Wales is defined as the geographic area which comprises the local authorities of Isle of Anglesey, Gwynedd, Conwy, Denbighshire, Flintshire and Wrexham as the map above illustrates.

The work has coincided with the agreement of Heads of Terms for the North Wales Growth Deal. In addition to other projects and initiatives, the Growth Deal's 'Low Carbon Energy Programme' will assist in delivering some of the actions outlined in this strategy and positioning the region as one of the leading UK locations for energy generation and energy related supply chain investment, with expertise in low carbon technologies, renewable energy and energy storage. Desired outcomes for the work include the identification of strategic projects that can be considered by the growth deal. More broadly, the plan provides a considered approach and an evidence base for North Wales, as a geographic and to move forward collaboratively towards a future decarbonised energy system. This strategy is presented in five chapters.

Chapter 1: Vision - The energy system vision that is presented in this strategy was developed with stakeholder contributions through the project's first workshop, survey feedback, and targeted stakeholder conversations. The vision describes the region's aspiration for what a future energy system will achieve and how it will function. Five core values have been defined that should be at the heart of future energy projects and decisions.

Chapter 2: Priorities - A literature review was undertaken combining key policy and evidence documents with expert interviews and workshop consultation to build a more comprehensive picture of the challenges and opportunities in North Wales. This includes available levers, barriers to development and key technologies. This research, and in particular the thoughts and ideas shared by stakeholders, informed the development of strategic priority areas. These priorities are central to achieving the region's decarbonisation goals and are important to its stakeholders.

Chapter 3: Energy system, energy use & emissions - A baseline study provides a portrait of the North Wales energy economy and landscape today. This chapter also summarises energy modelling that evaluates potential options for a pathway to a net zero energy system in the region.

Chapter 4: The future of energy and the economy - The fourth chapter considers the energy system pathways modelled and the economic impact of those pathways in terms of jobs, gross valued added (GVA), and the investment required to make those pathways a reality.

Chapter 5: Next Steps – Outlining the three key next steps that we will take to translate the North Wales energy system vision into reality.

Governance

Effective governance will be critical to take this strategy forward into implementation. There is still a long way to go to deliver results and bring projects to implementation and we need to consider how best to achieve this; from improving the evidence base, to assisting consenting relating to reinforcing the grid infrastructure as well as

encouraging the UK Govt to provide adequate funding support and routes to market for emerging technologies etc.

Achieving the decarbonisation of the energy system will require collective action across government, the public, private sector and third sectors, and ongoing governance should reflect cross-sector participation and responsibility for action.

The next step for region, with support from the WGES team, will be to work with stakeholders to define the governance structure, establish how to turn the strategy into action, and identify the role of the region, the Welsh government and stakeholders from across the public, private and third sectors. This will include areas where collaboration across government and key sectors is vital to the achievement of the vision.

The North Wales Economic Ambition Board (NWEAB) may be the most appropriate body to provide overall strategic direction and governance to the development and implementation of the regional energy strategy. The NWEAB directs, oversees and facilitates the delivery of the growth vision for North Wales. NWEAB is a Statutory Joint Committee and is made up of all cabinets of the six local authorities in North Wales. To ensure full participation of all relevant partners NWEAB also includes representatives from Higher Education, Further Education and the private sector.

Impact of the Covid-19 pandemic

This strategy has been finalised in the midst of the COVID-19 pandemic, which is having a profound effect on the lives of millions of people around the world, bringing unprecedented challenges for our economy, our society and our communities. At the time of writing, the true economic and societal costs of the pandemic for Wales and the North Wales region are not fully clear, but the severity of the impacts on the global economy are forecast by many commentators to exceed that of the 2008 financial crisis.

The pandemic is also taking place against the backdrop of the ongoing climate emergency. And whilst the economic damage caused will undoubtedly result in a short-term reduction in greenhouse gas emissions, it is possible that emissions could rebound if climate positive solutions are not included as central elements in our economic stimulus packages.

As we move from the immediate emergency response to save lives, support the health sector, retain jobs and support our society and economy, we must recognise that our approach to the economic recovery that will follow provides us with a unique opportunity to sustainably rebuild our economy and make greener investments and climate positive decisions that set us on a pathway that aligns with the Welsh, UK and international climate targets.

In this context, it is essential to acknowledge that our economic recovery and growth plans need to be decoupled from greenhouse gas emissions. We need to recognise the significant economic potential that a green recovery can have to rebuilding a sustainable economy in North Wales.

The Committee for Climate Change (CCC)² has identified 6 key principles for a resilient recovery from the pandemic, and we must ensure that our strategy is underpinned by these cross-cutting principles to help put North Wales in a position to capitalise on opportunities that may arise from the recovery:

1. Use climate investments to support economic recovery and jobs
2. Lead a shift towards positive, long-term behaviors
3. Tackle the wider 'resilience deficit' on climate change
4. Embed fairness as a core principle
5. Ensure the recovery does not lock-in greenhouse gas emissions or increased risk
6. Strengthen incentives to reduce emissions when considering tax changes.

We must also learn from the pandemic, taking the lessons from our response and apply them to the climate emergency. This may include for example:

- the need for openness and transparency;
- the importance of good data;
- the speed with which people can change behaviours and industry re-purpose;
- the need to support individuals and businesses through economic transition; and
- the importance of global collaboration.

Other lessons will undoubtedly emerge. But perhaps the biggest lesson from the COVID-19 pandemic is about the need for anticipation and preparedness in dealing with major societal issues, and the population's capacity and willingness to accept significant lifestyle changes if it is deemed necessary for the good of society. If it teaches us anything it is that we cannot afford to ignore science or expert judgement about the risks faced by our societies, or wait for problems to arrive before taking action. Learning lessons from the response to a global health emergency, and applying this to that of the global climate emergency could pave the way for the accelerated and sustained change that is so critical in solving the problem of climate change.

As the COVID-19 crisis is still ongoing at the time of writing, it is still somewhat unclear when and how Wales will emerge fully from the current social distancing and lockdown measures, and the process and timeframe through which the restrictions will be eased. We must therefore acknowledge the significant uncertainties that exist around how the North Wales economy will emerge from the crisis as well as the uncertainties associated with the shape of the future economic growth and decarbonisation trajectories modelled in this strategy. As such, the economic and climate modelling that underpins this strategy will need to be kept under review and updated when, and how, our emergence from the COVID-19 crisis becomes clearer. Certain elements of the strategy, such as our understanding of what it means to make 'futureproof decisions', may also need to be revisited.

² <https://www.theccc.org.uk/2020/05/06/take-urgent-action-on-six-key-principles-for-a-resilient-recovery/>

In addition, North Wales may be able to capitalise on the opportunity to sustain behaviours observed throughout the pandemic that have had a positive effect on reducing emissions, such as the increase in active travel, reduction in travel by private car, increased working from home practices and willingness to invest in domestic property improvements. Directing resources towards infrastructure that will support the embedding of such behaviours into business as usual for communities and businesses has the potential to drive lasting emissions reduction as we recover from the COVID-19 crisis.

However, the fundamental principles of this strategy remain firmly relevant. With its focus on cleaner, fairer economic growth, this energy strategy has the potential to play a significant role in helping North Wales to recover and rebuild sustainably. It sets out a pathway for accelerating the shift to a decarbonised energy system in the region and demonstrates the potential for achieving far greater local economic benefits than could be achieved by returning to business as usual.

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Our Energy vision

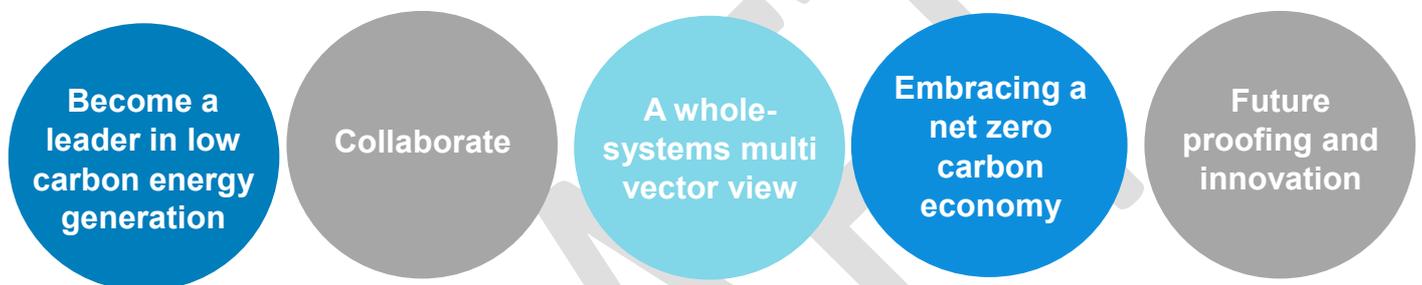
Our Energy Vision

Our 2035 Energy Vision statement

Delivering maximum local economic, social, ecological and wellbeing benefits from transitioning to a net zero economy and becoming a net exporter of low carbon electricity through cross-border and regional cooperation.

The principles behind the vision

Our vision is guided by five core principles



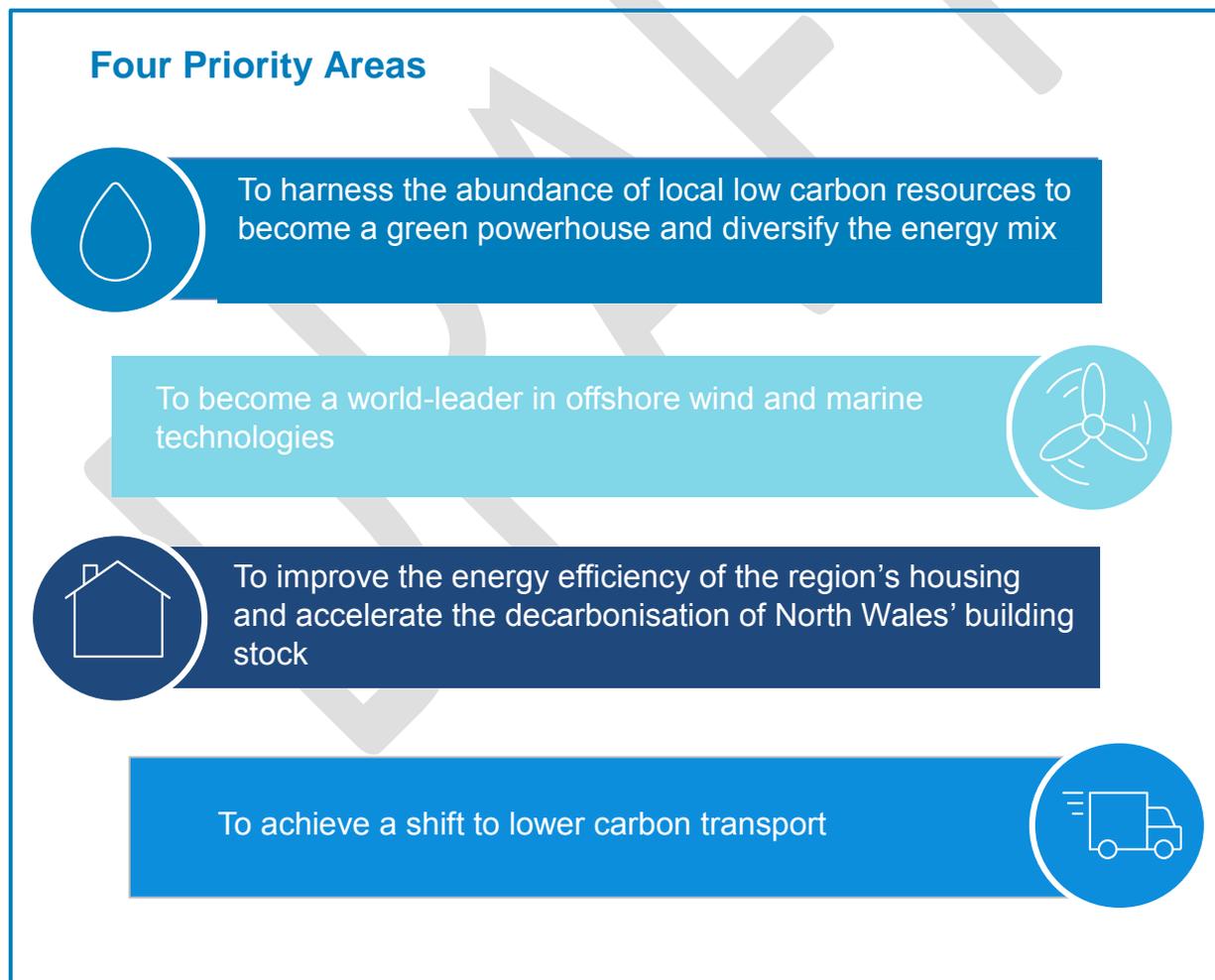
Core Principles

- **Become a leader in multi-scale low carbon energy generation from small community projects through to large developments** including nuclear, offshore generation, and other renewables capitalising on natural and local resources. This strategy should also rely on the existing infrastructure to accelerate Wales' ambition to increase local ownership of energy generation, making use of smart grid technologies to optimise the grid, and ultimately exporting low carbon electricity to other areas.
- **Collaboration** - Developing cross-sectorial and cross-regional collaboration - using existing working structures such as the Mersey Dee Alliance, the Cheshire Energy Hub, Bangor University, the North West Nuclear Arc and facilitating collaboration between public, private and third sectors for scaling up projects. The Anglesey Energy Island Programme could be used as a role model in the region for cross-sector collaboration across public and private sectors.
- **A whole-systems multi vector view** – which broadens the focus from solely electricity, power generation and energy efficiency to include heat and transport. An integrated approach that accounts for the interactions between all elements of the energy system and new technologies to maximise synergies and reduce the overall energy consumption level.

- **Embracing a net zero carbon economy** – whilst it is key to harness the opportunities to unlock cleantech growth and skilled job creation across the low carbon economy, decarbonising North Wales’ existing strong economic sectors is as important. Enabling green growth in sectors that are key for the region such as manufacturing and exports can improve the attractiveness of these sectors and ensure they are competitive in the long run.
- **Developing future proofed and innovative solutions:** ensuring that solutions, infrastructure, and technologies implemented will have a long life, can integrate with future systems, and will continue to provide benefits for the duration of their lifespan. Further develop energy R&D activity through local universities and research centres to become a Centre of Excellence for Low Carbon Energy.

Our priorities

To achieve our vision, we have defined the following four priority areas.





To harness the abundance of local low carbon resources to become a green powerhouse and diversify the energy mix

- Capitalise on North Wales's natural resources, maximising locally generated low carbon electricity to reduce fuel poverty and help local businesses to be more competitive, whilst allowing the surpluses to be exported to produce value for the region. This will contribute to the well-being goals of a prosperous, healthier and globally responsible Wales.
- Whilst capitalising on offshore wind (see next priority area), continue the deployment of land-based renewables such as onshore wind, hydro-electric, solar PV and hydrogen.
- Promote a smarter and local approach, building on local energy and sectoral strengths and opportunities, such as offshore wind and solar, to meet local needs.
- Explore community-led models such as the Ynni Ogwen Cyf hydro project in Grwp Cynefin and de-risk investment examining untapped opportunities and alternative stakeholders such as pension funds.
- Explore routes and identify incentives to safeguard local benefits of energy projects, setting up community-owned energy cooperatives, private wire Power Purchase Agreements, and developing local supply chains for the manufacture and support of low carbon energy projects which will contribute to the well-being goal of a Wales of cohesive communities.
- Build on the existing manufacturing base to grow a strong low-carbon energy sector encouraging collaborative work with particular sectors to improve the region's productivity and accelerate economic growth.
- Build on the Smart Living Initiative to encourage more trials in innovative solutions in Demand Side Response, storage, and publicly owned assets as well as explore opportunities for including bio-methane for energy provision.
- Support the restart of the Wylfa Newydd project that has the potential to generate 2.7GW of electricity on Anglesey as well as pursuing the development and deployment of small modular or advanced modular reactors at Trawsfynydd.
- Explore the role of CCS as a route to decarbonise power generation and potential to balance intermittency from renewables.



To become a world-leader in offshore wind and marine technologies

- Harness the existing efforts of Marine Energy Wales and encourage development of tidal zones and projects, such as Morlais and Minesto to help put North Wales at the forefront of the development of the marine energy sector at a global scale.
- Explore possibilities of increasing the viability of tidal stream projects with the integration of battery storage.
- Develop local energy networks / microgrids where grid capacity or connection costs are a barrier to project development (e.g. locations such as the western Llyn peninsula).
- Identify the tidal supply chain gaps with the aim of building local skills to deliver a local supply chain making use of existing marine expertise and relevant offshore wind skillsets.
- Support the extension of exiting offshore wind farms and the development of new offshore wind in future leasing rounds in the region.
- Support supply chain opportunities, in particular in operations and maintenance, building on the capabilities that exist from servicing offshore wind farms in the Irish Sea Site extensions.
- Explore how excess generation can be used to produce alternative energy types such as hydrogen through electrolysis and further support the synergies across the border with Merseyside to develop a North Wales-Merseyside Hydrogen Cluster.
- Identify the potential for energy synergies between offshore wind and the wider maritime sector recognising the role of ports in a low carbon offshore/maritime ecosystem.



To improve the energy efficiency of the region's housing and accelerate the decarbonisation of North Wales' building stock

- Improve the condition of the North Wales housing stock targeting older homes, and those with low level of energy efficiency to help tackle fuel poverty.
- Promote all forms of energy efficiency and renewable energy, and capitalise on the pilot mind-set of the region, such as the region's experimental approach to marine heat pumps, regarding how modern and cleaner technology can heat old houses.

- Proactively reinforce the distribution grid network to deliver decarbonisation and help homeowners to become prosumers.
- Prioritise off-gas properties by exploring the potential for different low carbon heating solutions in these homes, the innovation required to make them work better in local housing stock, and how to overcome technical, financial, and behavioural barriers to their installation.
- Facilitate behavioural change by improving education around domestic low carbon heating technologies.
- Build on existing local successes such as Arbed and other property improvement programmes and further encourage their deployment.
- Deliver energy efficiency retrofit such as external and internal wall insulation and window glazing to homes across the region particularly to improve living conditions of low-income households and reduce fuel poverty.
- Engage with Planning Authorities to support the adaption of Merton-style renewable energy requirements in all new developments and specify housing requirements for all future social housing to be developed to Passivhaus standards
- Ensure consistency between the Welsh Government National Development Framework (NDF) and the local planning policies to set the direction of travel on where investment, including major regional investment such as the Growth Deal, will take place.
- Align with The Growth Deal's Housing Enabler Project by maximising housing energy efficiency and integrating low carbon heating measures into homes. This will contribute to the well-being goals of a prosperous and globally responsible Wales.



To achieve a shift to lower carbon transport

- Encourage an ambitious shift to public transport, while accepting the rurality of North Wales will lead to continued relatively high use of cars.
- Support the roll out of electric vehicles (EVs) with future-proof charging/refuelling infrastructure, making sure that EVs are a viable option for remote communities.
- Ensure the effective low carbon transport networks, active travel options and EV charging are deployed to facilitate decarbonisation and green tourism.

- Explore the potential of alternative fuels for vehicles such as hydrogen and biofuels (e.g. slurry) to supply local vehicles and HGV transport related to Holyhead.
- Investigate the potential for excess low carbon electricity generation to be used for hydrogen production for HGV transport.
- Support research, development and demonstrators related to the use of hydrogen fuel cells for different applications on public transport such as hydrogen battery for buses and trains (i.e. Conwy Valley line) as well as freight following Stena's model of hydrogen car ferries.
- Encourage the creation of a hydrogen Hub in Holyhead (i.e pilot project at Parc Cybi) to support the logistics industry with particular respect to Euroroute E22 connecting Holyhead to Europe.
- Improve cycling infrastructure in urban areas and rural areas to link villages, while encouraging more active travel modes and healthier lifestyles that contribute to the well-being goal of a healthier Wales.

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The Energy system, energy use & emissions

The Energy system, energy use and emissions

Modelling an Energy Vision scenario

Aims of undertaking scenario modelling

Scenario modelling has been undertaken to create a 2035 North Wales Energy Vision scenario that could deliver against the level of ambition set out in the Energy Vision statement. The modelling outcomes are unique to the region, taking advantage of local resources and opportunities, and input from local stakeholders.

The overall aim of the scenario is to set out a potential decarbonisation route that will put the region on track to achieve a net zero energy system by 2050. The scenario is not intended to be prescriptive. There are a number of potential pathways to achieve energy system transformation, including new opportunities from technological innovation and changes to energy demand that will certainly emerge as the transformation takes place.

The modelling presents a potential development scenario that is intended to:

- Highlight the scale of the challenge
- Identify existing opportunities and barriers
- Point to new opportunities and key decisions
- Provoke discussion and inspire action planning.

The scenario focuses on known decarbonisation solutions that could be implemented by 2035, which would put North Wales on a pathway consistent with achieving net zero emissions by 2050. However, this does not mean that activity around innovative new technologies should not also be pursued. The modelling takes a whole system approach to energy, considering the interactions between heat, transport and electricity demand. For example, the impact of decarbonising heat through electrification is reflected through an increase in electricity demand.

Why does the scenario look to achieve zero emissions from energy in 2050 and not 95% decarbonisation?

The Committee on Climate Change recommended in its 2019 report, Net Zero: The UK's contribution to stopping global warming, that Wales adopt an overall decarbonisation target reduction of 95%, against a 1990 baseline, by 2050³. This target, which is lower than the equivalent UK 2050 net zero decarbonisation target, recognises that Wales faces several additional challenges including higher greenhouse gas emissions from its agriculture and parts of its heavy industry.

However, Welsh Government has expressed an ambition to exceed this target and aim for 100% decarbonisation. Non-energy agriculture emissions are out of scope of this energy system study. Both a Welsh 95% and a 100% emissions reduction target require the energy system to maximise its decarbonisation, reserving any residual emissions for more difficult to decarbonise sectors such as agriculture and heavy industry. It is worth noting that during the course of our engagement, stakeholders in the region and across Wales have expressed very strong support for ambitious energy system decarbonisation.

