

National Assembly for Wales
Sustainability Committee

Inquiry into Carbon Reduction in Wales

October 2010



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Sustainability Committee

Inquiry into Carbon Reduction in Wales

October 2010



Sustainability Committee

The Sustainability Committee is appointed by the National Assembly for Wales to consider and report on issues affecting Climate Change, Energy, Rural Affairs and Agriculture, Environment and Planning

Powers

The Committee was established on 26 June 2007 as one of the Assembly's scrutiny committees. Its powers are set out in the National Assembly for Wales' Standing Orders, particularly SO 12. These are available at www.assemblywales.org

List of Reports published by the Committee

<i>Report title</i>	<i>Date of publication</i>
Carbon Reduction from Land use; Fifth report of the Sustainability Committee's Inquiry into Carbon Reduction in Wales	July 2009
Carbon Reduction from Energy Production: Fourth Report of the Sustainability Committee's Inquiry into Carbon Reduction in Wales	May 2009
Carbon Reduction by Industry and Public Bodies in Wales: Third Report of the Sustainability Committee's Inquiry into Carbon Reduction in Wales	April 2009
Carbon Reduction by Transport: Second Report of the Sustainability Committee's Inquiry into Carbon reduction in Wales	March 2008
Residential Carbon Reduction in Wales: First report of the Sustainability Committee's Inquiry into Carbon Reduction in Wales	March 2008

All previous committee reports can be found at www.assemblywales.org

Committee membership

<i>Committee Member</i>	<i>Party</i>	<i>Constituency or Region</i>
Kirsty Williams	Welsh Liberal Democrats	Brecon and Radnorshire
Lorraine Barrett	Labour	Cardiff South and Penarth
Joyce Watson	Labour	Mid and West Wales
Irene James	Labour	Islwyn
Leanne Wood	Plaid Cymru	South Wales Central
Angela Burns	Welsh Conservative Party	Carmarthen West and South Pembrokeshire
Karen Sinclair	Labour	Clwyd South
Rhodri Glyn Thomas	Plaid Cymru	Carmarthen East and Dinefwr
Brynle Williams	Welsh Conservative Party	North Wales

The following were also members of the Committee during this inquiry:

Mick Bates	Welsh Liberal Democrats	Montgomeryshire
Alun Davies	Labour	Mid and West Wales
Lesley Griffiths	Labour	Wrexham
Alun Ffred Jones	Plaid Cymru	Arfon
Darren Millar	Welsh Conservative Party	Clwyd West

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Chair's foreword / Summary

This has been one of the most comprehensive inquiries undertaken by an Assembly Committee, on one of the most important topics facing society today. When the Committee was established, Members agreed that the first priority should be to examine how Wales is contributing to carbon reduction targets and make recommendations to ensure Wales becomes a leader and exemplar of a truly low carbon, prosperous country. The result of this work was a series of topic based reports, and this final report which draws together the headline recommendations of these report and highlights a number of cross cutting themes- which must be acted on if the necessary reductions in Carbon emissions are to be achieved.

As a Committee we believe it is vital for everybody from Government and organisations to individuals to play their part in reducing the amount of carbon dioxide we emit in Wales. This will help to secure the planet both for us and for future generations. However, in order for any actions to be successful, it is essential that we have an accurate picture of the current situation and the impact of any actions have on Carbon Reduction, but a lack of available and consistent data was a continuous barrier that we came across through our work. Without the information, it is difficult to target actions effectively, and if the information does not exist or cannot be collated then there needs to be a frank and honest discussion about how to best measure the impact of our actions.

This is one of the first reports published by the Sustainability Committee since I took over as Chair, and the work of scrutiny on this topic was completed before I joined the Committee - I therefore can take little credit for the contents and conclusions of this report, but I can emphasise the importance and value of this work, and urge everybody in Wales to consider how they can help with Carbon Reduction.

Hopefully, this report will help everybody from industry and public bodies, to land owners and householders to consider further the need for reducing their Carbon reductions whether through transport, energy or other emissions, and will help to further ensure that Carbon reduction is placed at the heart of all Government strategies.

We have not referred to the Welsh Government's recently published Climate Change Strategy for Wales except in the most general of terms. We hope to discuss the Strategy with the Minister before the end of the Third Assembly and then produce our assessment of the Strategy.

I would like to thank all those who have given us written and oral evidence for sharing their knowledge and expertise with us and for their openness and frankness in expressing their views to us. I would like to thank all the previous Committee Members who made such an important contribution to this vital inquiry.

The Committee's Recommendations

The Committee's recommendations to the Welsh Government are listed below, in the order that they appear in this Report. Please refer to the relevant pages of the report to see the supporting evidence and conclusions:

Headline recommendation 1: The Welsh Government should review its responses to the Committee's reports in the light of a full cost benefit analysis of our headline recommendations. (Page 11)

Headline recommendation 2: The Welsh Government should produce a full costing, both in terms of amounts of carbon saved and financial implications of the measures it intends to implement through its Carbon Reduction Strategy. (Page 11)

Headline recommendation 3: The Welsh Government publishes, along with its Carbon Reduction Strategy, a comprehensive list of the data which are and are not available and a timeline for the collection and publication of the unavailable data. (Page 11)

Headline recommendation 4: The Welsh Government includes a detailed outline of the data that will need to be collected and reported by each sector as the reporting requirements for the Carbon Reduction Strategy. (Page 12)

Headline Recommendation 5: The Welsh Government should bring together all the research and good practice that currently exists about effective ways of changing behaviour to inform a published programme for behavioural change in Wales. The programme should include key targets, milestones and evaluation points. (Page 12)

Headline Recommendation 6: The Welsh Government should allocate specific funding to the behavioural change programme and should have sufficient funds allocated to incentivise key measures in the programme if voluntary and other methods of implementation are shown not to be effective. (Page 12)

Headline Recommendation 7: The Welsh Government should establish a true one stop shop for all information and advice about carbon reduction from all sectors. The new organisation should be the only point of contact for inquiries and advice on and help with accessing grants and contractors, and should take a pro active role in engaging all areas of and sectors in Wales in carbon reduction.