Methodology in brief

The modelling sets an indicative decarbonisation trajectory to 2035. It has been created using a methodology that reflects the high-level methodology used by the Committee on Climate Change in its 2019 progress report⁴. This absolute contraction method assumes a constant rate of decarbonisation is achieved between now and achieving net zero by 2050. This is used as a preliminary benchmark, pending 2020's more detailed assessment by the Committee on Climate Change, which will set out more detailed carbon budgets consistent with the new net zero target.

The North Wales energy baseline has been established by gathering and analysing national and local datasets of energy consumption, energy efficiency and generation. The Energy Vision scenario has been created through a bottom-up analysis of the level of uptake of measures and technologies that is possible by 2035. Assumptions have been drawn from a range of sources, including:

- Committee on Climate Change reports^{5,6}
- National Grid's Future Energy Scenarios⁷
- The project team's past work on future energy scenarios for Wales & West Utilities and for Western Power Distribution⁸
- Engagement and workshops with local, regional and national stakeholders.

³ Committee on Climate Change: Net Zero, The UK's contribution to stopping global warming. May 2019

⁴ Committee on Climate Change (2019) 2019 Progress Report to Parliament

<https://www.theccc.org.uk/publication/reducing-uk-emissions-2019-progress-report-to-parliament/>

⁵ Committee on Climate Change (2019) 2019 Progress Report to Parliament

<https://www.theccc.org.uk/publication/reducing-uk-emissions-2019-progress-report-to-parliament/>

⁶ Committee on Climate Change (2018) Hydrogen in a low-carbon economy

<https://www.theccc.org.uk/publication/hydrogen-in-a-low-carbon-economy/>

⁷ National Grid (2019) *Future Energy Scenarios*, <http://fes.nationalgrid.com/media/1409/fes-2019.pdf>

⁸ <https://www.regen.co.uk/area/local-future-energy-scenarios/>

<https://www.regen.co.uk/project/wales-and-west-utilities-regional-growth-scenarios-for-gas/>

The methodology results in a bottom-up, stakeholder-informed Energy Vision for each unique Welsh region

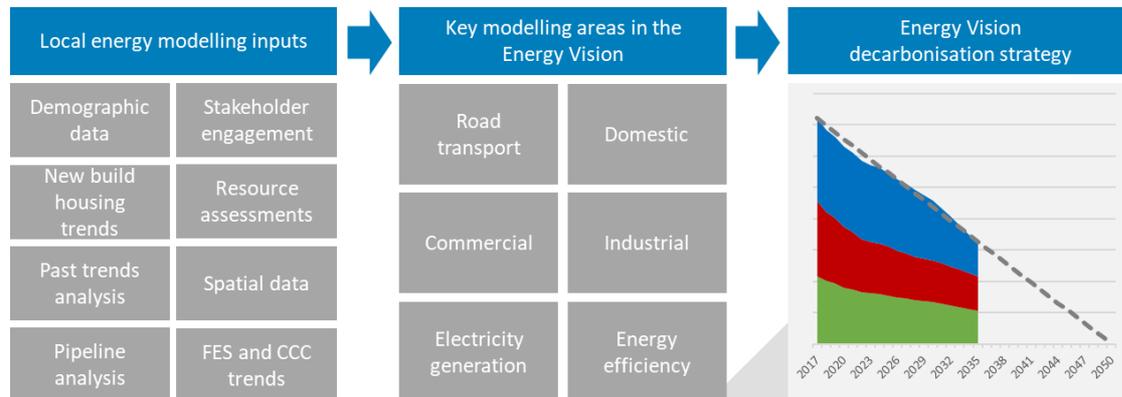


Figure 3: Modelling methodology

Worked example: The modelling approach for domestic heat

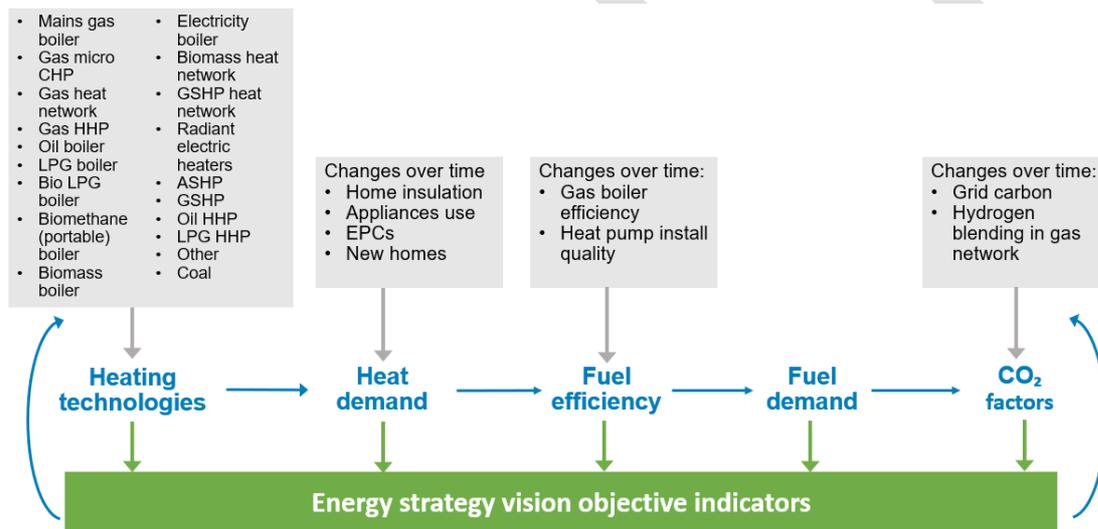


Figure 4: Modelling approach worked example

A note on scope

The strategy is focused on emissions associated with the energy system in North Wales. As a result, the scope of the modelling is limited to the energy system, which includes transport, power and heat use. Emissions or sequestration from non-energy activity such as agriculture and land use are not considered in the model. Data limitations and issues around whether emissions are considered locally or nationally mean that some other emissions that are within the energy system are also not considered by the model. These include aviation, shipping and some very large industrial energy users.

Baseline and modelling results: By sector

Our energy consumption

Baseline: energy consumption by sector

North Wales currently consumes around 23% of all energy consumed in Wales⁹, which is slightly higher, on a pro-rata basis, than its 22% share of the Welsh population¹⁰.

The region's total energy demand is split broadly into three main areas, weighted towards commercial and industrial use, with:

- Transportation consuming 30%
- The domestic sector – household heat and power use - consuming 30%
- The commercial and industrial sector consuming 39%⁷.

Energy consumption in North Wales by sector and fuel

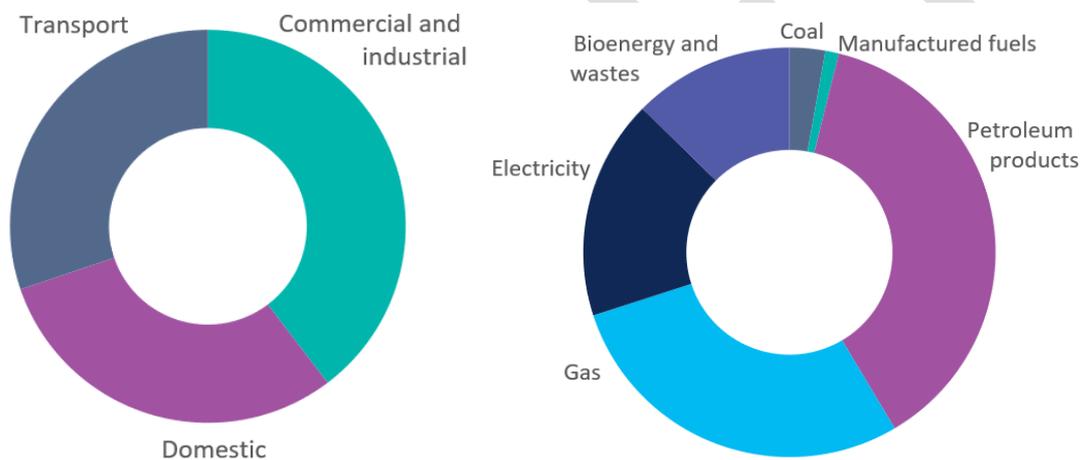


Figure 5: Breakdown of energy consumption in North Wales. Source: BEIS sub-national total final energy consumption, 2019.

⁹ BEIS: Regional and local authority electricity consumption statistics, 2019

¹⁰ StatsWales: Population estimates by local authority and year

North Wales' decreasing energy consumption trend reversed in 2017

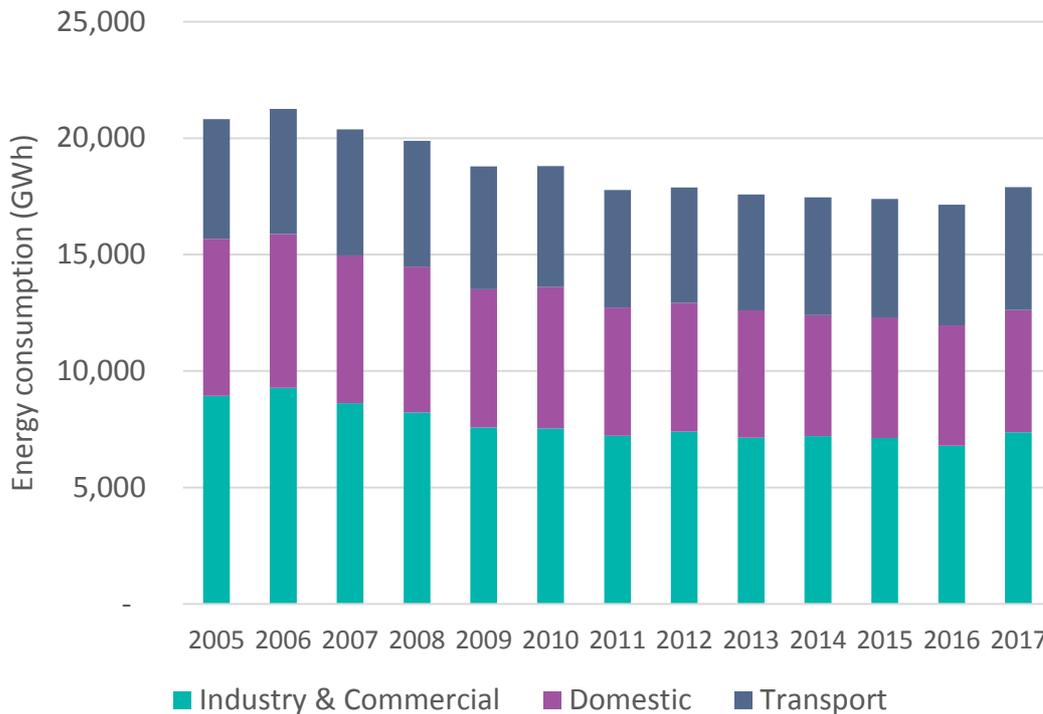


Figure 6: Trend of energy consumption in the North Wales region, by sector. Source: BEIS sub-national total final energy consumption, 2019

Analysis of BEIS sub-regional data¹¹ shows that total energy consumption has fallen by 5% since 2005, an average rate of about 0.4% per year. This is significantly less than the 20% reduction in energy demand experienced across Great Britain over the same period. This is predominantly due to the commercial and industrial sector's energy consumption not reducing in North Wales to the same extent as in the rest of Great Britain, at 18% and 36% respectively. This is likely to be the result of different trends in energy efficiency measures and rates of deindustrialisation.

Emissions from energy consumption reduced by around 28% from 2005 to 2017¹² as a result of falling demand and, more significantly, due to decarbonisation of the national electricity grid.

However, in 2017 there was an increase in industrial and commercial consumption in North Wales, resulting in an increase in overall consumption.

¹¹ BEIS: Regional and local authority energy consumption statistics, 2019

¹² BEIS: UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2017

North Wales' emissions from energy consumption have reduced by approximately 28% since 2005

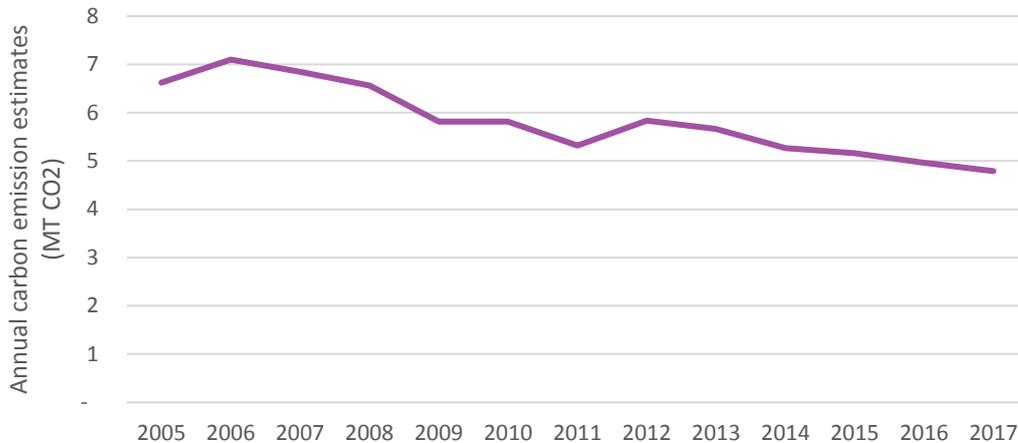


Figure 7: Estimated historic emissions in North Wales. Source: BEIS sub-national emissions

Energy system vision: energy consumption by sector

To be on track for net zero by 2050, North Wales needs to achieve 55% decarbonisation of its energy system by 2035.

North Wales' Energy Vision scenario decarbonisation trajectory

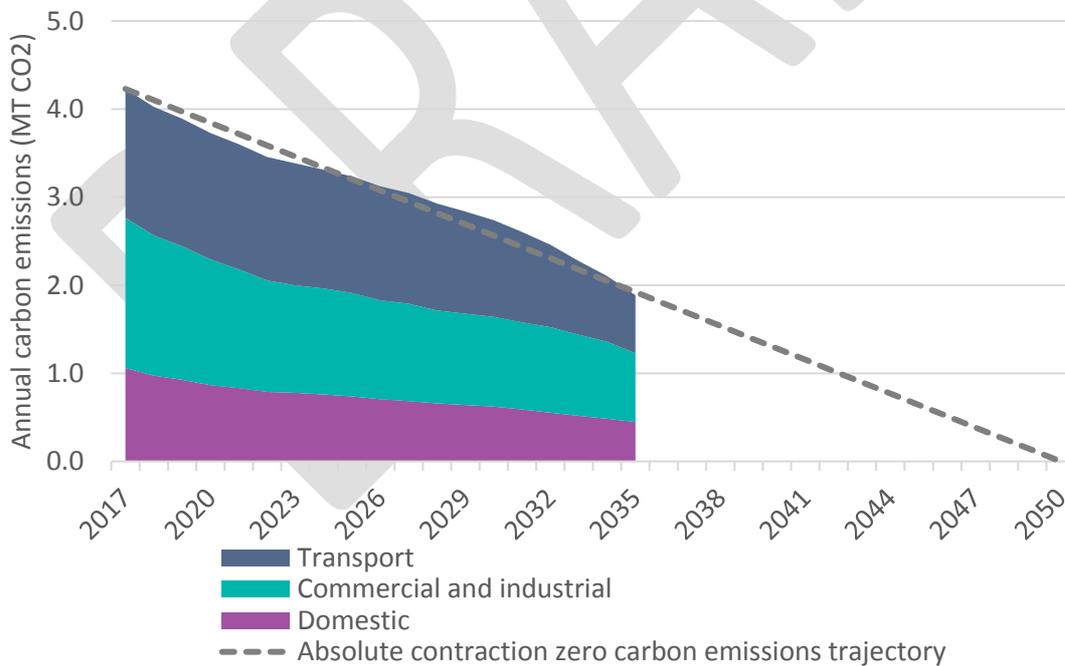


Figure 8: North Wales' Energy Vision decarbonisation trajectory by sector to meet net zero 2050 under an absolute contraction methodology. Source: WGES analysis

By reviewing the measures that could be implemented in North Wales by 2035, this 55% decarbonisation target can be split by sector into:

- 57% reduction in domestic heat and power emissions

- 54% reduction in commercial and industrial emissions
- 55% reduction in transport emissions.



Figure 9: Summary of the Energy Vision's emission reductions by sector. Source: WGES analysis

Our domestic energy consumption

Baseline: domestic heating

North Wales is characterised by its mixture of urban, semi-urban and rural areas, with the majority of towns concentrated along the north coast and eastern border with England. As a result, there are large areas that are sparsely populated and not on the gas network. These areas contain a high proportion of solid fuel and electrically heated homes. In Gwynedd, 4% of homes are without any central heating, the highest proportion of any local authority in Wales.

North Wales' local authority areas have an above average proportion of homes off the gas network

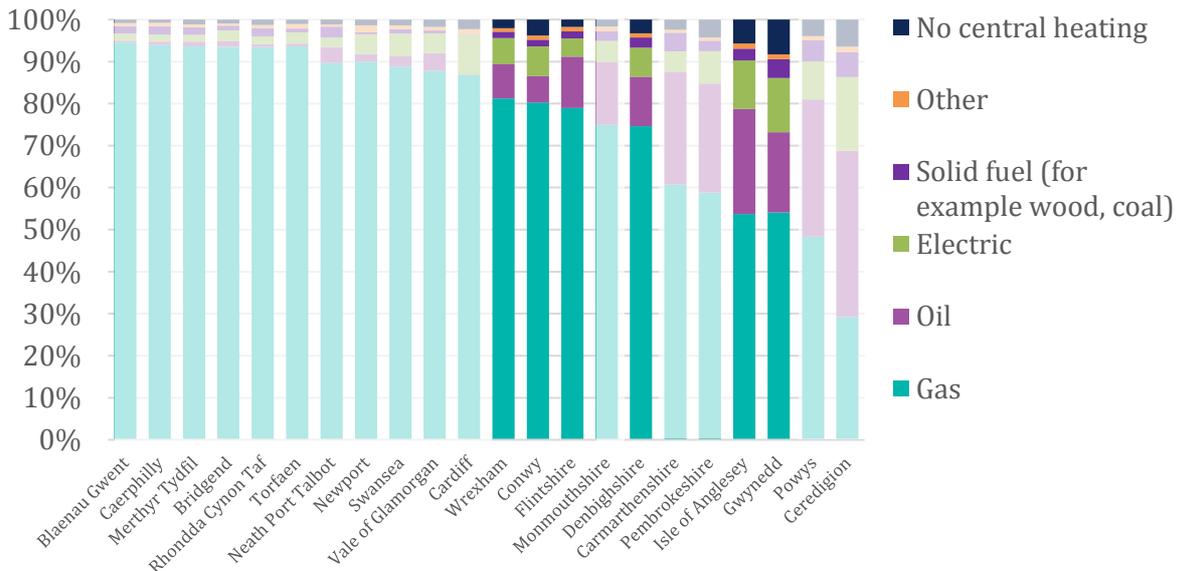


Figure 10: Proportion of homes heated by each heating fuel type, by local authority. Source: Census, 2011. MHCLG, Energy Performance Certificates.

North Wales is the Welsh region with the second highest number of renewable heat installations

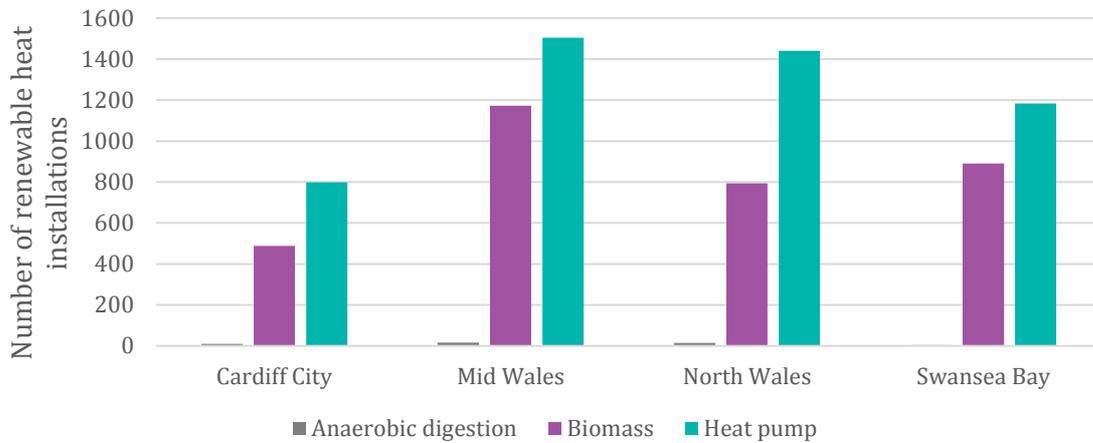


Figure 11: Renewable heat installations in Wales. Source: Energy Generation in Wales 2018

North Wales has the second highest deployment of renewable heat installations in Wales. However, this represents a small proportion of just 0.7% of homes with a heat pump or biomass boiler.