(Page 13)

Headline recommendation 8: The Welsh Government should commit to funding the one stop shop for at least five years whilst exploring other funding streams and sponsorship opportunities for it. (Page 13)

Headline recommendation 9: Each Welsh Government Minister should make explicit their role in carbon reduction and how they are going to achieve the targets set within their portfolios. (Page 13)

Headline recommendation 10: All new policies and plans issued by the Welsh Government should contain an explicit statement about how they address carbon reduction issues. (Page 13)

Headline recommendation 11: All public bodies in Wales should be required to issue annual reports setting out how carbon reduction has been mainstreamed throughout their policy development and service delivery mechanisms. (Page 14)

1. **Headline recommendations**

“Climate change is a major global threat. We are resolved that this government and the people of Wales will play the fullest possible part in reducing its CO₂ emissions.

“This cannot be a short-term project – there must be radical changes in people’s behaviour and their expectations which will require concerted action over the full four year term of the Assembly government.”¹

1. We applaud the Welsh Government’s recognition of the challenges and importance of climate change and their efforts to address carbon reduction in Wales.
2. We acknowledge the high esteem that the Minister for Environment, Sustainability and Housing is held in world wide because of her bold response to climate change.
3. Throughout our inquiry, we have sought to compliment the work being done by the Welsh Government on their Carbon Reduction Strategy as well as scrutinising the ability of existing policies and plans to deliver the Welsh Government’s aim of:

“.....to achieve annual carbon reduction-equivalent emissions reductions of 3% per year by 2011 in areas of devolved competence. We will set out specific sectoral targets in relation to residential, public and transport areas. We will work with the heavy industry/power generation industries to reduce emissions in those sectors.”

Carbon reduction figures

4. We have included, in the majority of our reports, calculations of the amount of carbon that we estimate that some of our headline recommendations will achieve. We hoped that, by doing this, we could indicate to the Welsh Government what we thought would be the most effective measures to achieve carbon reduction in Wales.

¹ Welsh Assembly Government [*One Wales: A progressive Agenda for the Governance of Wales*](#) July 2007

5. In this report, we have updated our estimates and included some additional figures. This has been done by an independent academic institution and represents what we consider to be a realistic and up to date estimate of the amount of carbon that can be saved by each of the measures we recommend.

6. We are very concerned about the lack of data available to calculate the carbon savings in this report. We are concerned that the data is not only not available to us, but does not currently exist. We discuss our concerns further in Chapter 3.

7. We have had a mixed response to the headline recommendations contained in our reports. The response to them and the progress on implementing them can be found in Chapter 4.

The benefits of carbon reduction measures

8. It was our intention, in this final report, to give a total figure for the amount of carbon that could be saved by the implementation of all the headline recommendations in our 5 topic reports. However, despite help from academics at Cardiff University, we were unable to do little more than identify potential savings from some of our headline recommendations, based on previous years' figures. Chapter 3 outlines the potential carbon saving benefits we were able to identify.

9. Whilst we acknowledge that the measures which will result in the greatest carbon savings (such as the retrofitting of hard to heat homes and business rate relief for carbon reduction measures taken by small and medium businesses) will, by their nature, result in increased expenditure, we believe that the benefits from these measures will justify the initial outlay.

10. In a time when Wales is going through the worst recession in living memory, we consider that the additional benefits from the carbon reduction measures we recommend will address many of the economic concerns we face.

11. Whilst we would have liked to produce a full cost benefit analysis of our headline recommendations, we had neither the resources nor the data to carry this out with any level of confidence. We have, however, listed below the additional benefits that we see as coming from our recommendations.

12. We see these additional benefits as being:

- increased employment through the creation of jobs in the 'green economy' manufacturing and installing carbon reduction technology;
- increased inward investment to Wales as it becomes a leading manufacturer and installer of carbon reduction technology;
- increased reputation of Wales's academic and technology capacity as a leader in research and development of green technologies which would lead to increased income;
- reduced long term expenditure and additional income for individuals, communities and businesses who have benefited from using carbon reduction measures;
- increased revenue expenditure for public bodies to deliver front line services as their expenditure on power decreases and their income from renewable energy sources increases;
- an increased commitment from the people of Wales to work towards a common shared goal which will benefit not only themselves in the short term but global society in the long term.

Recommendations

Headline recommendation 1: The Welsh Government should review its responses to the Committee's reports in the light of a full cost benefit analysis of our headline recommendations.

Headline recommendation 2: The Welsh Government should produce a full costing, both in terms of amounts of carbon saved and financial implications of the measures it intends to implement through its Carbon Reduction Strategy.

Headline recommendation 3: The Welsh Government publishes, along with its Carbon Reduction Strategy, a comprehensive list of the data which are and are not available and a timeline for the collection and publication of the unavailable data.

Headline recommendation 4: The Welsh Government includes a detailed outline of the data that will need to be collected and reported by each sector as the reporting requirements for the Carbon Reduction Strategy.

13. Many people during our inquiry told us that we already have a lot of the technological solutions needed to achieve substantial carbon savings. These reductions are not happening, however, and we consider that without a concerted effort in addressing the four cross cutting areas below (which are discussed in more depth in the next chapter), substantial carbon reduction will not be achieved.

14. In tackling all these areas, wholehearted political will and commitment is needed along with a bold response to the climate change agenda from the Welsh Government.

The Planning System

15. The planning issues that have emerged during the inquiry are discussed in the next chapter.

16. As we think that planning system has a key role to play in carbon reduction in Wales we are pleased that the latest version of Planning Policy Wales explicitly states the role of planning in carbon reduction.

Behavioural Change

17. The issues that have emerged during our inquiry surrounding behavioural change are discussed in the next chapter.

18. As we think that widespread behavioural change is a key to achieving carbon reduction we make the following strategic recommendations.

Headline Recommendation 5: The Welsh Government should bring together all the research and good practice that currently exists about effective ways of changing behaviour to inform a published programme for behavioural change in Wales. The programme should include key targets, milestones and evaluation points.

Headline Recommendation 6: The Welsh Government should allocate specific funding to the behavioural change programme

and should have sufficient funds allocated to incentivise key measures in the programme if voluntary and other methods of implementation are shown not to be effective.

Information and Advice

19. The issues that have emerged during our inquiry surrounding information and advice are discussed in the next chapter.

20. As we consider that the quality and clarity of information and advice available is a key factor in achieving carbon reduction in Wales, we make the following strategic recommendations.

Headline Recommendation 7: The Welsh Government should establish a true one stop shop for all information and advice about carbon reduction from all sectors. The new organisation should be the only point of contact for inquiries and advice on and help with accessing grants and contractors, and should take a pro active role in engaging all areas of and sectors in Wales in carbon reduction.

Headline recommendation 8: The Welsh Government should commit to funding the one stop shop for at least five years whilst exploring other funding streams and sponsorship opportunities for it.

Joined up working

21. The issues that have emerged during our inquiry surrounding joined up working are discussed in the next chapter.

22. As we consider that co-operative and co-ordinated working at all levels is key to achieving carbon reduction in Wales, we make the following strategic recommendations.

Headline recommendation 9: Each Welsh Government Minister should make explicit their role in carbon reduction and how they are going to achieve the targets set within their portfolios.

Headline recommendation 10: All new policies and plans issued by the Welsh Government should contain an explicit statement about how they address carbon reduction issues.

Headline recommendation 11: All public bodies in Wales should be required to issue annual reports setting out how carbon reduction has been mainstreamed throughout their policy development and service delivery mechanisms.

2. Cross cutting conclusions and recommendations

Introduction

23. The committee agreed to carry out this inquiry into carbon reduction in Wales in July 2007. Since then, we have taken evidence from many organisations and individuals on carbon reduction in specific sectors in Wales. We have also published five reports (listed on page 2 of this report) during this time.

24. This chapter aims to identify the common themes that ran through all the reports and explain the strategic recommendations we have made in Chapter 1.

25. Throughout the course of our inquiry, several issues were raised repeatedly. We consider that, because these issues appear to be fundamental to the success of carbon reduction policies in Wales, we would like to explore them in more detail in this chapter.

26. Although the five main cross cutting areas cannot achieve large scale carbon reduction on their own, we believe that large scale carbon reduction cannot be achieved without them being addressed in every sector for which targets are set.

Planning for carbon reduction

27. We consider that planning, in all its forms, is at the heart of achieving meaningful levels of carbon reduction.

28. In each of our topic inquiries, the land use planning system was identified by many of its users as barrier to achieving carbon reduction yet the Minister and those involved in administering the planning system strongly believed that it is and will continue to be a key tool in delivering carbon reduction.

29. Those people who believed that the planning system is a barrier to achieving carbon reduction came from many different fields of expertise and experience. The issues that they raised were discussed in detail in the relevant sector reports and focussed mainly on the ability of existing policy to deliver carbon reduction and the effectiveness of the implementation of those policies.

30. We realised at an early stage in the inquiry that planning was going to be a recurring theme and therefore decided to dedicate a small part of the inquiry to looking at the role of the planning system. We asked planning practitioners for their views on the role of the planning system in Wales in achieving carbon reduction.

Policies

31. There were doubts expressed during our sectoral inquiries about the robustness of the planning system in encouraging a positive approach to carbon reduction.

32. There were also reservations about whether planning guidance was far ranging enough and responsive enough to new technologies which are constantly emerging.

33. A key theme which emerged at a very early stage was the perceived lack of leadership from the Welsh Government to planning authorities.

34. There was a great deal of confidence expressed by the planning practitioners in the ability of the planning system to deliver meaningful levels of carbon reduction. The Royal Institute of Chartered Surveyors (RICS) told us:

“The Planning system is arguably the one process through which change is processed and the role of the planning authorities has to be a controlling and positive one. Perhaps, most importantly, it has to be an informed one.”²

35. There was general agreement amongst the practitioners that the planning system in itself had great potential to act as a catalyst for carbon reduction and could be the agent through which great change could be achieved. The Pembrokeshire Coast National Park Authority considered that:

“...the planning system is well placed to make a significant contribution to a comprehensive and integrated strategy towards addressing carbon reduction, and Local Planning Authorities eager to play their part.”

² Royal Institute of Chartered Surveyors

36. Much of the evidence pointed to the vital role played by leadership and that strong leadership from the Welsh Government and Local Authorities was needed to ensure that the planning system realises its full potential for carbon reduction.