North Wales' domestic properties have an average EPC rating of D

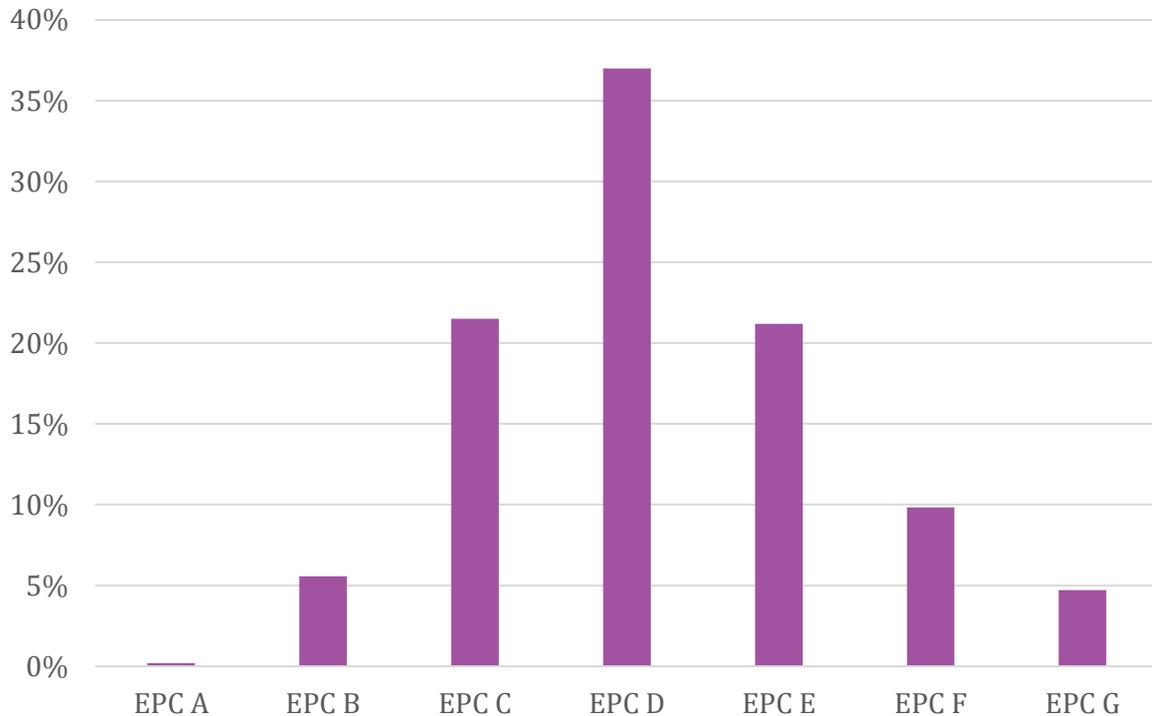


Figure 12: Proportion of homes in North Wales in each EPC band. Source: MHCLG, Energy Performance Certificates

Domestic energy efficiency is relatively poor in North Wales, with 36% of homes rated as EPC band E, F or G, compared to 23% in Great Britain. The average rating is a D, and there are virtually no A-rated properties.

Despite this, domestic energy demand has fallen by 22% since 2005, reflecting the national trend resulting from more efficient appliances and lighting combined with behavioural change.

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Box 1: Assumptions regarding the decarbonisation of domestic heating in North Wales¹³

The North Wales energy strategy modelling assumptions for domestic heating are based on input from regional stakeholders and the 2019 Wales & West Utilities Distribution Future Energy Scenario (DFES) project which explored potential future scenarios for the gas network in North Wales in 2035. Some of the key scenario highlights from the 2019 DFES included:

- Around 20% of homes could be heated by a heat pump by 2035, predominantly air source or ground source heat pumps replacing more expensive oil, LPG or solid fuel heating.
- Hydrogen offers a number of significant opportunities for Wales, particularly through the development of industrial clusters in North Wales and extending into the Wirral, and in South Wales in Pembrokeshire, Port Talbot and industrial zones around Cardiff and Newport. A number of hydrogen projects are planned and there is a high likelihood that hydrogen for industrial and transport applications will become an important fuel over the next decade. There is the potential that some hydrogen from these trial projects could be used to supply heat to adjacent homes and commercial buildings, however hydrogen is not expected to become economically viable or widely available for network distribution as a heating fuel before 2035.
- Biomethane from food waste and sewage in populous areas, alongside farm waste in more rural areas, could provide up to 5.1% of energy supplied by the gas distribution network in North Wales by 2035. The proportion of biomethane that is injected into the mains gas network will depend on the availability of feedstocks and level of demand from other biomethane uses such as power generation.
- Consumption of natural gas energy in Wales could fall by over 20% between now and 2035.
- Projections on the uptake of heat pumps, including the proportion of hybrid heat pumps, were based on FES 2019 scenarios. Since then, the FES 2020 study has been published and includes a higher proportion of hybrid gas heat pumps, particularly under the Leading the Way scenario.

These findings have been built on in developing the North Wales Energy Vision scenario.

Wales and West Utilities' outlook regarding the potential for biomethane and hydrogen has evolved since the modelling was undertaken following the UK government evolution to a net zero target last year. Net zero scenario shows higher potential for biomethane and hydrogen. For example biomethane levels can exceed in some parts of the WWU network will reach over 20% by 2021. This would facilitate the decarbonisation of homes using smart hybrid heating systems.

¹³ For more information about HyNet visit <https://hynet.co.uk/>

Table 1. Regional Growth Scenarios for Gas and Heat compared with energy modelling

Key assumptions for domestic heating fuels		2019 WWU DFES Study			WGES Energy Strategy Study
		Two Degrees Scenario	Community Renewables Scenario	Hybrid Accelerator scenario	
Heat pump deployment (% of houses with a HP by 2035)		12%	20%	16% (including significantly higher proportion of hybrid heat pumps)	20%
Biomet hane and bioSNG energy	Biomet hane and bioSNG heat energy for domestic and C&I heating in 2035	171 GWh	332 GWh	283 GWh	227 GWh (note the scope excludes some large industrial sites)
	Biomet hane and bioSNG percentage of heat delivered by the gas network	3% of gas network energy	5.1% of gas network energy	5% of gas network energy	5.1% of gas network energy

¹⁴ Regen (2019) Regional Growth Scenarios for Gas and Heat for Wales & West Utilities
<https://www.regen.co.uk/regional-future-energy-scenarios-for-heat-and-gas/>

Hydrogen use for domestic and commercial heating (Hydrogen for industrial processes and transport is modelled separately)	1% of gas network energy	None modelled before 2035	3% of gas network energy	None modelled before 2035 although there is potential for some domestic heating associated with industrial clusters
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Energy Vision scenario: domestic heating

Achieving a 57% reduction in domestic carbon emissions by 2035 requires a significant shift in the way homes are heated and their level of energy efficiency.

One pathway to achieve this would be to focus on improving the worst performing homes, eliminating all E, F and G ratings through improvements, as well as some improvements to homes with higher ratings. Under the Energy Vision scenario, 35% of all homes are improved from G, F and E to D, C and B, leaving just 1% of properties with an EPC rated E or worse.

Upgrades to nearly all homes rated E, F and G required to deliver North Wales' Energy Vision

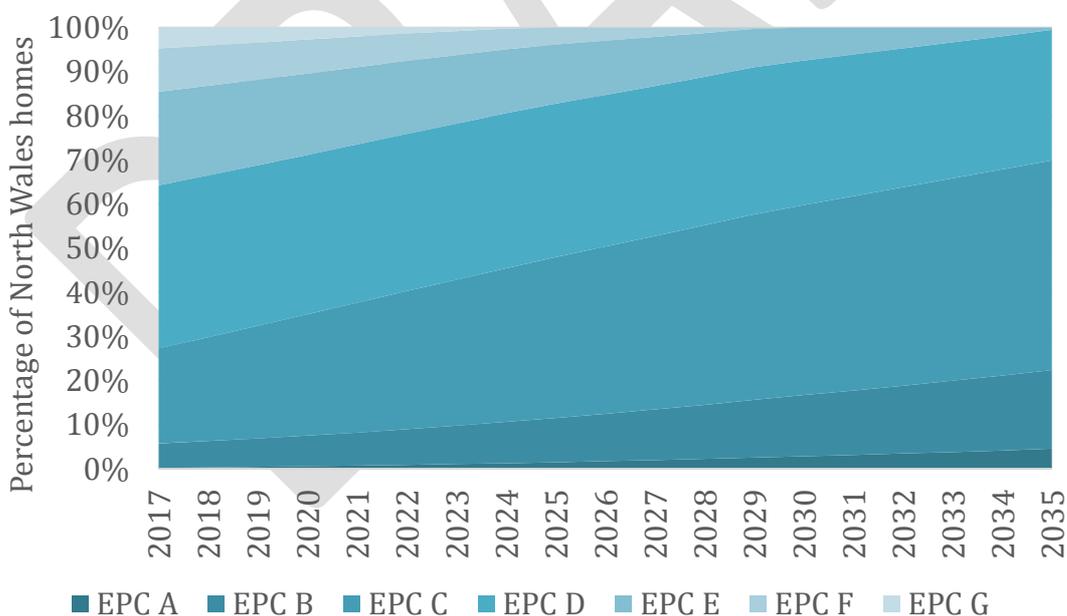


Figure 13: Estimated domestic EPC band changes to deliver the Energy Vision scenario. Source: WGES analysis

Around 67,000 homes (21% of existing homes), would need to move from using fossil fuel heating to low carbon heating. Of these, approximately 25,000 are currently fuelled by oil, LPG, coal or other solid fuels, with the remainder currently on mains gas.

The Energy Vision scenario assumes that the transition to low carbon heating will be dominated by a shift to air source heat pumps, with a smaller role for ground source heat pumps, biomass and bio-LPG heating options. By 2035, over 65,500 heat pumps have been installed in North Wales. Heat networks have a limited role in North Wales due to the rurality of the area, with around 1,200 homes estimated to connect to a heat network by 2035. The development of heat networks is concentrated in the urban areas of Flintshire and Wrexham.

The scenario relies on new homes being built with low carbon heating and high standards of energy efficiency from 2025, as broadly set out in the recent Welsh Government consultation on Building Regulations Part L that was closed in March 2020¹⁵. At the time of writing, consultation responses are being reviewed.

Air source heat pumps are the dominant new low carbon heating source introduced by 2035 under the North Wales Energy Vision scenario

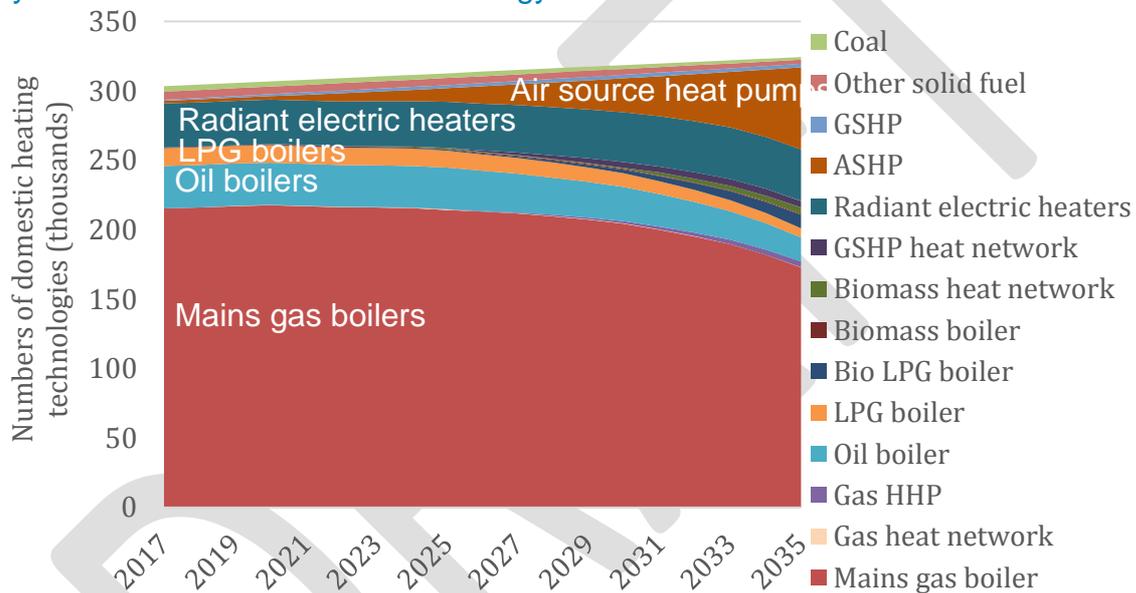


Figure 14: Breakdown of domestic heating technologies in the North Wales Energy Vision scenario, including existing and new build houses. Source: WGES analysis

¹⁵ <https://gov.wales/all-new-homes-wales-be-heated-and-powered-clean-energy-sources-2025>

Box 2. Alternative Domestic energy and heat Pathway – ‘balanced’ scenario

The Energy Networks Association’s ‘Pathways to Net Zero’ report explores the role of gas networks in a future Net Zero energy system, producing cost-optimised scenarios out to 2050. The Pathways to Net Zero report presents an alternative pathway called the ‘balanced scenario’ for a decarbonized heating system that can also be applied to the Cardiff Capital Region.

The “balanced scenario” describes a future where low carbon and renewable gases are used in a *balanced* combination with low carbon electricity, where electrification plays a less dominant role and renewable gas grid conversion is prioritized. It highlights the significant role of renewable gas in meeting net zero by 2050, especially in cases where existing homes can’t be renovated or all-electric heat pumps are not an appropriate solution. However, it also identifies current barriers to achievement, for example, a significant reliance on timely Carbon Capture Use and Storage implementation and accompanying policies to support this.

WWU have considered these principles into its 2021-26 business plan, consulting over 20,000 stakeholders and consumers in the process.

‘Balanced scenario’ overview for domestic energy and heat:

- Deployment of hybrid heat systems becomes main heat source in buildings not suitable for all-electric heat pumps and where connecting to a district heating network is not an option
- Heat supply is mostly hydrogen and biomethane
- Moderate renovation in existing buildings

The key difference between the balanced scenario and the energy system vision scenario modelled for this report concerns the level and timing of the installation of heat pumps versus hybrid heat pumps. The balanced scenario, when applied to the Cardiff Capital Region would focus on hybrid heat pump installation first. Another key difference between the balanced scenario and the energy system vision scenario are timelines. The balanced scenario models out to 2050, whereas the energy system vision modelling has modelled out to 2035.

Detailed energy planning is required to provide certainty on the pathway and short term actions required in CCR to decarbonise not just heating, but the wider energy system. The gas and electricity DNOs, and the local authorities in the region, are vital to this process. Electrification is currently one of the few proven scalable options for decarbonising heat, with heat pumps playing a substantial role in any Net Zero scenario. Local area energy planning will identify the preferred combination of technological and system changes needed to the local energy system, to decarbonise heat, and local transport, and realise opportunities for local renewable energy production.

Table 2: Scenario summary: domestic

Sector	Example outcomes Energy Vision scenario	Energy prize	Carbon saving potential
Domestic heat and energy efficiency	30,000 houses fitted with internal or external wall insulation Over 120,000 other insulation measures in homes Over 65,500 heat pumps Replacing heating systems in oil, LPG and solid fuel heated homes prioritised No gas in new homes from 2025, to avoid retrofitting at a later date	17% reduction in gross thermal energy demand 32% net decrease in domestic heating energy consumption, taking into account demand reduction and improved heat technology efficiencies, including the impact of heat pump performance.	499 kt CO ₂ (57% reduction)

Our commercial and industrial energy consumption

Baseline: commercial and industrial

Industrial energy demand has decreased by 18% since 2005 and emissions have decreased by 28%. The more significant reduction in emissions, compared to the reduction in energy demand, is largely due to the decarbonisation of the UK's electricity grid.

46% of commercial and industrial demand is met by gas, reflecting the mix of on and off gas locations in the region.

North Wales' commercial and industrial energy demand has declined steadily since 2005, with an increase in 2017

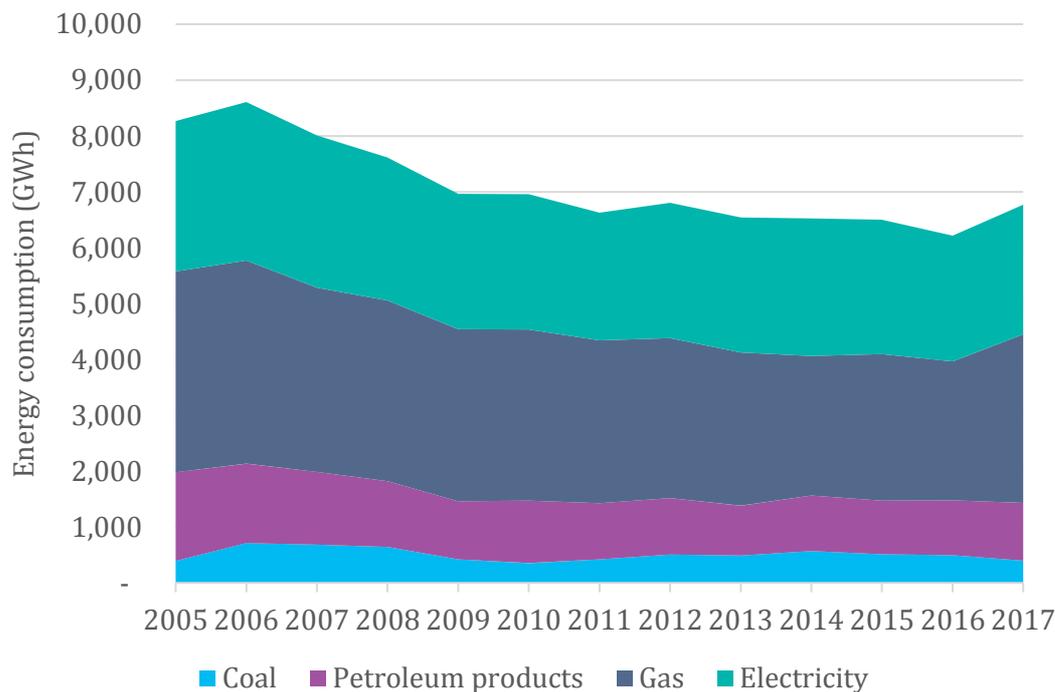


Figure 15: North Wales' historic commercial and industrial energy consumption, by fuel. Source: BEIS total final energy consumption (2019)

Energy Vision scenario: commercial and industrial

The Energy Vision scenario sets out a pathway to achieve a further 54% reduction in commercial and industrial emissions by 2035 through:

- A 16% decrease in energy demand
- Some use of low carbon hydrogen in industrial processes
- Significant further decarbonisation of the electricity grid through renewable generation.

Reaching a grid carbon factor of 30 gCO₂ per kWh¹⁶, for example, achieves on its own a 57% reduction in all commercial and industrial emissions in North Wales. This very low grid carbon factor would depend on significant installation of new low carbon generation capacity both in North Wales and across the UK.

Feedback from North Wales stakeholders was that there is strong support for hydrogen use in industrial clusters in the region. The Energy Vision scenario therefore assumes that hydrogen use in industrial processes is introduced in a North Wales cluster around 2032. To be in line with the region's net zero carbon ambitions, hydrogen needs to be produced either using excess renewable energy to power electrolysis or through steam methane reformation with effective carbon capture and

¹⁶ Assumption based on Community Renewables and Two Degrees scenarios in National Grid (2019) *Future Energy Scenarios*, <http://fes.nationalgrid.com/media/1409/fes-2019.pdf>

storage. To be viable, cost reduction and further technology development is needed. Hydrogen for use in North Wales could potentially be sourced from the Hynet North West project, based in the Liverpool region, which is aiming to produce hydrogen from methane with carbon capture and storage for use by energy intensive industrial organisations¹⁷.

North Wales' Energy Vision scenario includes a 16% decrease in commercial and industrial energy consumption by 2035

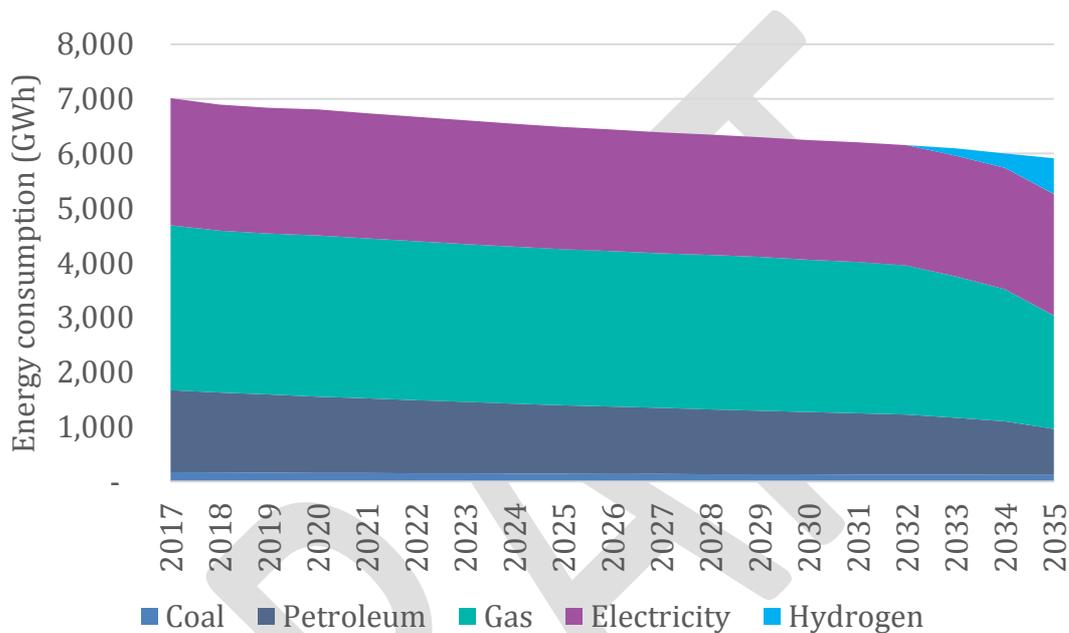


Figure 16: Energy Vision scenario commercial and industrial energy consumption, by fuel. Source: WGES analysis

North Wales' Energy Vision scenario results in a 54% decrease in commercial and industrial energy emissions by 2035

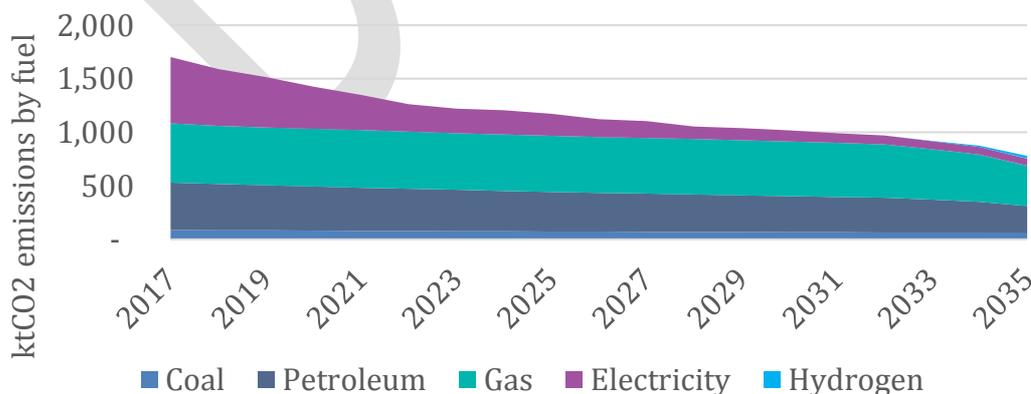


Figure 17: Energy Vision scenario commercial and industrial emissions estimates, by fuel. Source: WGES analysis

¹⁷ <https://hynet.co.uk/faqs/>

Table 3: Scenario summary: commercial and industrial

Sector	Example outcomes Energy Vision scenario	Energy prize	Carbon saving potential
Commercial and industrial energy demand	<p>Significant energy efficiency programme</p> <p>A switch to alternative fuels, including hydrogen and electrification of heating</p> <p>Decarbonisation of electricity network through renewables and behind-the-meter low carbon generation</p>	<p>42% reduction in coal and petroleum energy consumption</p> <p>31% reduction in gas consumption</p> <p>11% of demand supplied by hydrogen through industrial clusters</p> <p>4% reduction in electricity demand</p>	922 kt CO ₂ (54% reduction)

Our transport

Baseline: transport

North Wales has a high dependence on private cars for transport. Average annual vehicle miles in North Wales are similar to those in other Welsh regions at 9,184 per car^{Error! Bookmark not defined.}. Less than 1% of road miles are driven by buses and coaches in North Wales¹⁸. North Wales is assumed to follow Welsh trends for active travel in having the joint lowest percentage of all journeys taken by walking and cycling when compared to other regions in Great Britain¹⁹.