37. Whilst supporting the role of the planning system in carbon reduction, The Planning Society of Wales told us:

“If the Welsh Assembly Government is serious about carbon reduction, it must continue to promote and set the agenda by establishing requirements not just aspirations....By making certain standards “requirements” this removes the scope for negotiation and ultimately non-delivery by the development industry. In addition, the introduction of national policy requirements provide certainty and clarity to landowners and developers.”

38. The importance of the leadership role of local authorities was also highlighted. Ceredigion County Council told us:

“The role the LPA can play in progressing towards the achievement of carbon reduction is dependant on the legislation the Assembly produces. However, the LPA could independently rise to the challenge and encourage and promote low carbon building etc. For any effect to occur within the LPA the relevant Council will need to put sustainable development at the top of their agenda and recognise the difference this will mean to local development etc.”

39. The development of new Local Development Plans was viewed by all those who expressed a view on planning as being an important opportunity to mainstream carbon reduction into planning policies and decision making.

40. One issue that became clear from the evidence was that of the number of different policies and requirements that have to be taken into account when Local Development Plans are being written and planning applications considered. The Planning Officers Society of Wales (POSW) highlighted the fact that the planning system has to respond to several, often competing demands and that the social and economic needs of a community may not necessarily correspond with national carbon reduction policies and targets.

41. We discuss joined up thinking in policy making later in this chapter but acknowledge that while sustainability should be at the heart of the planning process, specific carbon reduction planning policies have to be integrated into those for sustainable communities.

Policy implementation

42. The main issues raised concerning the implementation of planning policy were concerns about the length, complexity and cost of the planning application process and the lack of knowledge of and confidence in new technologies by Local Planning Authorities.

43. The practitioners who gave us evidence again emphasised the need to take various, sometimes conflicting policies into account when making decisions on planning applications. Some considered that the extended time and information requirements needed for some applications (especially those covering new and developing technologies) meant that they were able to give full consideration to the benefits of the application.

44. There was, however, a general acknowledgement that the planning application process could be made clearer and more accessible. We welcome the recommendations made by GVA Grimley in their report following a review of the planning application process commissioned the Minister for Environment, Sustainability and Housing in August 2009.

45. There was also an acknowledgement amongst many of those giving evidence that it was often difficult to make recommendations for applications concerning new advances in technology (such as biodigesters and combined heat and power plants). Planning officers felt that they were not always aware of the issues and benefits surrounding the use of new technology. There were also calls for the Welsh Government to issue policy guidance on new carbon reduction technologies at an early stage in their development and use.

Conclusions

46. We believe that the planning system has a key role in enabling carbon reduction in Wales through offering positive opportunities to encourage and incentivise low carbon buildings and renewable energy projects.

47. We feel that there has not been enough emphasis on the role of planning in leading carbon reduction in Wales. This can only come about by leadership shown by the Welsh Government in encouraging and supporting planning authorities to develop innovative policies and make bold decisions and by local authorities putting carbon reduction at the top of their agenda. We consider that there is still a great scope for improvement in the leadership shown by the Welsh Government and the commitment to carbon reduction from Local Planning Authorities.

48. There is great potential for the planning system to be a flagship for carbon reduction in Wales, and, we believe, a great deal of enthusiasm for the role amongst many planners. We really do believe that planners can be heroes!

Behavioural change

49. Another of the common themes running throughout the evidence we received during our inquiry was that of the importance of behavioural change in achieving carbon reduction in Wales.

50. We heard several examples of good practice in influencing people to reduce carbon both in their domestic and work lives. There was a general acknowledgement, however, that not only were these working on a small scale, but also that there was much more research needed to discover effective methods of positively influencing behaviour.

51. We were encouraged to hear that most of our witnesses considered that we do not need to make large changes in our lifestyles or give up our standards of living. Small changes made by everyone and sustained throughout all our activities can make a large difference.

52. We have made recommendations about behavioural change in all of our reports. Although individually, there have been more important recommendations in each report which have formed the headlines, collectively, behaviour change has emerged as a key barrier to achieving carbon reduction.

53. We consider that the Welsh Government needs a strategic, co-ordinated and sustained approach to influencing behaviour using a

variety of methods appropriate to the audience and type of behaviour it is targeting.

54. Although we have made great technological advances in reducing carbon, if the way in which we all live does not embrace those technologies and acknowledge the need to live more sustainable lifestyles, then whatever the carbon reduction targets that are set, they cannot be achieved.

Information and Advice

55. We heard from all sectors during our inquiry about the lack of clear, accurate information and advice available about carbon reduction.

56. Several witnesses cited the confusion about who and where to go to for advice on carbon reduction measures as a major barrier to achieving carbon reduction.

57. They also considered that there should be a more proactive approach taken to providing information and advice rather than the current situation of organisations waiting for individuals, companies and communities to approach them.

58. We were very impressed with the model we saw during our visit to Austria. There, an agency set up by the regional government in Upper Austria dealt with every inquiry about carbon reduction measures from the initial inquiry, through site visits and assessments, identifying and applying for relevant grants to instructing contractors and assessing any work carried out. This was done for all sectors of society for individuals, businesses and public bodies. The agency was also pro-active and had a target of contacting and offering its services to all householders, businesses and public bodies in the region.

59. The outcome of setting up this agency has been that Upper Austria is now one of the leader regions for carbon reduction in Europe. The establishment of the agency and its pro-activity has also demonstrated the commitment of the regional government to tackling climate change and has resulted in considerable behavioural change amongst people in the region.

60. We think that this model should be used for a similar agency in Wales which could end the existing confusion about how and where to

access information and advice and how to apply for and evaluate funding available for carbon reduction measures.

61. We have made a recommendation about a one stop shop for carbon reduction advice in all of our reports. The recommendations have either been rejected or accepted with examples of what is currently being done.

62. From our evidence, the current situation is clearly not sufficient to help and advise all those who want to reduce their carbon emissions let alone those who are unaware of, or resistant, to the need.

63. We have been very disappointed at the Welsh Government's response to our recommendations and that they appear to be content with the status quo.

64. Whilst we fully support the valuable work being done by the Energy Saving and Carbon Trusts and other organisations in Wales, we feel that information and advice on carbon reduction in Wales should be adequately funded and committed to over the long term and should be a truly pro-active one stop shop.

Joined up working

65. A fourth theme that emerged from our five inquiries was that of the importance of policies and plans which were integrated with carbon reduction goals and acknowledged and worked towards carbon reduction goals across all policy sectors in Wales.

66. A lack of 'joined up' thinking and working was considered by many of those giving evidence to be an unnecessary hurdle in achieving carbon reduction.

67. We heard examples of public bodies being given targets by one Welsh Government department which would result in increased carbon emissions whilst being given a target to reduce their current emissions by another department.

68. We were so concerned about these apparent anomalies that we held a short scrutiny inquiry into how the Welsh Government is mainstreaming sustainability across all ministerial portfolios.

69. Our conclusions showed a confused picture with some Ministers embracing the need to reduce carbon and taking steps to do so whilst others claimed little or no responsibility for carbon reduction.

70. The issue is not only one for the Welsh Government as we were given examples of the lack of engagement with the carbon reduction agenda by many local authority departments and public and private sector organisations.

71. We believe that the carbon reduction targets set by the Welsh Government will not be achieved until:

- carbon reduction is mainstreamed into every area of policy and implementation; and
- responsibility is taken and accountability assigned at all levels across the public and private sectors.

3. Costing our headline recommendations

72. We have attempted, throughout our sectoral reports, to assign a carbon saving to as many of our headline recommendations as possible.

73. As part of the review of our previous recommendations that we carried out for this report (see the updates in Chapter 4), we commissioned the University of Cardiff School of Architecture (as part of the Low Carbon Research Institute) to validate and update our figures.

74. Throughout our inquiry into carbon reduction, concerns were expressed by many of those giving us evidence about the lack of complete, robust data on carbon emissions.

75. This lack of data was confirmed by the University of Cardiff School of Architecture. We asked them to access as much of the up to date information on carbon reduction in Wales as they could to inform their calculations.

76. In this chapter, we revisit our headline recommendations and discuss their potential for delivering carbon savings and meeting the Welsh Government's 3% target. We also highlight the data issues that were raised with us through Cardiff University's work.

Residential carbon reduction recommendations

77. Our headline recommendations in the residential report can be split into two categories for the purpose of assessing carbon reductions:

Recommendations relating to new buildings (HR 1,2,3,4)

78. Our first four recommendations (see Chapter 4 for the text of each recommendation) relate to reducing the amount of carbon emissions coming from new homes. Although this will result in fewer emissions from the newly built homes, there will still be a net increase in emissions until the Welsh Government's target of all homes being built to zero carbon standards is achieved.

Recommendations relating to existing buildings (HR 5,6)

79. The majority of carbon savings in the residential sector in Wales will be achieved through the existing housing stock. Wales currently has around 492,000 'hard to heat' homes which are the greatest source of domestic carbon emissions.

80. The figures produced by Cardiff University show that if all the hard to heat homes in Wales were to be 'retrofitted' with such things as cavity, solid wall and loft insulation, a carbon saving of 3,444kt could be achieved.

81. To achieve a 3% per annum reduction, Cardiff University estimates that 4,456 homes will have to be retrofitted every year for 2011 - 2020 at an estimated cost of £111.4 million and an estimated carbon saving of 311.9kt.

82. We recommended that the installation of microgeneration equipment should be supported and encouraged through grants to householders.

83. The figures produced by Cardiff University show that if the current funding and uptake levels from the Low Carbon Buildings and Clear Skies Programmes are maintained from 2011- 2020, reductions of 11kt could be achieved.

84. These figures are based on a number of assumptions such as the properties installing the equipment having already been insulated, potential savings for each type of microgeneration equipment, the rate of uptake of funding schemes and the levels of funding available.

85. The figures show a relatively low carbon saving figure and are based on the assumption that these properties have already had the maximum amount of energy saving measures applied to them.

86. The newly introduced feed in tariffs and the proposed New Renewable Heat Incentive are aimed at significantly increasing the installation of domestic microgeneration equipment and have superseded the Low Carbon Buildings Programme. No figures are currently available for the uptake rates of the feed in tariff.

Carbon savings from transport

87. Our recommendations for carbon reduction from the transport sector focus mainly on policy mechanisms for achieving reductions rather than specific reductions themselves.

88. Cardiff University have based their calculation on three specific actions which have proven to be effective and could flow from the recommendations on policy mechanisms. The actions and forecast savings outlined in the table below are those that were estimated to have been achievable in each of the years 2009 and 2010.

Action	Estimated carbon saving (kt) per annum	Saving as a percentage of transport emissions per annum
Support for non-motorised modes of transport (e.g. walking/cycling)	200	2.5
Eco-driving and speed limit enforcement	400	5
Travel plans, personal, school and workplace	240	3

89. These actions are examples of the types of interventions that could be used by the Welsh Government to reduce transport emissions within the policy recommendations in our report. It is debatable whether these policies would result in a sustainable year on year reduction from 2011 – 2020 as they will be most effective in the early years of their implementation.