To date, North Wales has seen a slow uptake of electric vehicles. Approximately 0.1% of cars registered in the region are pure electric, compared with an average of 0.6% of vehicles across Great Britain. Similarly, despite a surge in charger installations in 2019, North Wales currently hosts only 148 public charging devices, including 14 rapid public chargers²⁰. This is relatively low, as is the case across Wales, where there are half the number of public EV chargers per capita compared to Scotland.

Marine transport, such as ferries and cruise ships, was not in the scope of emissions covered by this analysis. However, this area is likely going to be important for North Wales, particularly given the importance of Holyhead port. Holyhead is also

¹⁸ DFT Road traffic statistics (TRA) and Regen transport model

¹⁹ Personal travel in Wales – 2012 statistical bulletin (2013)

²⁰ DFT, Electric Vehicle Charging Device Statistics, 2019

noteworthy due to its position as part of Euroroute E22 which poses a specific decarbonisation need and challenge. The appropriate infrastructure in this area will need to be rolled out to be compatible Europe wide technology adoption in Logistics.

Wales has far lower bus utilisation rates than England or Scotland

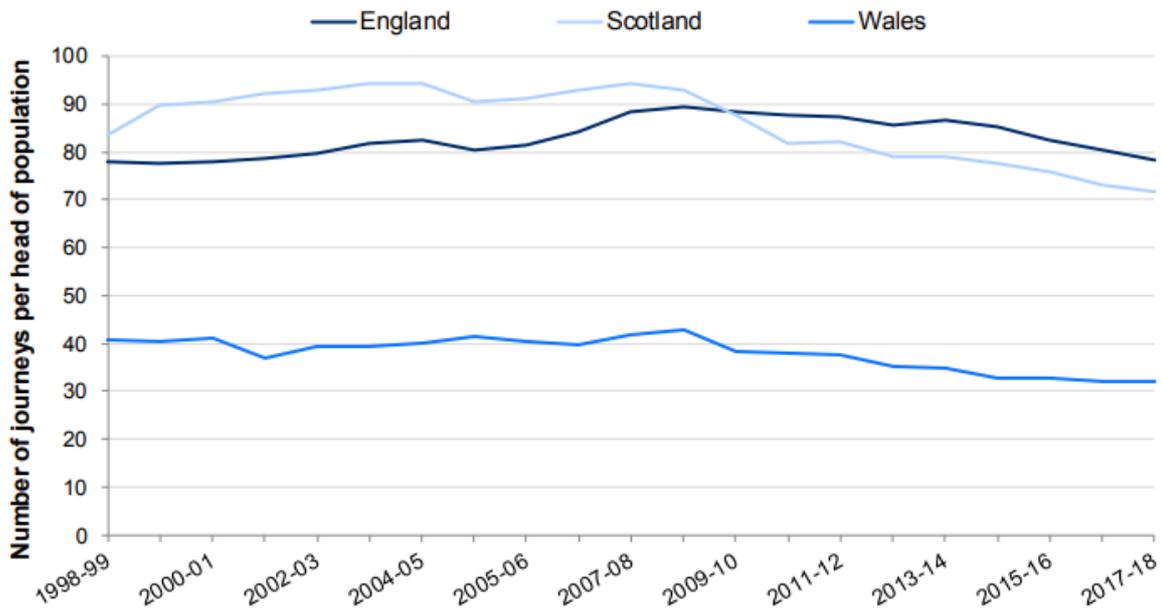


Figure 18: Passenger journeys per head on local bus services by country, 1998-2018. Source: Public service vehicles statistical bulletin, 2019

Energy Vision scenario: transport

Achieving a 55% reduction in transport emissions by 2035 is a significant challenge for North Wales with its high dependency on private vehicles. The Energy Vision scenario assumes:

- 55% of vehicles driven in North Wales in 2035 are electric, with the ban on fossil fuel vehicle sales brought forward to 2030
- A 15% reduction in private vehicle mileage in 2035
- A slowing of the growth in total number of vehicles on the road, facilitated by increased use of public transport and active travel.

North Wales' Energy Vision scenario requires a significant decrease in the number of petrol and diesel vehicles

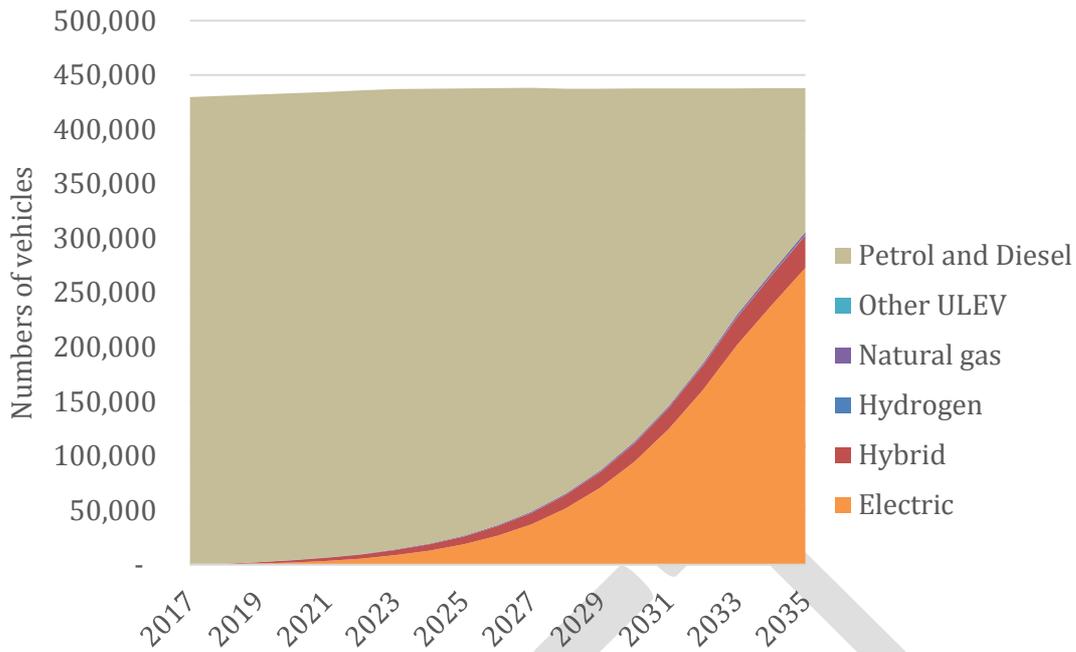


Figure 19: North Wales' Energy System Vision road vehicle numbers, by vehicle fuel. Source: WGES analysis

North Wales' Energy Vision scenario results in road transport emissions reducing by around 55%

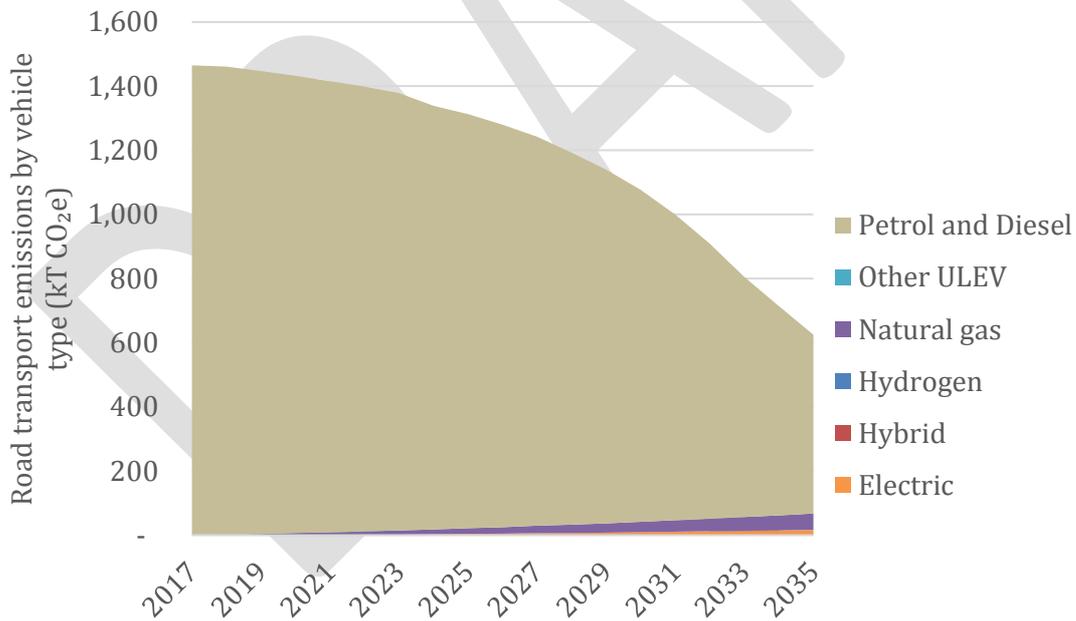


Figure 20: Energy System Vision road vehicle emissions, by vehicle fuel. Source: WGES analysis

Table 4: Scenario summary: transport

Sector	Example outcomes Energy Vision scenario	Energy prize	Carbon saving potential
Road transport	260,000 electric cars 2,600 gas HGVs 1,000 hydrogen vehicles 2,000 public EV chargers 15% reduction in private vehicle mileage	3.2 TWh reduction in petrol and diesel energy consumption 0.6 TWh increase in electricity consumption	660 kt CO ₂ (55% reduction)

Achieving these outcomes requires 7,000 EV sales per year by the mid-2020s, peaking at 40,000 per year in the 2030s before reducing to 30,000 per year. Peak sales of fossil-fuelled cars in North Wales have historically reached 30,000 per annum²¹. Additional support, such as a scrappage scheme alongside a 2030 ban on new fossil-fuelled car sales, would be needed to retire some fossil-fuelled vehicles earlier than their average lifespan, in order to achieve a peak of 40,000 EV sales per year in the 2030s.

This level of EV sales will require a supportive, area-wide EV charging network. Similarly, the switch to gas and hydrogen heavy good vehicles and buses is reliant on the fuelling infrastructure being in place.

Baseline and modelling results: Electricity

Our annual electricity demand

Baseline: annual electricity demand

Annual electricity demand in North Wales is currently approximately 3.6 TWh²². It has fallen steadily since at least 2005 when electricity demand was nearly 4.2 TWh^{Error!}
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As a result of a concentration of commercial and industrial activity in Flintshire and Wrexham, commercial and industrial electricity consumption constitutes 71% of all electricity consumption, nearly 10% higher than the Great Britain average.

Energy Vision scenario: annual electricity demand

The scenario projects a 10% increase in annual electricity demand for North Wales by 2035, compared to 2017. Increased energy efficiency measures and appliance efficiency lead to a decrease in the base electricity demand, with the increase resulting from the electrification of heating and transport.

²¹ DFT Road transport statistics and Regen analysis

²² BEIS: Regional and local authority electricity consumption statistics, 2019

In the North Wales Energy Vision scenario, decreasing base annual electricity demand is outweighed by increasing demand from electrified heat and transport

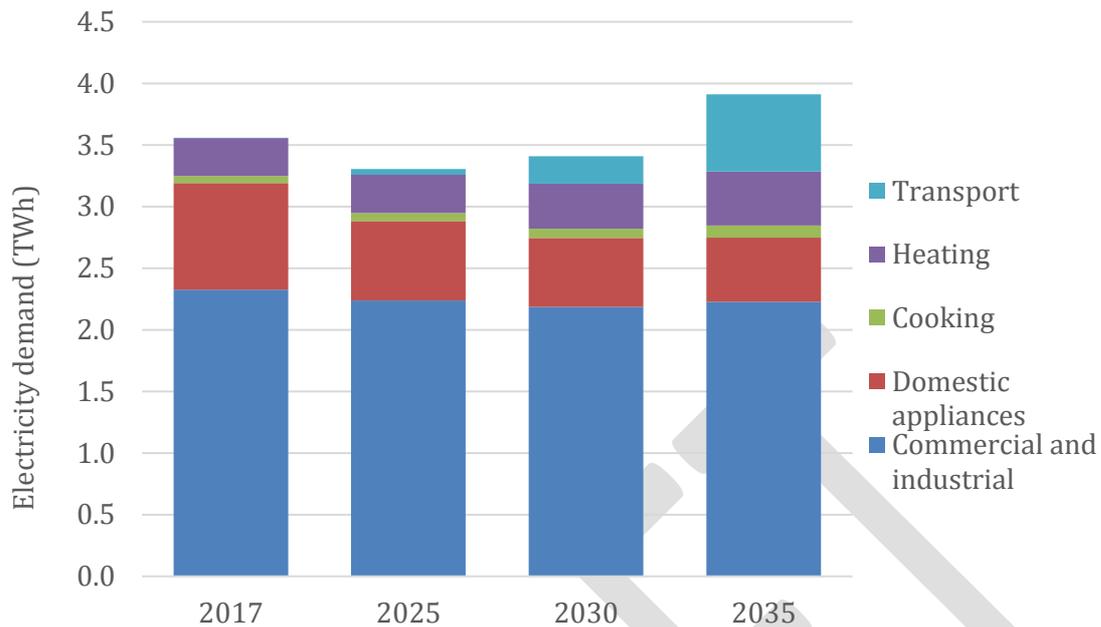


Figure 21: North Wales' Energy Vision scenario demand by sector. Source: WGES analysis

Our electricity generation

Baseline: electricity generation

726 MW of offshore wind, 98 MW of onshore wind projects and 224 MW of solar PV currently installed in North

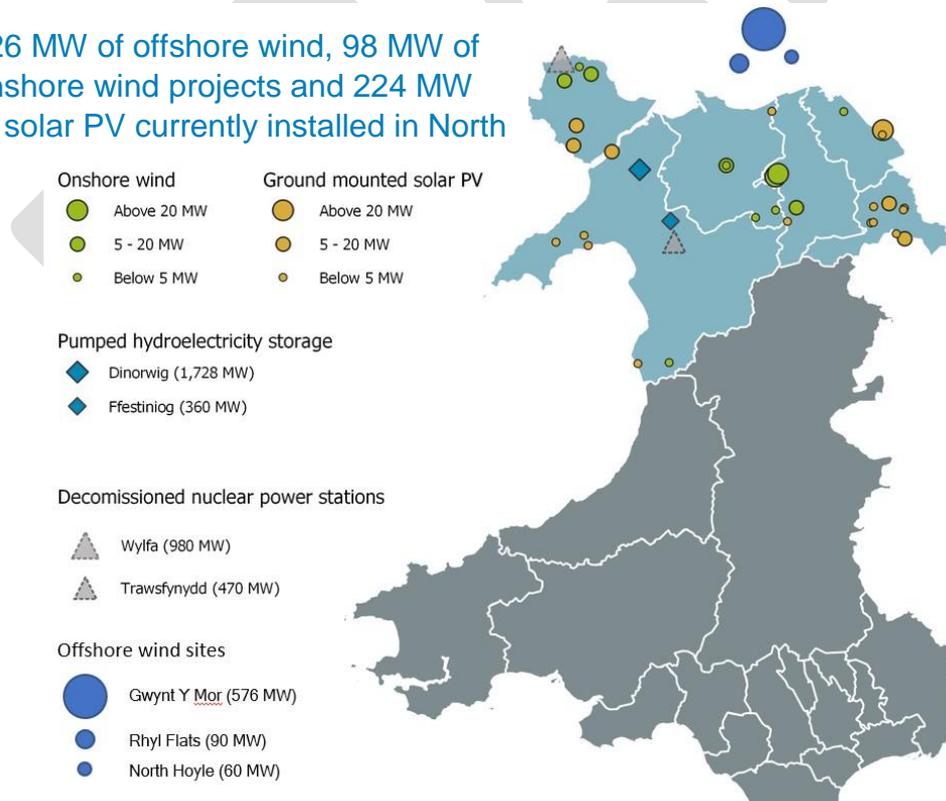


Figure 22: Offshore wind, solar PV and onshore wind projects (>1MW) currently generating in Wales. Source: BEIS Renewable Energy Planning Database, 2019

There is a total of 1,183 MW of installed renewable electricity capacity in the region, with 95 MW locally owned²³.

Renewable electricity generation in North Wales is dominated by offshore wind, which makes up 72% of generation and 61% of capacity. Solar PV has a relatively high installed capacity with 224 MW, but, due to a lower capacity factor, provides around 7% of renewable energy generation in the region.

The Gwynt Y Mor offshore wind farm commissioned in 2015, more than doubled the region's renewable generation capacity

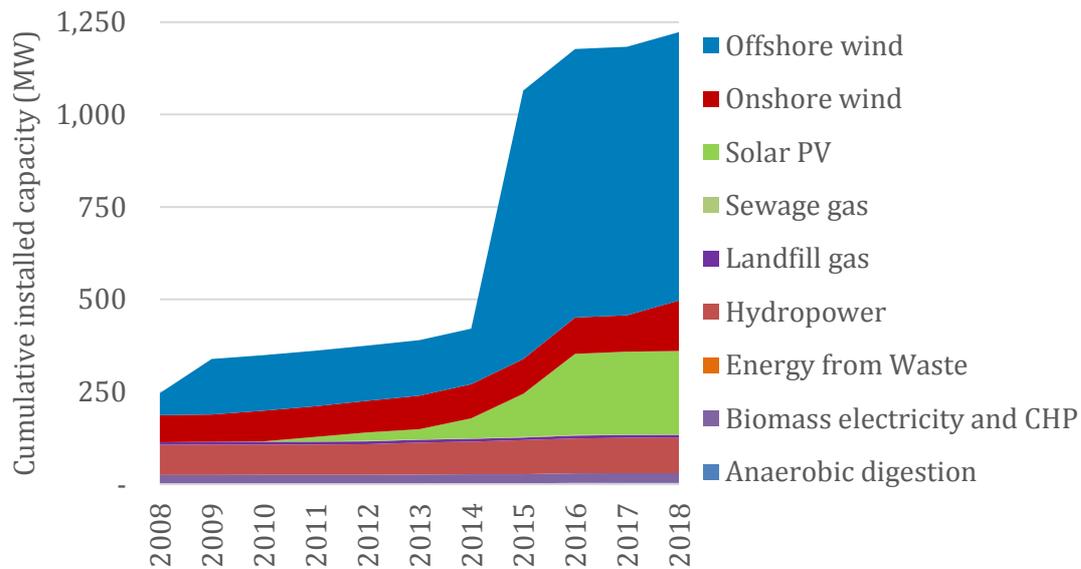


Figure 23: North Wales' renewable electricity generation trends 2008-2018. Source: WGES analysis, Energy Generation in Wales 2018

²³ Welsh Government: Energy Generation in Wales, 2017

North Wales currently hosts over a third of Wales' renewable energy capacity, largely due to 726 MW of offshore wind capacity.

North Wales hosts all of the current Welsh offshore wind capacity

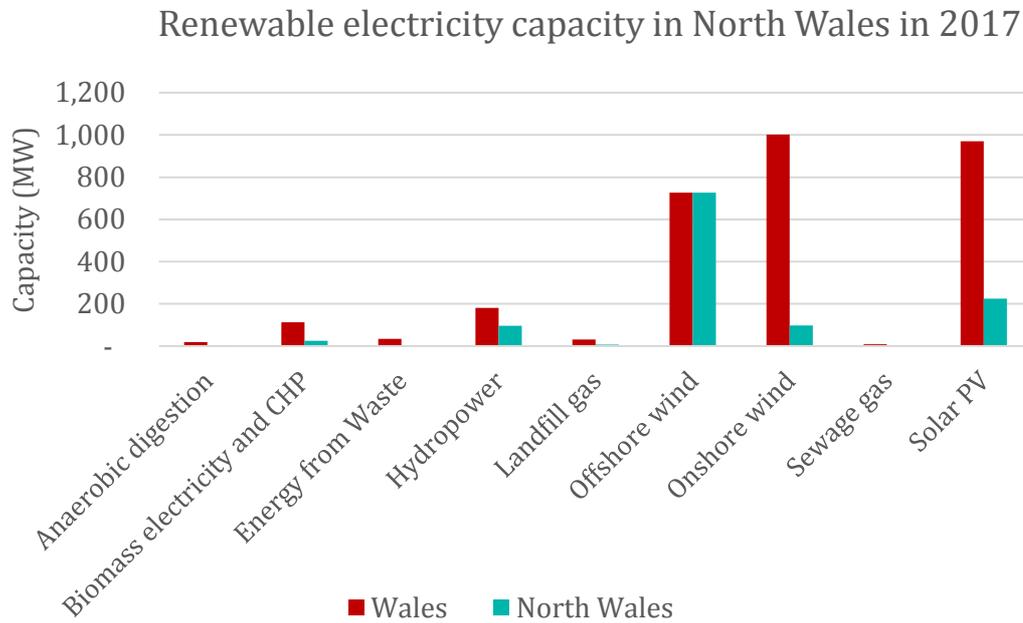


Figure 24: Renewable electricity capacity in North Wales region, 2017. Source: WGES analysis, Energy Generation in Wales 2018

North Wales currently generates the equivalent of 82% of its electricity consumption from local renewable sources

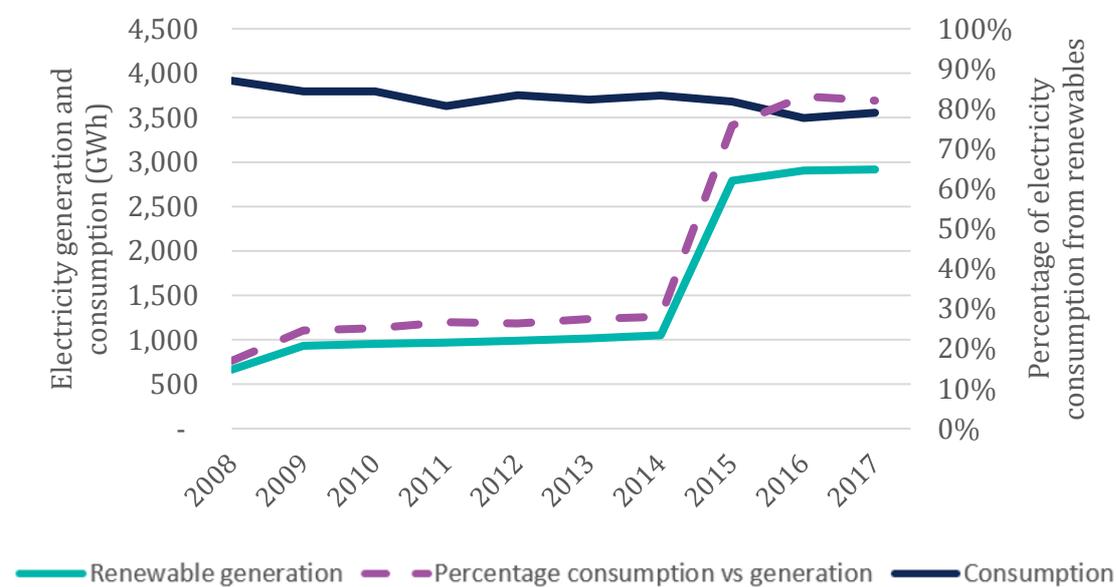


Figure 25: Percentage of electricity consumption from renewables in North Wales. Source: WGES analysis, Energy Generation in Wales 2018

Energy Vision scenario: electricity generation

Box 3: A note on grid carbon factors

Achieving net zero carbon emissions across the UK requires the decarbonisation of the electricity grid. In line with industry best practice, the modelling for the Energy Vision scenario applies the UK grid carbon factor to electricity consumed in the region, rather than creating a regional factor based on electricity generated locally.

To be on track for net zero, the Energy Vision scenario assumes that an average UK grid carbon factor of 30 gCO₂/kWh has been achieved by 2035, in line with the assumptions used by National Grid's 2019 Future Energy Scenarios. In order to achieve this level of grid decarbonisation, National Grid's Community Renewables and Two Degrees scenarios require a net increase of 68 and 74 GW of low carbon electricity capacity respectively, across the UK by 2035. North Wales has the natural resources and the ambition to play a significant role in delivering renewable energy deployment.

Stakeholders engaged throughout the development of this strategy were keen that the region becomes a significant net exporter of renewable electricity. This reflects high ambition in the region and also a desire for the energy sector to contribute to the region's wellbeing including in terms of jobs. The Energy Vision scenario developed is based on the region generating around four and a half times the renewable electricity it consumes. This figure has been arrived at by balancing the region's ambition against the available resources, investment requirement and potential grid capacity. Potential benefits to the region in addition to supporting decarbonisation would include investment opportunities, job creation, supply chain stimulation and community benefit funds. If projects are developed by or invested in by the public and community sector there are additional potential economic and social benefits that could result, enabling the region to retain a higher proportion of the value created.

To enable North Wales to meet 450% of its 2035 electricity consumption from local renewables requires a significant increase in generation

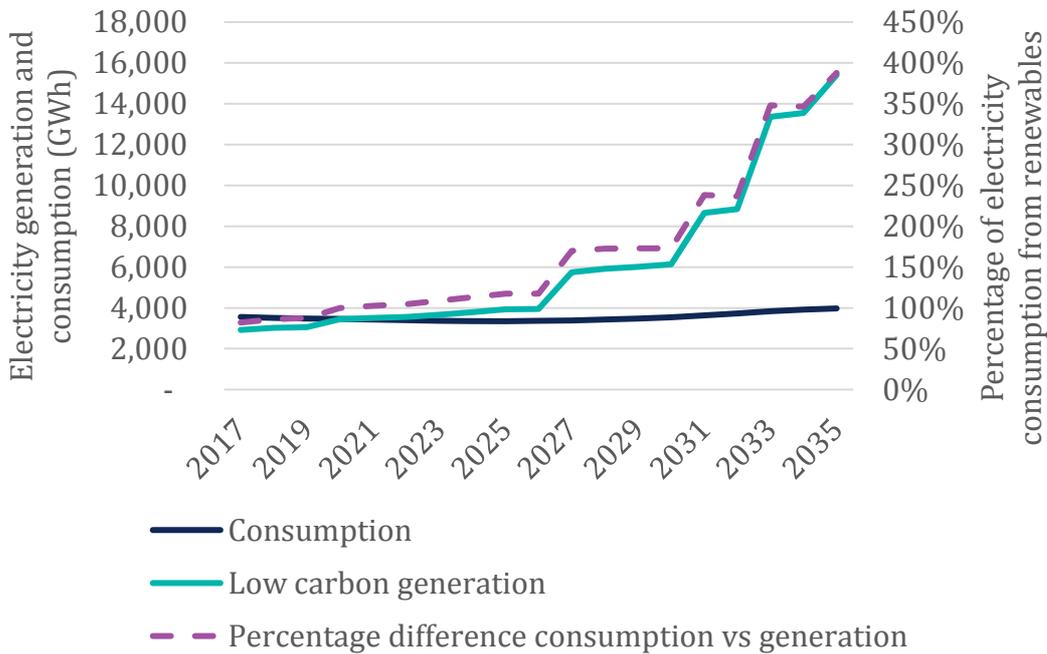


Figure 26: North Wales' Energy Vision scenario low carbon electricity consumption vs generation. Source: WGES analysis

Figure 27 shows one pathway to achieving this level of electricity generation in the region. The modelling produced two sensitivities: a high offshore sensitivity and a high onshore sensitivity. Feedback from stakeholders in the region strongly favoured the high offshore sensitivity. If the proposed marine and offshore wind projects are not developed, further onshore renewable development would be needed to result in the same renewable generation outcome.

Offshore wind is the technology likely to provide the majority of the capacity increase needed to deliver North Wales' Energy Vision scenario

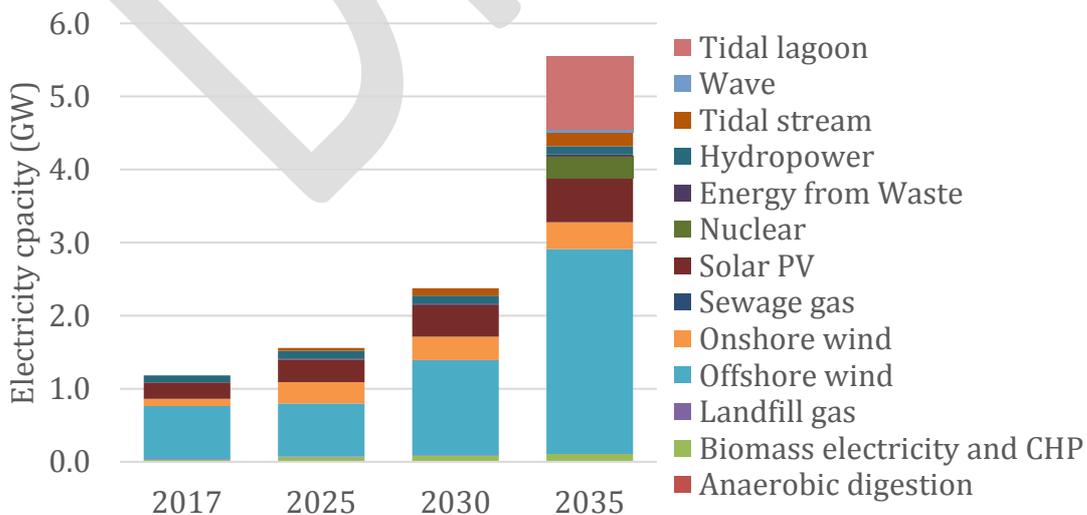


Figure 27: Low carbon energy capacity increases under North Wales' Energy Vision scenario. Source: WGES analysis

Offshore wind

There is currently 726 MW of offshore wind connected to the North Wales' coastline. The Energy Vision scenario includes a 576 MW increase in offshore wind capacity in the late 2020s as a result of a proposed extension to Gywnt Y Mor.

In addition, The Crown Estate's proposed new projects under Round 4 include sites off the coast of North Wales that could connect in the 2030s. The Carbon Trust's 2018 report for the Welsh Government on the Future Potential for Offshore Wind in Wales estimates the opportunity for 1-3 GW of new offshore wind from the 4th leasing round in North Wales' waters. However, part of the area that contributes to this estimation has not proceeded to the bidding stage. Therefore, the Energy Vision scenario contains an ambition to develop 1.5 GW of offshore wind within the Crown Estate's 4th leasing round. Whether or not sites progress in this area will depend on the outcome of the 4th leasing round, followed by investable sites being developed and obtaining planning permission.

No assumptions have been made regarding what portion of the 1.5GW of offshore wind is floating or fixed. However, it is worth noting that Wales is taking a leading role in bringing floating wind technology to commercial readiness, thanks to the 90-180 MW Pembrokeshire Demonstration Zone, which is aiming to commission floating wind starting from 2024.

Significant new offshore wind capacity could be developed under the Energy Vision scenario within existing and upcoming Crown Estate allocations

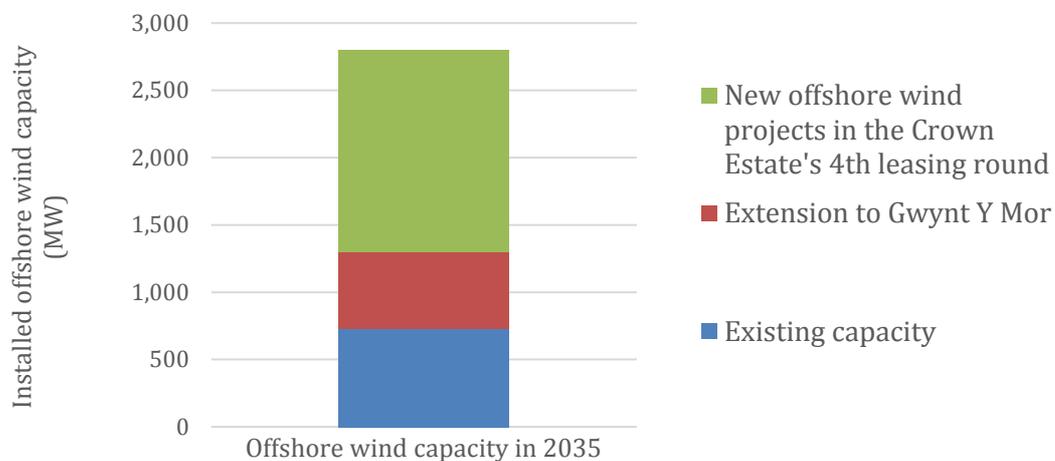


Figure 28: North Wales' Energy Vision scenario for offshore wind. Source: WGES analysis

Onshore wind

The Energy Vision scenario includes an increase in onshore wind capacity of 213 MW. This increase is made up of projects currently in development, new projects in the existing Strategic Search Area (SSA), a potential extension to the SSA and an area designated by the proposed National Development Framework²⁴, and a number of small-scale projects.

Energy Vision onshore wind development

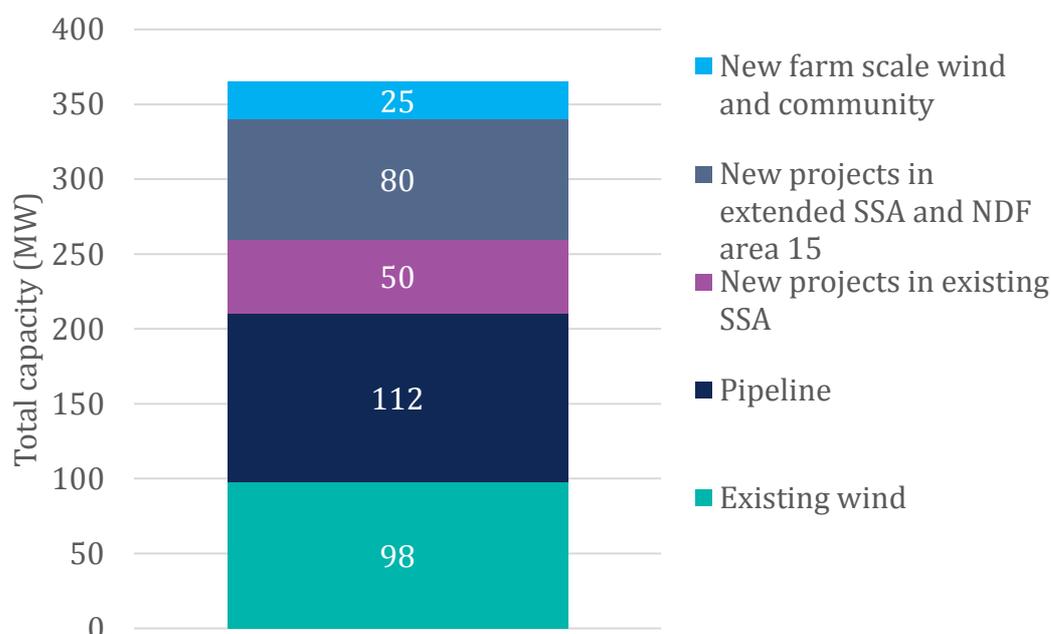


Figure 29: North Wales' Energy Vision scenario for onshore wind. Source: WGES analysis

Nuclear

The scenario includes the development of small modular reactor on the site of the former nuclear power station at Trawsfynydd. Small modular reactors at Trawsfynydd could make use of existing grid capacity and other site infrastructure, in addition to making use of the existing skill base in the region.

Plans for a large-scale power station at Wylfa have been suspended, having been unsuccessful in reaching a suitable financing model following negotiations between Horizon Nuclear Power, Hitachi and UK government.

The process for securing a Development Consent Order for the project is continuing and following a Covid 19 related delay, a likely decision on the project is expected in September 2020.

The publication of the UK Government's Energy White Paper and conclusion of its Regulated Asset Base model consultation are likely to influence any future financing models. However, Horizon and Welsh Government continue to liaise with UK Government on securing a decision as soon as possible.

²⁴ At the time of the analysis, the NDF consultation area 15 related to North Wales, however the area numbers are subject to change as a result of the responses to the consultation.

Figure 30 shows the additional generation that could be achieved if a 3 GW Wylfa Newydd reactor is developed.

A 3 GW reactor at Wylfa would add significantly to North Wales' low carbon generation capacity

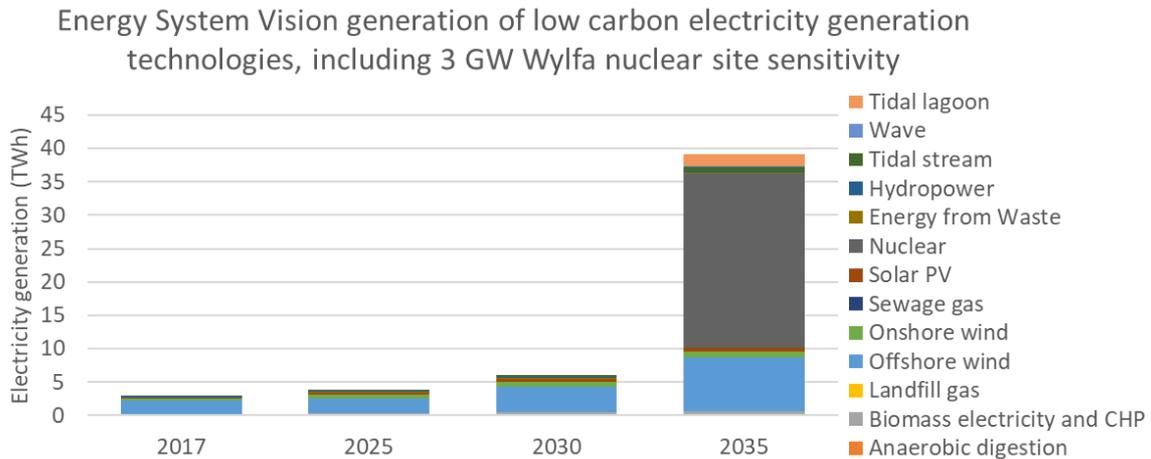


Figure 30: Low carbon energy capacity increases including Wylfa Newydd under North Wales' Energy Vision scenario. Source: WGES analysis

Marine

The North Wales coastline has significant opportunities and resources for wave, tidal stream and tidal lagoon technologies. A priority for the region has been to maximise opportunities for offshore and marine renewables, supported by Marine Energy Wales. For example, North Wales hosts a marine energy demonstration zone, the Morlais Demonstration Zone, and the Anglesey Enterprise Zone²⁵.

There are early-stage plans to develop a tidal lagoon in Colwyn Bay, which adds 1 GW of renewable capacity to the Energy Vision scenario²⁶. In addition to the tidal lagoon, the Energy Vision scenario sees the development of 180 MW of tidal stream generation capacity within the Morlais Demonstration Zone, previously known as the West Anglesey Tidal Demonstration Zone. This site has good tidal resources, a 45-year lease from the Crown Estate, and good access to the electricity grid.

²⁵ Marine Energy Wales Brochure, 2018

²⁶ It's worth noting that after the modelling was undertaken, plans for the Mostyn Tidal Lagoon (128 MW) were unveiled. Due to timing, this lagoon does not feature in any of the modelling.

Morlais Demonstration Zone



Figure 31: Morlais Demonstration Zone off the coast of the Isle of Anglesey

Other renewables

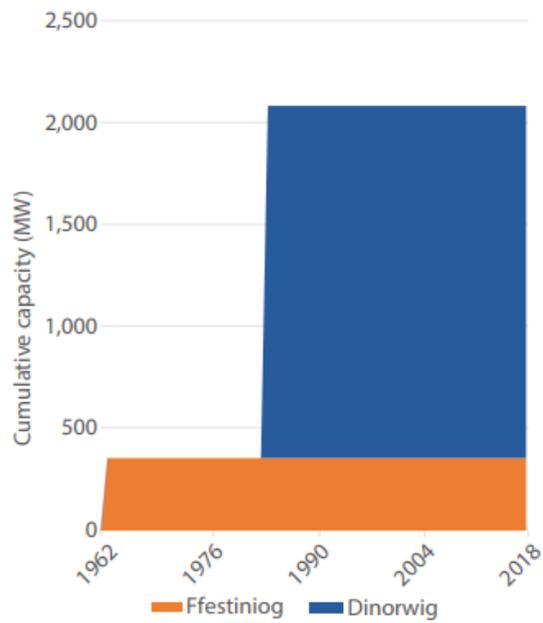
The Energy Vision scenario also includes increases in the deployment of ground-mounted solar PV, anaerobic digestion (including biomethane-producing sites), biomass electricity/CHP and hydropower. Each of these technologies could have a small but significant impact on local renewable energy generation with associated economic benefits.

Storage and flexibility

No large-scale batteries have been installed to date in North Wales; however, North Wales hosts two pumped hydropower sites totalling 2,088 MW capacity. Pumped hydropower is an essential part of the UK's electricity network and has been a feature of the North Wales energy landscape since the 1960s. The Dinorwig power station runs on a Short-Term Operating Reserve (STOR) contract to meet rapid changes in electricity demands, while the Ffestiniog storage plant is used primarily to meet peak loads.

Further deployment of electricity storage, alongside flexibility such as demand side response provision or the creation of local energy markets, could support the decarbonisation of energy generation in North Wales by enabling more renewables to connect to the network in constrained areas and supporting the business case for investing in renewables.