90. Cardiff University also estimate that Headline Recommendation 4, the adoption of Sustran’s TravelSmart programme in Wales, could achieve an estimated one-off saving of 80kt.

91. It should be noted that these figures cannot be added together as there is an element of double counting between them.

92. The figures are also based on current vehicle usage. As vehicle usage is increasing, savings delivered by these actions would result in a lower overall reduction if vehicle usage continues to rise.

Carbon reduction by industry and public bodies

93. Although the industry and public bodies sector has shown a decrease in emissions over recent years, Cardiff University researchers estimate that the rate of decline could slow or even reverse as the majority of 'quick wins' have already been achieved.

94. They estimate that, if a 3% reduction target is imposed on the business sector (HR 1) as we recommended, the amount of carbon saved could be 2,000kt between 2011 and 2020.

95. Cardiff University estimate that the following reductions would be possible if our recommendation (HR2) to set a target of more than 3% for public bodies is implemented:

2011 - 2020

3% reduction - 363kt

4% reduction - 425kt

5% reduction - 482kt

96. Cardiff University validated the figures we used to calculate savings brought about by the provision of 'kick start' funding (HR7), based on the experience in Scotland.

97. They highlighted, however, that the Carbon Trust's scheme which currently operates in Wales operates on a different funding model, granting £1,000 for every 1.5kt reduction of carbon per year as opposed to Scotland where the figure is £1,000 for every 0.7kt reduction of carbon per year. The level of funding used by the Welsh Government to implement this recommendation may affect the take up rate of the grant and therefore the overall amount of carbon saved.

Issues raised by the Cardiff University research

Availability of data

98. The quality of the data sets used by the University of Cardiff were very variable. Some data do not exist whilst other data are patchy, incomplete and/or inaccurate. Much of the data available were not collected for the purpose of monitoring carbon reduction and were therefore not easily used for that purpose.

99. We are concerned that the lack of reliable, consistent data sets will make the assessment of carbon savings, both forecast and actual,

difficult to calculate. This could compromise the Welsh Government's ability not only to monitor the actual saving made but also the legitimacy and credibility of the target setting and monitoring exercise.

100. Whilst we are not advocating a lack of action until datasets are available, we urge caution in the setting of stringent, inflexible targets.

101. We are also concerned that the reporting cycle for the disaggregated carbon emissions for Wales means that the data set for 2006 – 2010 which will form the baseline against which reductions will be measured, will not be complete until the 2010 figures are published in September 2012. This also means that the savings from 2011, the first year of the strategy, will not be available until 2013.

Double counting

102. We have decided not to produce an overall carbon reduction figure for all our recommendations as it is difficult to disaggregate the figures across sectors. For instance, figures assigned to microgeneration installations in the private and public sectors will indicate a saving in those sectors but will also show up as reductions in the energy sector as less energy is needed from large scale power generation. Again, estimated figures for domestic microgeneration can be evidenced but these would be influenced by the amount of energy saving measures that are put into properties.

103. We think that this issue of potential double counting is one which needs exploring and addressing at local, national and international levels to give us a more accurate picture of our overall carbon savings.

4. Progress on our headline recommendations

Introduction

104. Throughout our reports, we thought that it was important, not only to make recommendations to the Welsh Government about how carbon can be reduced but also to give some indication of how much carbon we thought could be saved by some of our recommendations.

105. We have made headline recommendations in the majority of our reports and these are the ones which we think will result in the largest carbon savings. In this chapter, we revisit our headline recommendations and assess the progress that the Welsh Government has made in implementing them.

Residential Carbon Reduction in Wales

106. We made six headline recommendations in our report on residential carbon reduction. Five of these were accepted either completely or in principle and one was rejected.

Headline recommendations

107. The following table shows the progress of the six headline recommendations.

Headline Recommendation	Response	Progress to date
<p>1: The Committee recommends that, through a Ministerial Interim Planning Policy Statement (MIPPS), the Welsh Assembly Government require developments of over 5 dwellings and all commercial developments to produce at least 10 per cent of their energy requirements through on site renewable energy or local decentralised sources.</p>	<p>Accept in principle subject to a thorough analysis of the costs and benefits.</p>	<p>A Ministerial Interim Planning Policy Statement (MIPPS) was published in May 2009, in which the Welsh Government states that it ‘expects’ that applications for 1 or more (from 1 September 2010) and applications for 5 or more dwellings (from 1 September 2009) will meet the Code for Sustainable Homes Level 3. This means an improvement of at least 25 per cent on the requirements contained in current building regulations.³ A consultation on the draft Technical Advice Note (TAN) 22: Planning for Sustainable Buildings was published on 7 May 2009.⁴</p>

³ Welsh Government, [Ministerial Interim Planning Policy Statement 01/2009: Planning for Sustainable Buildings](#) , May 2009 (accessed on 29 September 2009)

⁴ Welsh Government, [Consultation on Draft TAN 22: Planning for Sustainable Buildings](#) , May 2009 (accessed on 29 September 2009)

<p>2: The Committee recommends that, through a Ministerial Interim Planning Policy Statement (MIPPS), the Welsh Assembly Government require developments of less than 5 dwellings to reduce their predicted CO₂ emissions by at least 25 per cent based on current building regulations through improvements to the energy performance of buildings, and/or the efficient supply of heat, cooling and power.</p>	<p>Accept in principle subject to a thorough analysis of the costs and benefits.</p>	<p>Planning Policy Wales (Issue 3) published in July 2010 requires all applications for new housing to meet the Code for Sustainable Homes level 3.</p>
<p>3: The Committee recommends that Building Regulations are devolved to the Welsh Assembly Government as a matter of urgency.</p>	<p>Accept</p>	<p>An order for the transfer of functions for building regulations was laid before Parliament on 21 July 2009.⁵ This will come into force on 31 December 2011.</p>

⁵ Office of Public Sector Information, [The Welsh Ministers \(Transfer of Functions\) \(No. 2\) Order 2009](#) (accessed on 29 September 2009)

<p>4: The Committee recommends that the Welsh Assembly Government adopts the Code for Sustainable Homes with immediate effect. We also recommend that, when Building Regulations are devolved, those which would enable the highest level of the Code for Sustainable Homes to be enforced should be revised first.</p>	<p>Accept in principle (subject to cabinet agreement)</p>	<p>The Code for Sustainable Homes was adopted on 1 May 2008.⁶</p>
<p>5: The Committee recommends that the Welsh Assembly Government should fund a programme of retrofitting of all existing hard to heat homes so that they meet one of the agreed levels in the Code for Sustainable Homes.</p>	<p>Reject. The Assembly Government is committed under 'One Wales' to developing a National Energy Efficiency and Saving Plan. The plan will examine our Fuel Poverty Strategy, the role of HEES and potential partnerships with energy suppliers to</p>	<p>A written statement in July 2009 indicated that a final National Energy Efficiency and Savings plan will be published later in the year. The Welsh Government will also consulting on Home Energy Efficiency regulations in the autumn of 2009.</p> <p>The UK Low Carbon Transition Plan, published in July 2009, includes a proposal for 'pay as you save' pilots which will enable households</p>

⁶ Welsh Government, [Code for Sustainable Homes](#) (accessed on 29 September 2009)

	<p>deliver energy efficiency improvements in an integrated way. In terms of existing housing, the plan will be informed by the work that I have asked the sustainable development commission to take forward on how the built environment should contribute to the assembly government's 3% annual emissions reduction target.</p>	<p>to pay for energy efficiency initiatives using the savings made on energy bills to repay the upfront costs.⁷ £4 million is being allocated to the pilots, which are due to start in 2009.</p> <p>As part of the Welsh Government's consultation on its fuel poverty strategy, published in November 2009, they propose means tested funding for those in fuel poverty for Energy performance improvement packages (whole house assessments) which will include basic measures (e.g. loft and cavity wall insulation, draught proofing etc), replacement of a particularly inefficient boiler, solid wall insulation and/or low or zero carbon energy generation technologies. Funding for the measures will be provided in whole or in part by the energy companies and the Welsh Government.⁸</p> <p>The Minister for Environment, Sustainability</p>
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⁷ Department of Energy and Climate Change, [The UK Low Carbon Transition Plan](#), July 2009 (accessed on 29 September 2009)

⁸ Welsh Assembly Government, [Fuel Poverty Strategy Consultation](#), November 2009

		and Housing announced £30 million of the arbed scheme to retrofit houses in the heads of the Valleys Strategic Regeneration Area in November 2009.
6: The Committee recommends that the Welsh Assembly Government actively promotes the Low Carbon Building programme in Wales and provides additional grants for microgeneration schemes in existing housing	Accept in part	In response to a question on Fuel Poverty on 25 February 2009, the Minister made reference to the Low Carbon Building Programme being used to establish a low carbon zone in the Heads of the Valleys areas.⁹

⁹ [OAQ\(3\)0710](#) Trish Law to Jane Davidson (Minister for the Environment, Sustainability and Housing), RoP p29, 28 February 2009

Our thoughts on the progress towards implementing the recommendations

108. We are pleased to see so much progress from the Welsh Government on our headline recommendations.

109. We are disappointed that the requirement for 10% of energy for new developments to be produced by on site by renewable energy has not been adopted. Whilst we welcome the MIPPS statement that new developments will be 'expected' to make the 25% improvement on existing building regulations by reaching level 3 of the Code for Sustainable Homes, we feel that this could be strengthened by 'requiring' them reach level 3.

110. We welcome the devolution of building regulations to the Welsh Government and we believe that this is a key area in which Wales can forge ahead with carbon reduction measures for new buildings. We note, however, that the 'sunrise' clause which means that the transfer of functions will not take place until 31 December 2011 means that the Welsh Government will not be achieving their target of all newly built residential property being carbon neutral by 2011.

111. Although our recommendation on the retrofitting of hard to heat homes was rejected, we are pleased to see the Welsh Government accepting the need for government funding for retrofitting the homes of those in fuel poverty. The Minister has emphasised how important the residential sector will be in achieving the carbon reduction targets she has set and we hope to see schemes for retrofitting existing homes developed as a way of achieving the 3% carbon reduction target.