Deployment of pumped hydropower storage over time



Geographic distribution of hydropower storage

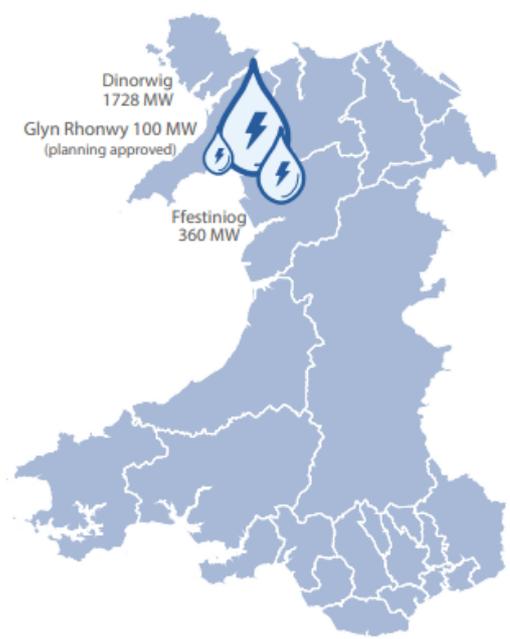


Figure 32: Pumped hydropower storage in North Wales. Source: Energy Generation in Wales, 2018

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Table 5: Scenario summary: electricity generation

Sector	Example outcomes Energy Vision scenario	Energy prize	Carbon saving potential
Renewable generation	Over 2.8 GW of offshore wind 1 GW tidal lagoon 300 MW of small scale modular nuclear reactors 180 MW of tidal stream 310 MW of onshore wind	Generating the equivalent of over 388% of electricity consumption in 2035	Significant contribution towards reduction in UK grid carbon factor

Future progress

Potential Business as Usual and Energy Vision decarbonisation trajectories in North Wales

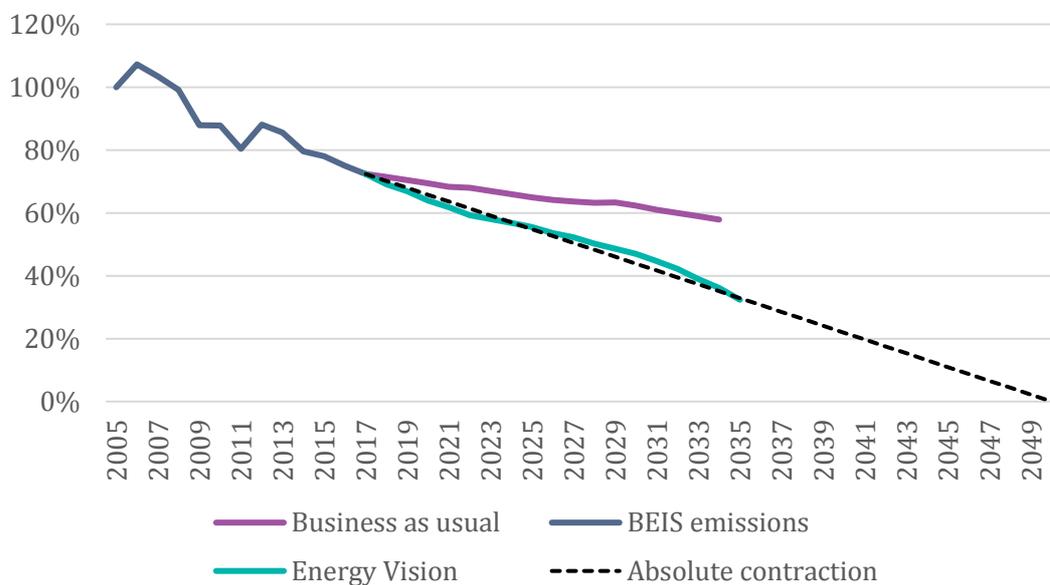


Figure 33: Decarbonisation trajectories in North Wales. Source: WGES analysis

Under a Business as Usual scenario, North Wales is expected to achieve only 22% decarbonisation by 2035, approximately half of the 55% needed to be on track for net zero. Delivering the Energy System Vision scenario represents a very significant step

up from a Business as Usual scenario and will only happen with significant local, regional and national commitment.

The scale of the challenge identified through the Energy Vision scenario

The Energy Vision scenario is to 2035 and focuses on known, deployable technology and behavioural change. Based on National Grid's 2019 Future Energy Scenarios²⁷ and the Committee on Climate Change²⁸, the scenario prioritises “clear, urgent, no regrets” actions. The modelling sets out the following key challenges to be achieved by 2035:

- Domestic: how can North Wales achieve deep energy efficiency retrofits on almost all of its worst performing stock, support energy efficiency measures in the remaining stock and install renewable heat technologies in 67,000 homes?
- Non-domestic: how can North Wales reduce energy demand from its commercial and industrial organisations by 16%?
- Transport: how can North Wales ramp up the rate of electric vehicle sales, install around 2,000 public EV chargers and invest in electrified public transport and low carbon HGV fuelling networks?
- Renewable electricity generation: how can North Wales support the deployment of further offshore wind and the development of small modular reactors?

Post-2035 challenges and innovation

Beyond 2035, and to achieve net zero, further decarbonisation of all aspects of the energy system will be required. In some cases, this further decarbonisation is dependent on innovation, national policy and/or overcoming significant challenges. The following challenges were raised through the stakeholder survey and workshops

Domestic decarbonisation

- What is the future role of the gas network and transition technologies such as hybrid heat pumps post-2035?

Non-domestic decarbonisation

- How can North Wales support the role for hydrogen in industrial clusters?
- Where would low carbon hydrogen be sourced from and what is the role of the HyNet North West project?
- What is the role for carbon capture and storage technologies in supporting the decarbonisation of heavy industry?

²⁷ National Grid (2019) *Future Energy Scenarios*, <http://fes.nationalgrid.com/media/1409/fes-2019.pdf>

²⁸ Committee on Climate Change (2019) 2019 Progress Report to Parliament

<https://www.theccc.org.uk/publication/reducing-uk-emissions-2019-progress-report-to-parliament/>

Transport

- How can North Wales go further in reducing its per capita road miles and support a shift to greater use of public transport?

Low carbon generation

- How can the region work together to overcome network infrastructure issues?
- Is there a role for large-scale nuclear in the region in the longer term?

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The future of energy and our economy

Economic assessment

Introduction

The changes required to develop a decarbonised future energy system have impacts that reach beyond reducing carbon emissions. Changing the technologies that we use to heat our homes, generate our electricity, and produce our energy will also affect the economic landscape. Examples of these effects include changes:

- in the geographic distribution of jobs as energy becomes less centralised,
- in the job intensity required to produce electricity because this is unique to each generation technology,
- in how expensive new technologies are to install, construct, and operate, and
- in how cash circulates around local economies as a result of these changes.

We have built on the scenario modelling described in the previous chapter to try to better understand the impact on net job creation and gross value added. Additionally, we have estimated the level of investment required to achieve the scenarios. The impacts that we consider; job creation, gross value added, and investment required, are just some of the economic impacts related to the energy transition. Other impacts, such as the impact on the cost of energy prices are not included in analysis. Where possible, we have sought to estimate the specific changes to the North Wales economy.

Approach

We have used an indicator-based approach to estimate job creation, gross value added, and investment. This involves using literature reviews to identify the most appropriate estimates such as jobs/MW, or GVA/employee. Subsequently, these indicators are applied to the results of the energy modelling and allow us to estimate the economic impact of changes in electricity generation, energy efficiency, and domestic heating. A technical annex that accompanies this report provides additional detail on the calculations and sources used in our analysis.

In practice, this approach has an important limitation in relation to low carbon heating. There is significantly less data available to assess the number of jobs associated with the transition to low carbon heating than electricity generation or energy efficiency. This means that the low carbon heating jobs are not comparable with the electricity generation or energy efficiency jobs. We discuss this in more detail in the low carbon heating section below.

In terms of scope, the economic impact in terms of jobs, GVA and investment has not been calculated in relation to two sectors in the energy modelling: 1) transport and 2) commercial and industrial energy efficiency. The transport sector was excluded because the production and employment benefits associated with EV manufacture will not be strongly influenced by the speed of customer switching to EVs in the same region. It is also frequently assumed that there will be no net change in jobs from the transition to EV manufacturing and assembly. Commercial and industrial energy efficiency has not been assessed because the energy modelling inputs do not allow

us to identify energy efficiency impacts from other factors influencing energy demand change, such as the macroeconomic assumptions underpinning the future energy scenarios.

Finally, it is important to provide clarity on the definition of the term “jobs” within the context of this analysis and how this applies to each technology area. Political and media commentary on “jobs” often refers to gross jobs, which are the direct jobs related to a specific project or intervention. In examining the economic impact of the energy transition the accepted standard is to calculate net jobs – this considers the net impact of the job gains alongside the job losses associated with transitioning from one technology to another. Where data sources have made this possible, we have sought to present jobs estimates in net terms, in line with this best practice. We also define jobs in terms of Full Time Equivalents (FTE) wherever data allows.

Additionally, there is a difference between direct, indirect and induced jobs. In an energy context, direct jobs are typically associated with the manufacture, construction and installation of equipment. Indirect jobs arise in the supply chain of the energy technology. Induced jobs related to jobs generated as a result of spending incomes earned from direct employment. Figure below visualises these concepts.

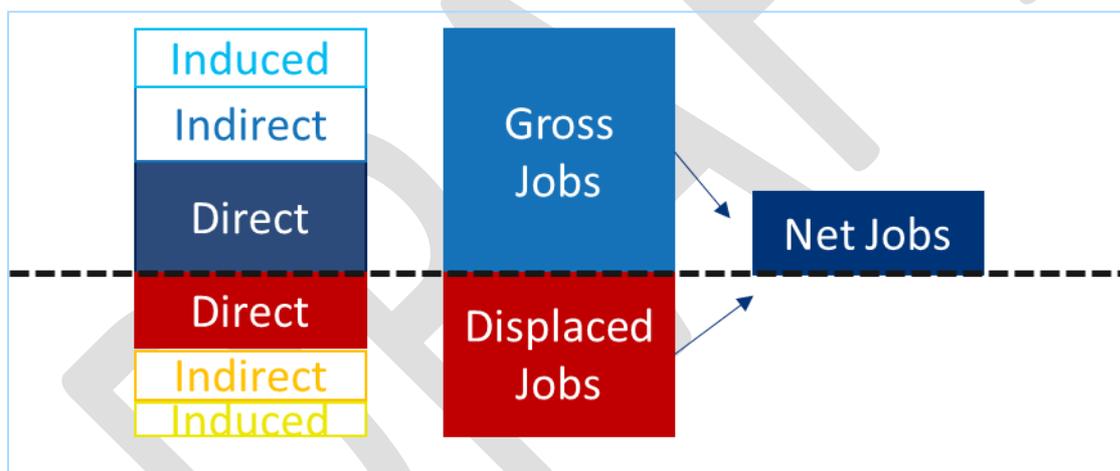


Figure 34. Shows the relationship between gross, displaced, and net jobs. Indirect direct and induced jobs are also shown. Indirect and induced jobs have not been filled with colour because these jobs are not taken into account in this analysis.²⁹

Throughout this analysis we only calculate direct jobs, as depending on the area of decarbonisation, these are more likely to be local jobs than indirect or induced jobs. However, the analysis does not allow us to comment on the exact location of the job estimates. Some jobs are likely to be held by residents of *North Wales*; other jobs may be held by those who travel into the region to perform their roles.

²⁹ Adapted from UKERC. 2014. Low carbon jobs: The evidence from net job creation from policy support for energy efficiency and renewable energy.

Electricity generation

The results from assessing the economic impact related to the change in energy generation technologies estimate that achieving the energy system vision scenario will require nearly £750 million of additional investment, equivalent to approximately £50 million per year, compared against the business as usual scenario. This spending will be made by a wide range of parties including businesses (and their investors), households as well as local and national government. The energy system vision scenario will also create an estimated 7,400 additional annual jobs and contribute nearly £850 million more in GVA than the business as usual scenario between 2020 and 2035. The location of these additional jobs is an important question and a difficult one to answer with a precise number. Construction, operation and maintenance jobs will occur locally – however manufacturing jobs may occur inside or outside of the region. Likewise, persons could travel into the region to provide operational support while being based elsewhere. Ultimately, a portion of the jobs figures presented are likely to be located within North Wales however other jobs will be held by persons resident outside of the region. In order to help the region benefit from jobs associated with future local electricity generation it will be important to first understand the reason why operation and maintenance jobs may be located outside of the region in order to develop a policy response.

summarises the additional investment, jobs, and GVA associated with the Energy System Vision (ESV) scenario.

Table 6 summarises the estimated economic impact of the business as usual and the energy system vision scenarios. The figures shown in the table represent the total value from all years from 2020 through to 2035. Similarly, **Table 7** summarises the additional investment, jobs, and GVA associated with the Energy System Vision (ESV) scenario.

Table 6. BAU and ESV economic impact 2020- 2035³⁰

Scenario	Gross Jobs including losses*	Discounted GVA	Discounted Investment
Business as usual (BAU)	46,600	£ 5.9b	£1.1b
Energy system vision (ESV)	64,400	£ 7.8b	£10.4b
<p><i>*Gross and annual job figures have been calculated based on UK or international direct job intensity indicators per technology. These full time equivalent indicators include both short term (construction) and long term (operations and maintenance) jobs. However, short term jobs are weighted against the lifetime of the plant. Non-manufacturing direct electricity generation jobs are typically more likely to be held by residents local to an energy site. The experience of Wales to date is that many of the long term operational and maintenance jobs associated with these technologies are held by persons outside of the region who travel into Wales to perform their duties.</i></p>			

³⁰ A discount rate of 3.5% is applied to calculate investment and GVA over the 2020 – 2035 time period.

Table 7. Difference between the ESV and BAU scenarios 2020-2035³¹

Scenario	Net Jobs	Discounted GVA	Discounted Investment
Difference between ESV and BAU	17,700	£1.9b	£9.2b
Difference between ESV and BAU (percentage)	+38%	+34%	+824%

Investment

In terms of investment, the energy system vision scenario requires substantial additional investment, largely associated with the amount of new electricity generation included in the scenario, as well as the specific technologies involved. Two areas of greater uncertainty in the estimated investment are worth noting. First, the energy system vision scenario includes 1 GW of tidal lagoon capacity in 2035. Tidal lagoon costs represent £3 billion of the energy system vision costs, representing 30% of the total energy system investment, the second largest additional investment compared to the business as usual. It should be noted that the capital and development cost estimates for tidal lagoon are more uncertain than for other technologies because there is less cost data available. This is due to the fact that no tidal lagoon powerplants have been developed in the UK. The second area with more uncertainty revolves around the investment required with small modular nuclear reactor development which is the third largest ESV investment area by technology, accounting for ~£1.3 billion of investment or 13% of the ESV investment costs. Traditional nuclear costs/MW have been used to estimate the investment associated with nuclear technology. Small Modular Nuclear reactors are a nascent technology with less well defined cost data available. The economic assessment shows that Offshore wind requires the largest additional investment to achieve the energy system vision ahead of the tidal lagoon and small modular nuclear reactor. Figure 35 shows the breakdown of the additional estimated investment required by technology area to achieve the energy system vision scenario compared with the business as usual scenario.

³¹ A discount rate of 3.5% is applied to calculate investment and GVA over the 2020 – 2035 time period.

Where ESV Investment occurs beyond the BAU scenario by technology

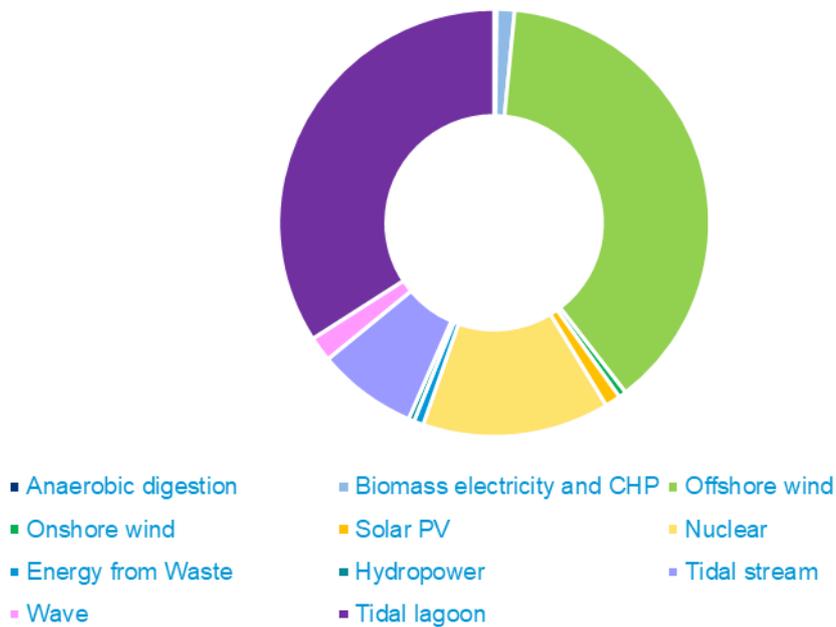


Figure 35. Where ESV Investment occurs beyond the BAU scenario by technology

Jobs

The jobs figures presented in table 6 include both the jobs associated with increases in capacity and output from some generation technologies (for example offshore wind) as well as the fact that some jobs will be lost as the capacity and output from fossil-fuel based generation technologies falls.

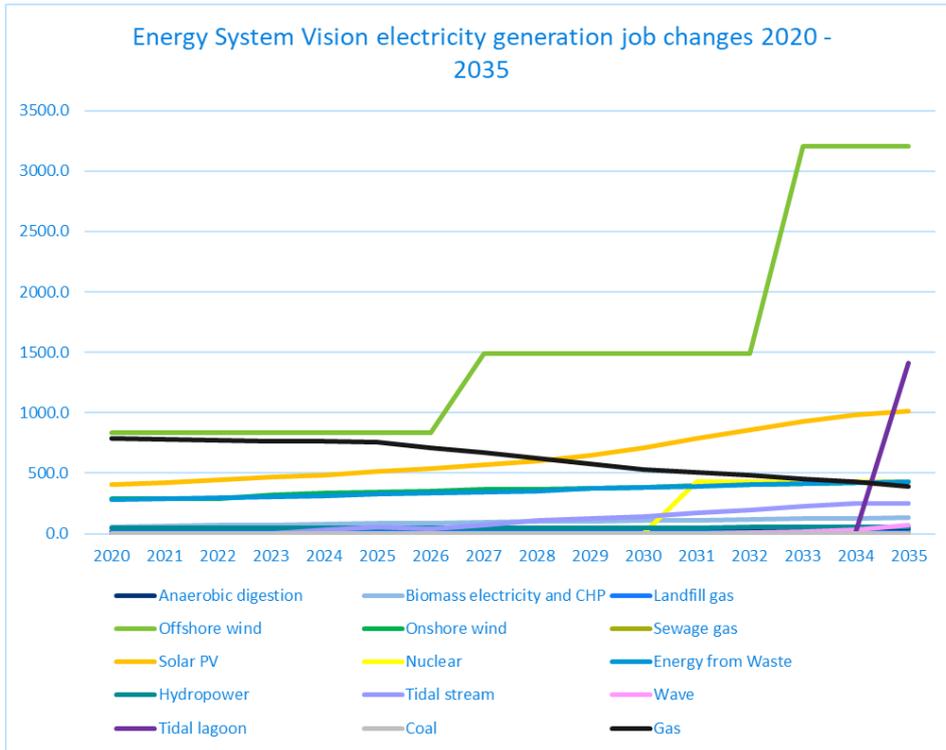


Figure 36. ESV Gross Jobs including job losses

It is estimated that in the energy system vision scenario electricity generation is responsible for 64,407 direct gross jobs from 2020 to 2035.

Figure 37 looks at which technologies in the energy vision scenario supports additional jobs in comparison with the business as usual scenario. The difference between the two scenarios (known as net jobs) represents the net additional jobs supported by the energy system vision in comparison with the business as usual. Onshore represents that largest difference in jobs between the two scenarios, followed by solar PV and nuclear.

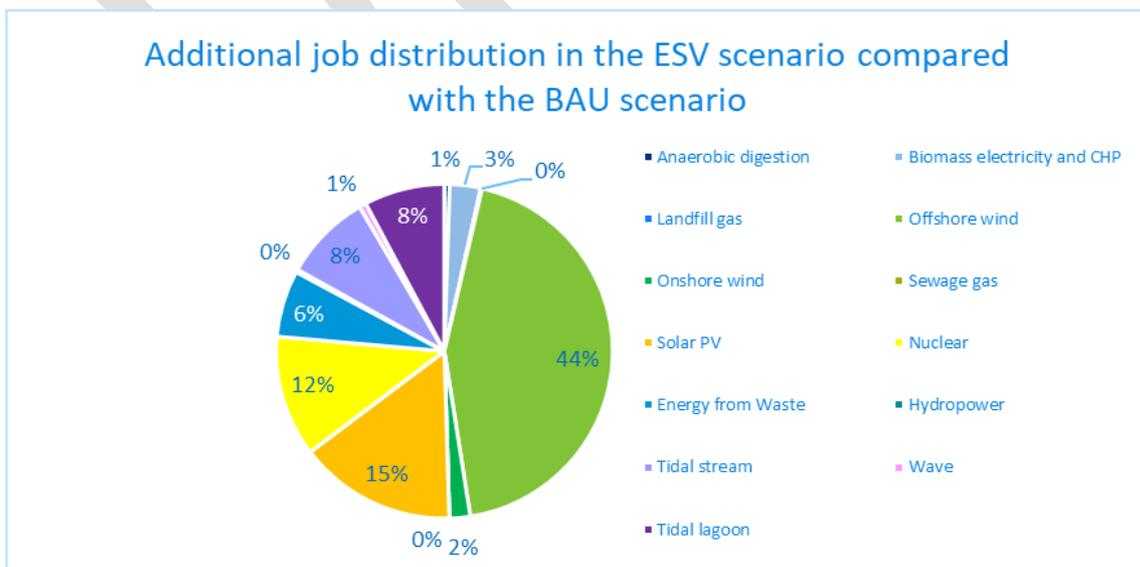


Figure 37: Additional Job distribution in the ESV scenario compared with the BAU scenario

Domestic energy efficiency

As with electricity generation, the increases in domestic energy efficiency associated with the Energy System Vision scenario relative to the BAU scenario require more investment, support more jobs, and lead to an enhanced contribution to GVA. This reflects that the energy system vision sees a more dramatic shift in the number of homes achieving higher EPC ratings and the larger number of energy efficiency improvements needed to achieve this outcome. These figures are presented in Table 8.

Table 8 shows that the energy system vision requires approximately 1.45 times the investment and jobs compared with the business as usual scenario. Additionally, it supports approximately 1.45 times the GVA associated with the business as usual scenario.

Table 8. Domestic Energy Efficiency additional economic impact of the ESV scenario compared with the BAU scenario from 2020 -2035³²

Scenario	Net jobs	Discounted GVA	Discounted Investment
Business as usual (BAU)	14,800	£880b	£3.1b
Energy system vision (ESV)	21,500	£1.3b	£4.5b
Difference between ESV and BAU	6,600	£397m	£1.4b
Difference between ESV and BAU (percentage)	45%	45%	45%
* Figures are rounded.			
** Net jobs figures do not include estimations of operation and maintenance jobs associated with the energy efficiency improvements.			

Investment

The majority of investment required to install the energy efficiency measures described by the BAU and ESV scenarios is related to insulation measures. The investment requirements can be seen in figure 38.

³² A 3.5% discount rate was applied to calculate the GVA and Investment over the 2020 – 2035 time period.

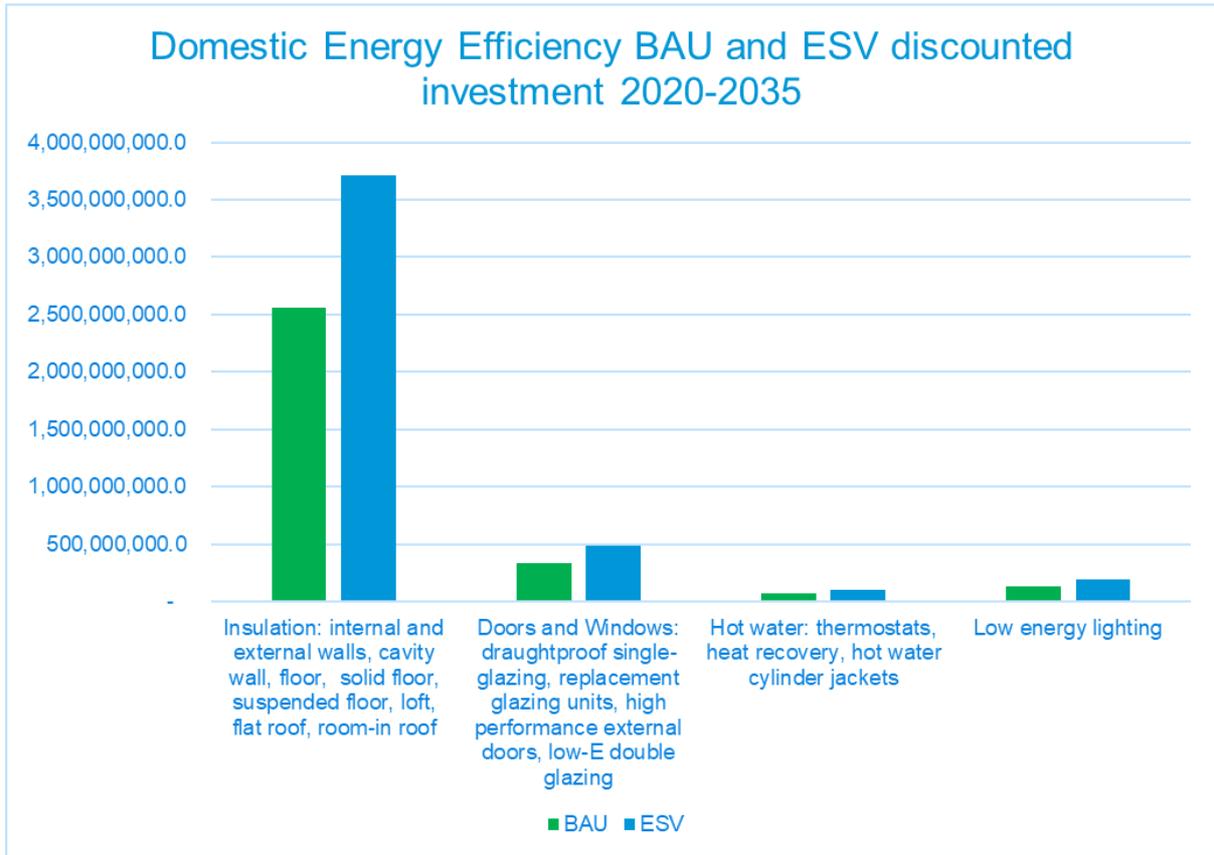


Figure 278. BAU and energy efficiency Investment requirements 2020- 2035

Jobs

Approximately 6,700 additional net jobs are related to the energy system vision scenario in comparison with the business as usual scenario between 2020 and 2035. These are net direct jobs and take account of the fact that energy efficiency requires additional jobs to deliver and install the relevant technologies, but could also reduce jobs associated with the reduced need for energy production and supply. Like electricity generation, some energy efficiency jobs may be held by those residing in the region and other jobs may be held by people who travel into the region to perform these jobs.

The majority (51%) of the additional jobs in the ESV scenario relate to installation of 50 mm internal or external wall insulation, 17% of jobs relating to floor insulation and 6% of jobs relate to the replacement of single glazed windows with low-E double glazing. Figure 39 below show the estimated jobs required to implement the energy efficiency measures that relate to the EPC shift in the BAU and ESV scenarios.

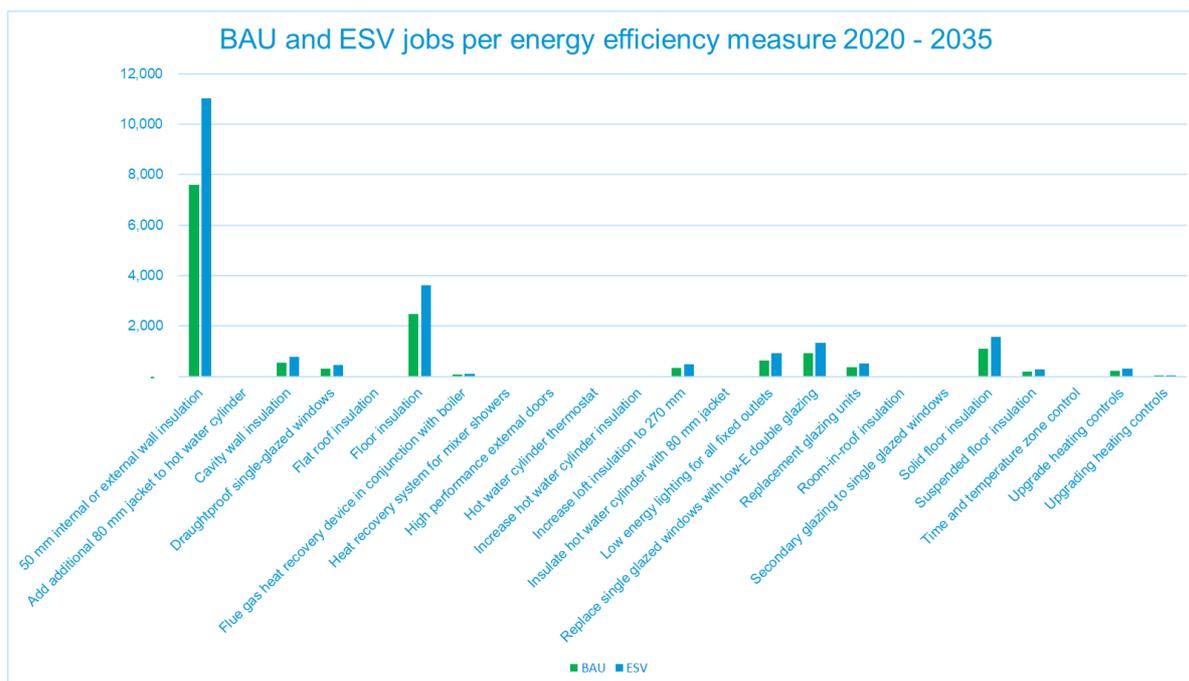


Figure 3928. Net BAU and ESV jobs per energy efficiency measure 2020 – 2035.

Domestic heat

The more intensive switch to low carbon heating in the energy system vision scenario requires additional investment, which increases the GVA associated with these activities. The GVA associated with heating technologies is 298% greater than the BAU while the energy system vision scenario requires nearly triple the level of investment compared with the business as usual scenario. The ESV scenario also requires more jobs related to low carbon heating. However, a lack of data on jobs associated with traditional heating technologies means a comprehensive comparison in the jobs impacts from the switch to low-carbon heating technologies is not possible. Table 9 below summarises the economic impact of both scenarios and also shows the difference between the scenarios. A comparison of the investment required in the BAU scenario and the ESV scenario is presented in figure 40.

Table 9. BAU and ESV economic impact as well the difference between ESV and BAU economic impact 2020-2035³³

Scenario	Gross jobs associated with low carbon heating*	Discounted GVA associated with all heating technologies	Discounted Investment associated with all heating technologies
Business as usual (BAU)	650	£65m	£161m
Energy system vision (ESV)	1,800	£257m	£463m

³³ A 3.5% rate is applied to GVA and investment to calculate these figures over the 2020-2035 time period.

Difference between ESV and BAU	1,216	£192m	£301m
Difference between ESV and BAU (percentage)	+188%	+298%	+187%
*For domestic heat it is difficult to link jobs to the local economy. This is because the jobs calculated are related to the manufacturing of heating technologies and products as well as their installation. A portion of these jobs is likely to be located within North Wales; however other jobs will be held by persons resident outside of the region.			

Investment

Figure 40 reflects that the shift to low carbon heating in the ESV scenario happens faster and at largest scale than the BAU scenario. For example, between 2020 and 2025, the ESV see less investment in gas boilers reflecting a faster shift away from this technology. The most predominant trend is across all year is that a substantial amount of additional investment is required in air source heat pumps. Investment particularly increases from 2028 in relation to air source heat pumps. Additionally, the BAU and ESV scenarios reflect different ground source heat pump installation pathways. The ESV scenario has less ground source heat pump investment from 2026 onward.

Domestic Low Carbon heating investment ESV vs. BAU 2020-2035

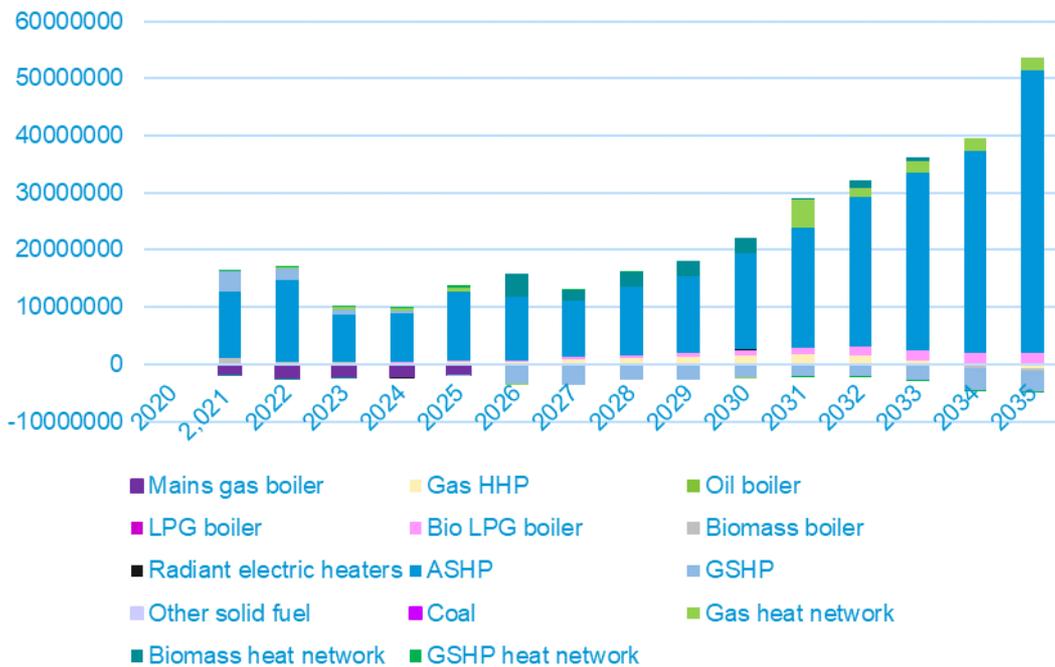


Figure 40. ESV vs. BAU discounted heat investment 2020 – 2035. Discounted at a rate of 3.5%.

Jobs

The job figures calculated for domestic heat differ from those calculated for electricity generation. Fewer studies quantify the jobs related to the installation of heating technologies than for electricity generation technologies. Given the paucity of studies, we use a jobs/£m turnover for non-heat network technologies, like heat pumps and biomass boilers but have to rely on permanent jobs/annual GWh of heat generated for heat networks.

Moreover, due to a lack of available high-quality data, our estimate of jobs related to heating technologies only relates to low carbon heating and does not include changes in jobs associated with the installation of more traditional heating technologies such as gas boilers.

Figure 41 below shows the difference in low carbon heating jobs between the ESV scenario and the BAU scenario. Like with electricity generation and energy efficiency, some of the jobs presented may be held by residents of North Wales while other jobs may be held by those residing outside of the region.

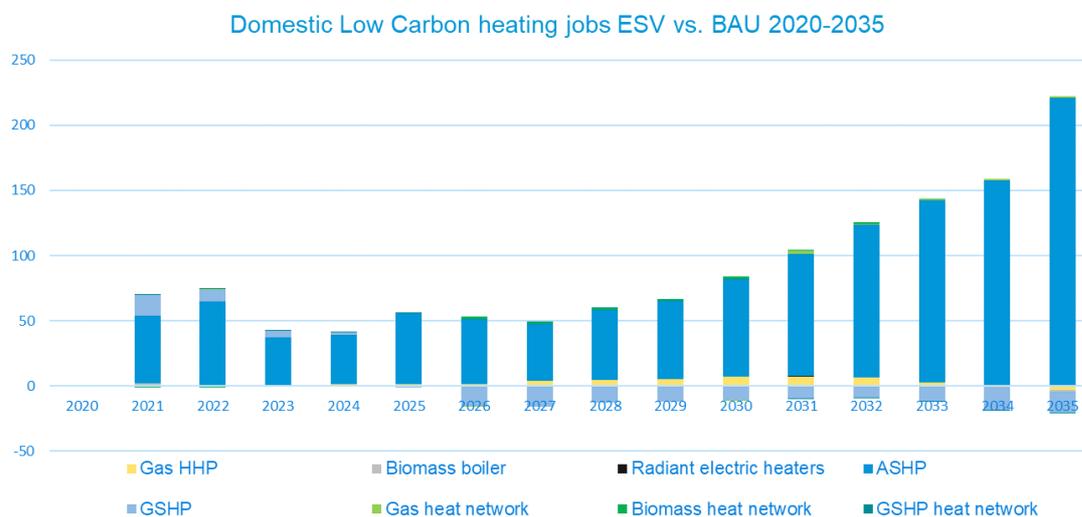


Figure 41. Domestic Low Carbon heating jobs ESV vs. BAU 2020-2035

Summary

Across all technologies, the higher level of effort related to decarbonisation and the energy transition in the energy system vision scenario requires more investment when compared against the business as usual scenario. The economic analysis demonstrates that £10.9 billion of additional investment is needed to achieve the energy efficiency, electricity generation, and heat aspirations described in the energy vision between now and 2035. This represents approximately £732 million per year and will need to be financed from a range of sources including the private sector, households, and national and local government.

In terms of jobs, the ESV scenario is estimated to require an additional 24,400 net jobs to deliver the accelerated deployment of renewable electricity generation technologies and the enhanced levels of energy efficiency. These additional jobs are associated with around £2.4b more GVA (discounted at 3.5% over the period 2020-2035). In

addition, it is estimated that there will be 1,216 more gross jobs associated with the provision of low-carbon heating technologies in the ESV scenario than the BAU scenario, associated with £192m of GVA.

DRAFT

Next Steps

Next Steps

The North Wales Energy Strategy has undertaken several important first steps towards addressing the climate emergency in North Wales. We have developed a collaborative vision for the future energy system in North Wales and defined key priority areas that are essential to achieving that vision. The assessment of current energy sector emissions, has enabled a deeper understanding of the progress that has been made in decarbonisation to date as well as the gap between our current activities and a net zero energy system.

Building on this, the energy modelling demonstrates a potential pathway to 2035 that is consistent with the long term aim of achieving net zero by 2050. This is coupled with an assessment of the economic benefits associated with transforming our energy system in alignment with this trajectory. This will be critical in communicating the benefits of action and demonstrating the potential for far greater local economic benefits than could be achieved by return to business as usual, particularly in the context of a green, economic recovery from the COVID-19 pandemic.

There are three crucial next steps that for the region to take forward, with the support of WGES, in order to transition from a strategy to real world action in the delivery of our North Wales energy system vision:

- 1) **Defining the strategy governance.** North Wales will establish a robust and formal governance structure for the Energy Strategy with support from WGES. This will include defining a structure of cross-sectoral governance, powers, roles and responsibilities for overseeing the implementation of the strategy, and the monitoring and evaluation of its progress. This is essential to coordinate and unlock action, and to ensure momentum going forwards.
- 2) **Communicating and socialising the strategy.** The region with support from WGES will undertake a series of engagement activities to communicate, socialise and build support for the final strategy amongst key political, corporate and community stakeholders throughout North Wales. This activity will help to align a diverse stakeholder group to the North Wales energy vision and raise awareness of insights arising from the analysis and engagement undertaken as part of the strategy development.
- 3) **Establishing an action plan.** We will create a delivery plan for addressing the challenges identified in the energy modelling work, and for defining the processes and actions that could be taken forward to realise the energy system vision. We anticipate that the delivery plan will be a living document that is regularly reviewed and updated, and may be influenced by future local area energy planning or other relevant developments and research.

The energy modelling presented has shown that significant action is required for North Wales to be on track for a net zero future and that we have the tools and technologies to make progress now. The economic assessment confirms that the challenge is large and will require investment from households, businesses, investors, and the public

sector. This challenge is matched with a vision that reflects the values demonstrated by stakeholders throughout the development of this strategy.

DRAFT



REPORT TO THE NORTH WALES ECONOMIC AMBITION BOARD

26 MARCH, 2021

TITLE: *Commercial Principles for the North Wales Growth Deal*

AUTHOR: *Hedd Vaughan-Evans, Operations Manager*

1. PURPOSE OF THE REPORT

- 1.1. To present a set of Commercial Principles that if adopted; would be used by the Portfolio Management Office to negotiate commercial opportunities relating to Growth Deal projects.

2. DECISION SOUGHT

- 2.1. To agree the Commercial Principles as set out in section 5 of the report.
- 2.2. To note that the rationale for adopting a specific commercial position will be clearly set out alongside project business cases for the Board to consider.

3. REASONS FOR THE DECISION

- 3.1. To provide a clear negotiating platform for the Portfolio Management Office.

4. BACKGROUND AND EXISTING COMMITMENTS

- 4.1. The North Wales Economic Ambition Board is committed to maximising the impact of the North Wales Growth Deal on the region. This position was confirmed in the Portfolio Business Case.
- 4.2. The primary driver for all projects within the Growth Deal is to deliver economic and social benefits to North Wales in line with the strategic outcomes set out in the portfolio business case – create 3,400-4,200 net additional jobs, generate £2-2.5bn in net additional GVA and attract a total investment of £1.1bn into the North Wales economy by 2036.
- 4.3. The Growth Deal aims to maximise the direct private sector investment in projects and to maximise the wider private sector leverage enabled through the portfolio.
- 4.4. There is a recognition of the difference between those not-for-profit project sponsors whose objectives are in line with the principles of the Ambition Board and those which operate in commercially and this will be reflected in the application of these principles.
- 4.5. Any return on investment to the North Wales Economic Ambition Board generated through the Growth Deal is to be reinvested within the portfolio.

5. COMMERCIAL PRINCIPLES

- 5.1. The following commercial principles are proposed:

- **Commercial Principle 1 – Sustainability and Re-investment**
 The Portfolio Management Office will seek to secure a return on investment from projects that generate a direct commercial return for project sponsors to enable funding to be recycled and reinvested in the region.
- **Commercial Principle 2 – Subsidy Control (State Aid)**
 The Portfolio Management Office will commission subsidy control (state aid) advice on all projects at the Outline Business Case stage and may result in specific funding models being applied to projects where there are no exceptions applicable e.g. commercial loan rate.
- **Commercial Principle 3 – Reinvestment of financial surplus or profit generated by not-for-profit project sponsors**
 Consideration will be given during negotiation to not pursuing or considering a reduced commercial return from not-for-profit project sponsors, where it can be demonstrated that any direct financial surplus or profit generated through the projects will be reinvested in North Wales in areas that align to the delivery of the Growth Vision, notably economic growth and skills development. This may require specific agreements to be put in place between the NWEAB and the project sponsor to secure this investment.
- **Commercial Principle 4 – Gap funding will be considered where there is a viability or market failure issue**
 Consideration will be given during negotiation to not pursuing a commercial return where the project sponsor or developer can demonstrate that there are viability or market failure issues with the project and that the project would not proceed without gap funding. In such instances, the Portfolio Management Office will weigh the risk of the project not proceeding against any potential return on investment or the timing or criteria for that return.
- **Commercial Principle 5 – Contractual arrangements will protect the North Wales Economic Ambition Board’s long-term interests**
 Contractual arrangements will protect the interest of the North Wales Economic Ambition Board and partners from future changes in ownership or operating models that could reduce the benefit to North Wales.

6. APPLYING THE PRINCIPLES TO PROJECTS

- 6.1. The Portfolio Management Office will lead on negotiations with project sponsors, supported by the Monitoring Officer and external legal support to deliver the best deal for North Wales. These principles will be applied proportionately on a case by case basis for each project.
- 6.2. The rationale for pursuing a specific commercial model will be clearly set out in a report to the North Wales Economic Ambition Board alongside the project business case and will have been challenged by the relevant Programme Board and the Portfolio Board before being recommended to the NWEAB for consideration.
- 6.3. In all cases, the ability to create effective contractual models to achieve and sustain the outputs will be a key consideration in the approach taken.

7. FINANCIAL IMPLICATIONS

- 7.1. There are no direct financial implications from adopting the principles.
- 7.2. Adopting the Commercial Principles will provide a clear negotiating platform for the Portfolio Management Office to seek to maximise the return to North Wales from each project business case.

8. LEGAL IMPLICATIONS

- 8.1. The provision of support to Projects through the mechanism of Growth Deal will involve the completion of a formal legal agreement with the relevant Project Sponsor. That agreement will incorporate the terms of conditions of that funding and may, where appropriated be supported by security for any commitments. The principles set out in the report provide a basis for agreeing the funding conditions for this investment of public funds and, allow for an element of re-cycling and re-investment where supported Projects generate financial profits from public funding. Where that arrangement allows e.g. for an agreed re-investment by the Project Sponsor this will also need to be reflected in the funding agreement so as to ensure that any commitments are defined and delivered.
- 8.2. The provision of Growth Deal Funding is also subject to the law in relation to State Aid or subsidy control law. Whilst this area of law is currently developing following the formal end of the Transition Period in relation to the departure from the European Union it is a key consideration for funding decisions and arrangements. Whilst there are a range of identified exemptions where those cannot be relied upon it is likely to mean that the models for providing support would have to be provided on commercial terms. That assessment remains a key component of the Business Case process.

9. STAFFING IMPLICATIONS

- 9.1. None.

10. IMPACT ON EQUALITIES

- 10.1. None.

11. CONSULTATIONS UNDERTAKEN

- 11.1. The Commercial Principles have been discussed with the Executive Officer Group (Portfolio Board) and were endorsed on 12 March, 2021.

STATUTORY OFFICERS RESPONSE:

i. Monitoring Officer – Host Authority:

“I have had an opportunity to advise on the report. As noted these principles and aims. The detailed work and outputs will derive from the Business Case process and the financing conditions.”

ii. Statutory Finance Officer (the Host Authority’s Section 151 Officer):

“The commercial principles presented here appear to be reasonable, but the nature of the “commercial return” (referred to in “Commercial Principle 1”) is going to depend on the project, and will need to be negotiated and agreed with the individual commercial project sponsors before formalizing it within the relevant financing agreements.”



REPORT TO THE NORTH WALES ECONOMIC AMBITION BOARD
26 MARCH, 2021

TITLE: *North Wales Growth Deal – Procurement Principles*

AUTHOR: *Hedd Vaughan-Evans, Operations Manager*

1. PURPOSE OF THE REPORT

1.1. To present a set of procurement principles for the North Wales Growth Deal.

2. DECISION SOUGHT

2.1. To adopt the proposed procurement principles for the North Wales Growth Deal.

2.2. To note the project sponsors will need to demonstrate how they will deliver against these principles as part of the project business case.

3. REASONS FOR THE DECISION

3.1. To provide a clear framework for projects to deliver against the aspirations of the North Wales Economic Ambition Board.

4. BACKGROUND AND RELEVANT CONSIDERATIONS

4.1. An initial set of draft procurement principles were endorsed by the Board as part of the Portfolio Business Case in October 2020 with the intention of developing a full procurement strategy for the Growth Deal.

4.2. The Portfolio Management Office has reviewed this approach supported by a procurement consultant and is proposing an alternative approach to deliver on our aspirations in this area.

4.3. All projects within the North Wales Growth Deal will be delivered by project sponsors who have their own well-established procurement policies and procedures. The regional projects to be delivered by the Portfolio Management Office can be delivered through the procurement policies and procedures of Gwynedd Council as the host authority.

4.4. The Portfolio Management Office is therefore proposing that the Board adopt the revised set out procurement principles as set out in **Appendix 1**. These principles represent an evolution of those previously adopted by the Board as part of the Portfolio Business Case and are based on recognised public sector procurement principles and align clearly to the Wellbeing of Future Generations Act.

4.5. The revised themes and principles are set out below (see Appendix 1 for further detail):

- **Regional Leadership and strategic approach**
 - Strategic

- Promote & Champion
- Integrity
- **Value Add**
 - Social Value
 - Skills, Jobs & Opportunities
 - Innovative
 - Collaborative
- **Sustainable**
 - Supporting Local Supply Chain
 - Climate & Ecological Change
 - Ethical
 - Efficient & Effective
- **Fair, Legal & Compliant**
 - Compliant
 - Without Conflict
 - Transparent

4.6. The principles above provide a clear focus on sustainability, securing added value through procurement and compliance and best practice.

4.7. It should be noted that while securing best value and value for money are not specifically set out in the principles above, these recognised public procurement objectives will be a key consideration for all projects and their project sponsors. Particularly given that Growth Deal projects will be funded from fixed budgets. Therefore the focus here through these principles is on other areas which may not be as strongly represented in partners existing policies and procedures.

4.8. The principles once adopted would be communicated to all project sponsors who will be required to demonstrate delivery against these principles as part of their project business cases.

5. FINANCIAL IMPLICATIONS

5.1. None.

6. LEGAL IMPLICATIONS

6.1. No direct legal implications. The procurement principles provide a strong focus on compliance. Project Sponsors will be required to demonstrate that their proposed procurement route for projects including their own policies and procedures comply with all relevant procurement regulations.

7. STAFFING IMPLICATIONS

7.1. None.

8. IMPACT ON EQUALITIES

8.1. The procurement principles include a strong focus on adding value through procurement, particularly through the delivery of social value and creating skills and employment opportunities for hard to reach groups and those in areas of deprivation. As a result, it is considered that the principles would have a positive impact on equalities.

8.2. **Well-being of Future Generations (Wales) Act 2015** – The Act places a duty on public bodies in Wales to improve economic, social, environmental and cultural well-being. The principles of the Act have been an integral consideration in the preparation of the Procurement Principles . Their

implementation will ensure that the concept of sustainable development as provided for in the Act will be reflected in procurement processes and outcomes.

9. CONSULTATIONS UNDERTAKEN

- 9.1. The procurement principles were discussed and endorsed by the Executive Support Group (Portfolio Board) on 12 March, 2021.

APPENDICES:

Appendix 1 Proposed Procurement Principles

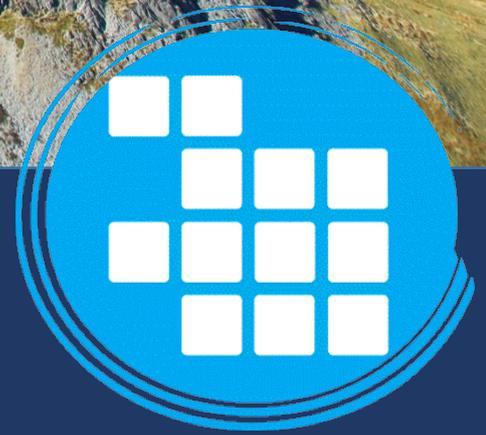
STATUTORY OFFICERS RESPONSE:

i. Monitoring Officer – Host Authority:

“The establishment of principles as to the expectations in procurement processes within the context of the Growth Deal is a positive step. The principles contribute to the establishment of the assessment framework which leads to the identification of the most economically advantageous tender in relation to a specific contract. They are a medium by which the principles and aims of the Ambition Board can be effectively transferred into the expectations on Project Sponsors.”

ii. Statutory Finance Officer (the Host Authority’s Section 151 Officer):

“Whilst there could be marginal financial implications from implementing the proposed procurement principles across all the Growth Deal’s projects, each of those projects must be delivered within their limited resources. Paragraph 4.7 of the report notes the unavoidable context that ‘best value’ and ‘value for money’ must be secured alongside the other aspirational principles set out in paragraph 4.5 and Appendix 1. Members might wish to note the essential need to achieve value for money while adopting the proposed procurement principles.”



NORTH WALES GROWTH DEAL PROCUREMENT PRINCIPLES



1. Introduction

The North Wales Growth Deal is a transformational portfolio of 14 projects delivered across five programmes – digital, low-carbon energy, land and property, innovation in high value manufacturing and agrifood and tourism. The Growth Deal (subject to Final Deal) will see a £240million investment in the North Wales economy from UK Government and Welsh Government which when combined with public and private sector contributions will see an investment programme of approx. £1billion delivered over the 15 year period (2021-2036).

The procurement themes principles set out in this document sets out the aspirations of the North Wales Economic Ambition Board to ensure that sustainable procurement is at the heart of the North Wales Growth Deal and is an enabler to deliver on our aspirations for the region. Procurement is a tool for us to maximise the impact of the Growth Deal projects for all communities across the region. A key focus is to support the region to recover from the COVID 19 pandemic, using the lens of the Well Being of Future Generations Act (Wales) 2015 to design our procurement approaches and way of working.

We are committed to be innovative in our approach to maximise social value working with partners to support building community resilience. Engaging with the contractors/suppliers and supporting supply chains including the key foundational economy, with a clear pipeline of works and two-way engagement that shapes the approaches we can take collectively to support economic, social, cultural and environmental wellbeing.

These principles have been developed in recognition that there are a number of projects sponsors developing business cases for the North Wales Growth Deal and that procurement activity will be led on by the relevant project sponsor in line with their own policies and procedures and all relevant procurement regulations.

To ensure that the aspirations of the North Wales Economic Ambition Board are embedded within all Growth Deal procurement activity, project sponsors will be required to demonstrate how they are delivering against these principles as part of the business case approval process.



2. Policy Drivers

While there are a significant number of policy drivers that have shaped the development of these principles, we wish to highlight the following:

North Wales Growth Vision

The North Wales Growth Deal is a key component of delivering the Growth Vision for North Wales. The adopted Vision is to develop “a confident, cohesive region with sustainable economic growth, capitalising on the success of high value economic sectors and our connection to the economies of the Northern Powerhouse & Ireland.”. The Growth Vision was founded on three key principles:

- **Smart North Wales** – with a focus on innovation and high value economic sectors to advance economic performance.
- **Resilient North Wales** – with a focus on retaining young people, increasing employment levels and skills to achieve inclusive growth.
- **Connected North Wales** – with a focus on improving transport and digital infrastructure to enhance strategic connectivity to and within the region.

The Wellbeing of Future Generations (Wales) Act 2015

The Act focuses on the principles of sustainable development and places a duty on Public Bodies to work in new ways to improve the economic, social, environmental and cultural wellbeing across Wales.

The Act promotes five ways of working – Long Term, Prevention, Integration, Collaboration and Involvement towards seven wellbeing goals. The ways of working and seven wellbeing goals will be incorporated within all Growth Deal project and procurement activities. Sustainable procurement practices using the Act as a framework can:

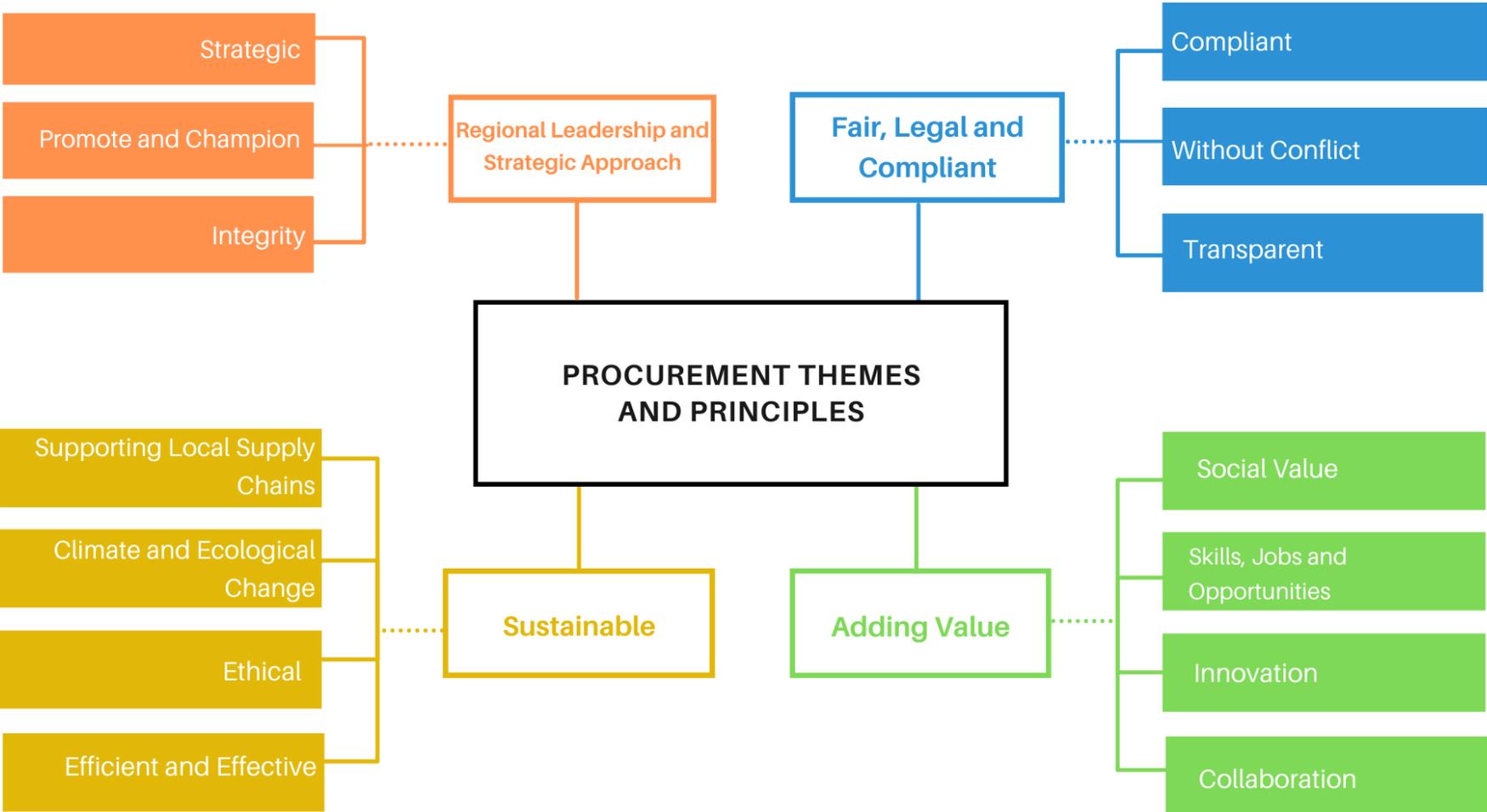
- Reduce our greenhouse gas emissions and contribution to climate change (A Prosperous Wales and A Globally Responsible Wales)
- Improve our natural environment and protect biodiversity (A Resilient Wales)
- Build more cohesive communities with thriving social enterprises and Small and medium sized enterprises (A Wales of Cohesive Communities)
- Support better physical and mental health (A Healthier Wales)
- Deliver decent work with fair and equal pay conditions (A More Equal Wales)
- Reflect the diversity and culture of all our communities (A Wales of Thriving Culture and Vibrant Welsh Language)
- Encourage greater ethical and global citizenship (A Globally Responsible Wales)





3. Procurement Themes and Principles

The following themes and principles will underpin all Growth Deal procurement activity:





Regional Leadership and Strategic Approach			
Principles	Promote and Champion	Integrity	Strategic
What is the principle?	<ul style="list-style-type: none"> The NWEAB will promote and champion collaborative procurement opportunities, supporting innovation and growth The NWEAB will promote and champion the delivery of social value and community benefits through procurement activity align with and test key policies such as the socio-economic duty and the social partnerships bill. Promote and generate positive awareness of the NWGD at all opportunities 	<ul style="list-style-type: none"> Provide good management, maintain professional conduct and control undertaking all activities in an open, consistent and transparent manner. 	<ul style="list-style-type: none"> The NWEAB will set out clear principles for achieving innovative and sustainable procurement practices with clients, contractors and communities working together
Why is this a priority?	<ul style="list-style-type: none"> To provide continuous support and further advance the benefits of each initiative. To seek inclusion and commitment from all stakeholders in order to progress. 	<ul style="list-style-type: none"> Assures confidence in the process and should inspire honesty, trust, responsibility and reliability. Prevent corruption or collusion with suppliers or others 	<ul style="list-style-type: none"> To ensure alignment of objectives throughout and to provide consistent and clear ways of working.
How will project sponsors deliver against this principle?	<ul style="list-style-type: none"> Through stakeholder engagement opportunities; networking; supplier days and early notification of tender opportunities to provide maximum benefit and opportunity Project sponsors to embed 'The Future Generations Act' lens into all procurement activity contributing where relevant to the 46 national wellbeing indicators for Wales. Use of North Wales Growth Deal branding on all approved projects 	<ul style="list-style-type: none"> Follow approved processes as laid out, ensure best practice principles are embedded. Provide challenge when there is contravention and non-compliance. 	<ul style="list-style-type: none"> Project Sponsors will have to demonstrate how their procurement processes deliver against these principles.



Adding Value				
Principles	Innovative	Skills, Jobs and Opportunities	Collaboration	Social Value
What is the principle?	<ul style="list-style-type: none"> With forward thinking, explore new ways of working, with the aims of the project at the fore and thinking in the widest possible terms focussing on economic growth, societal needs and with sustainability in mind. 	<ul style="list-style-type: none"> Create recruitment and training opportunities and focus on Targeted Recruitment and training (TR&T), work programmes and skills development. 	<ul style="list-style-type: none"> Explore opportunities for aggregation, utilise existing contracting arrangements and work with stakeholders to ensure all needs and aspirations are realised and achieved. 	<ul style="list-style-type: none"> Maximise Social Value delivered from Growth Deal projects to support regional economic, social, cultural and environmental and wellbeing objectives.
Why is this a priority?	<ul style="list-style-type: none"> Innovation contributes directly to productivity growth and creates sustainable, high-value jobs along with efficient and effective new ways of working and building on already existing frameworks. 	<ul style="list-style-type: none"> To address the socio-economic impacts of unemployment or economic inactivity particularly for disadvantaged persons and for those within areas of deprivation. 	<ul style="list-style-type: none"> Work together to harness expertise, share experiences and aspirations as an integrated team to achieve common goals to achieve project success. 	<ul style="list-style-type: none"> To build community resilience and contribute to the social, economic and environmental well-being of communities in the region.
How will project sponsors deliver against this principle?	<ul style="list-style-type: none"> Working with a cross functional team, including supply chain, early in the procurement process to identify opportunities for innovation identifying future roadmaps for products/services ensuring sustainability principles are embedded throughout and learning from experience where appropriate. 	<ul style="list-style-type: none"> Target opportunities and engage with existing mechanisms to support this and target specific groups such as young people or those in areas of deprivation to engage in education and learning/development. 	<ul style="list-style-type: none"> Communicate across business and external stakeholders. Seek others views to inform project briefs. Engage in two-way exchange with partners, contractors and communities and ensure local and regional needs and priorities are part of the social value clauses. 	<ul style="list-style-type: none"> Value for money will be balanced with whole life cycle cost, efficiency and benefit to the social, economic, cultural and environmental wellbeing. Deliver innovative community benefits by working with contractors to achieve maximum social value achieving additional value for the Welsh public pound. Social value/community benefits clauses will carry a minimum 15% overall scoring weighting or equivalent where appropriate.



Sustainable				
Principles	Climate and Ecological Change	Ethical	Efficient and Effective	Supporting local supply chains
What is the principle?	<ul style="list-style-type: none"> Reducing the climate and ecological impact of Growth Deal projects including operational and embedded carbon. Specifically to support projects to deliver the following aspirations: <ul style="list-style-type: none"> ➤ deliver to net zero operational carbon ➤ deliver 40% less embodied carbon ➤ deliver a 10% net benefit for biodiversity Maximising the circular economy opportunities. 	<ul style="list-style-type: none"> Promote and encourage ethical and responsible business behaviour helping to protect suppliers and employees, promoting Wales as a good place for doing business. 	<ul style="list-style-type: none"> To ensure, where possible, all procurement and supply chain activities are repeatable, aligned and consistent across its process and application. 	<ul style="list-style-type: none"> Support and improve access to tender opportunities for SMEs, micro-SMEs and 3rd sector organisations, and support collaboration between SMEs within the region.
Why is this a priority?	<ul style="list-style-type: none"> To address organisational and supply chain carbon footprint and biodiversity impact in line with UK and Welsh Government targets. 	<ul style="list-style-type: none"> Prevent and help to remove immoral, and illegal practices taking place in supply chains throughout Wales and beyond. 	<ul style="list-style-type: none"> Ensuring efficiencies are derived within its activities and supporting supply chains to produce desired results without wasting materials, time or energy. 	<ul style="list-style-type: none"> Support the economy and help create employment and training opportunities including promotion of Social Enterprises and supported businesses.
How will project sponsors deliver against this principle?	<ul style="list-style-type: none"> Application of sustainable procurement practices; Sourcing sustainable construction materials from local sources where possible; Use of local supply chains; Working with supply chain to develop innovative solutions Use of recycled materials Initiatives to enhance biodiversity on site 	<ul style="list-style-type: none"> Embed the contents of the Welsh Government's Code of Practice for ethical employment in supply chains within tender documents and ensure these are flowed through the supply chain. 	<ul style="list-style-type: none"> Work with recognised process, documentation and systems. Focus on strategic high-level goals to help provide a suitable efficient framework for undertaking procurement activities. 	<ul style="list-style-type: none"> Ensure supply chain opportunities are visible to Wales based suppliers to compete. Support local supply chains to engage with larger contracts through supply chain briefings and joint bidding opportunities and pipeline of projects.



Fair, Legal and Compliant			
Principles	Without Conflict	Transparent	Compliant
What is the principle?	<ul style="list-style-type: none"> Take measures at all stages of procurement to identify and manage any potential conflict of interest to avoid distortion of competition and to ensure equal treatment of all potential suppliers 	<ul style="list-style-type: none"> To clearly and openly lay out expectations, free from ambiguity providing the most optimum chances for all, and to ensure that all processes and information, where it is not deemed commercially sensitive information, are made available when required. 	<ul style="list-style-type: none"> Maintain business alignment with overarching regulations, policies and internal process and procedures
Why is this a priority?	<ul style="list-style-type: none"> Remove and cover situations where staff members and suppliers are compromised and ensuring impartiality and independence in the context of the procurement procedure are maintained 	<ul style="list-style-type: none"> Ensure all parties are provided equal and clear opportunities to participate in activities in a timely manner to avoid errors and optimise opportunities supporting fair and non-discriminatory ways of working 	<ul style="list-style-type: none"> Provides consistent ways of working along with mitigating potential risk of challenge and legal challenge.
How will project sponsors deliver against this principle?	<ul style="list-style-type: none"> Comply with approved Conflict of Interest policies and ensure records are maintained throughout procurement activities 	<ul style="list-style-type: none"> Management of records, clear audit trails and embedded into process and culture 	<ul style="list-style-type: none"> Build internal process and procedure with external policy in mind. Communicate to wider business and monitor and audit to ensure all are followed. Work within the parameters of public procurement policy