Carbon reduction by transport

112. We made four headline recommendations in our report on carbon reduction by transport.

Headline recommendations

113. The following table shows the progress of the four headline recommendations.

Headline Recommendation	Response	Progress to date
<p>1: The Committee recommends that the Welsh Assembly Government takes a much stronger lead by placing carbon reduction at the heart of the Wales Transport Strategy and by increasing funding for sustainable transport from around 50 per cent to around 70 per cent of the transport budget, in line with Scotland.</p>	<p>The Welsh Assembly Government fully supports the Committee's view that carbon reduction should be at the heart of the Wales Transport Strategy.</p>	<p>The National Transport Plan was published in February 2010.¹⁰ The transport budget for 2009-2010 was £890m (or £640m excluding non-cash items). The split of the non cash budget was £321m roads and £319m other transport (about 50/50). In 2010-2011 it is £283m roads/£333m other transport (46/54 per cent)</p>
<p>2: The Committee recommends that the Welsh Assembly Government ensures that the National Transport Plan and Regional Transport Plans include specific and</p>	<p>The National Transport Plan and the Regional Transport Plans will include a range of economic, social and environmental outcomes,</p>	<p>The National Transport Plan was published in February 2010¹¹ and the four Regional Transport Plans have now also been approved.¹² Connecting Wales¹³ the National Transport Strategy, set the strategic framework for the National Transport Plan and Regional Transport Plans. This included</p>

¹⁰ Welsh Assembly Government: *National Transport Plan* [Accessed 6 August 2010]

¹¹ Welsh Assembly Government: *National Transport Plan* [Accessed 6 August 2010]

¹² Welsh Assembly Government *Decision Notice*, 21 December 2009; South East Wales Transport Alliance *Regional Transport Plan*, November 2009; South West Wales Integrated Transport Consortium, *Regional Transport Plan*; TAITH, *Regional Transport Plan*; TraCC, *Regional Transport Plan*, September 2009 ;

¹³ *Welsh Government One Wales: Connecting the Nation. The Wales Transport Strategy (April 2008)* [on 13 May 2009]

<p>measurable objectives to cut carbon emissions and that sufficient funding is provided to the Regional Transport Consortia to be able to deliver these objectives.</p>	<p>based on those set out in the recent Wales Transport Strategy</p>	<p>“Reducing greenhouse gas emissions and other environmental impacts” as a strategic priority. However neither the National Transport Plan nor the Regional Transport Plans include any specific targets for reducing carbon emissions from transport.</p>
<p>3: The Committee recommends that the Welsh Assembly Government reviews the use of WelTAG as a matter of urgency to ensure that carbon reduction is the main objective when assessing projects.</p>	<p>The Welsh Assembly Government welcomes the Committee’s recognition that the Welsh Transport Planning and Appraisal Guidance (WelTAG) provides an important mechanism by which the carbon impact of potential projects can be assessed.</p>	<p>The Deputy First Minister told the Finance Committee in March 2009 that he will look again at WelTAG in the light of the Wales Transport Strategy.¹⁴ <i>A Wales Audit Office report on sustainable development and decision making in the Welsh Government stated:</i></p> <p><i>“It is too early to assess the effectiveness of WelTAG in embedding sustainable development principles in transport and transport-related decision-making. [...] The WelTAG document is seen by the Assembly Government as a 'live' document which will continue to evolve and be refined.”</i></p>
<p>4: The Committee recommends that the Welsh Assembly</p>	<p>The Welsh Assembly Government recognises</p>	<p>The Minister announced in March 2009 a pilot Sustainable Travel Towns initiative in Cardiff.¹⁵ A</p>

¹⁴ RoP p6, [Finance Committee](#), 18 March 2009

¹⁵ Welsh Assembly Government, Ieuan Wyn Jones, Deputy First Minister and Minister for the Economy and Transport, Cabinet Written Statement, [Sustainable Travel Towns Initiative](#), 10 March 2009

<p>Government conducts a pilot scheme in Wales based on the Sustrans' <i>TravelSmart</i> programme to assess its impact, before considering its roll-out across Wales.</p>	<p>that schemes like <i>TravelSmart</i>, which provide personalised travel information to households or individuals, can secure significant changes in personal travel behaviour.</p>	<p>Cabinet paper shows a commitment of £4.5 million per annum over the next five years.¹⁶ In March 2010 the Mon a Menai Sustainable Travel Area was announced, with funding of up to £8 million over three years.¹⁷</p> <p>A Welsh Government decision notice in February 2010 also identifies two further areas (Haverfordwest/Carmarthen and Aberystwyth) to be brought forward when funding permits.¹⁸ In addition the Safe Routes in Communities programme was allocated £8.5 million in 2010-11</p>
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¹⁶ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009

[Cabinet Committee On Climate Change - Programme of Action to deliver the 3% Target: Summary ff DE&T Phase 2 Submission](#)

¹⁷ Welsh Assembly Government, Ieuan Wyn Jones, Deputy First Minister and Minister for the Economy and Transport, Cabinet Written Statement, [Sustainable Travel Centres Initiative](#) 29 March 2010

¹⁸ Welsh Assembly Government, Ieuan Wyn Jones, Deputy First Minister and Minister for the Economy and Transport, Decision Reports [The future programme of work for Sustainable Travel Centres](#), 24 February 2010

Our thoughts on the progress towards implementing the recommendations

114. We have found it difficult to identify a great deal of progress on the implementation of our recommendations from this report. We consider that there are two reasons for this; firstly, that the Minister's response indicated that he was already implementing most of our recommendations (which the evidence we received would indicate is not the case); secondly, that there has been very little movement on carbon reduction within the transport portfolio.

115. Although the percentage spend on roads is falling, we still seem to be far from the 70%/30% figure contained within our report; the figures for 2010/2011 giving us a 38%/63% split.

116. Although the National Transport Strategy has not yet been published, we were very disappointed that there was no reference to carbon reduction targets in the consultation on the strategy. Not only does this not give a strategic direction on carbon reduction in the transport sector but it would also imply that carbon reduction targets will not appear in the Regional Transport Plans which are based on the national strategy.

117. The lack of a published National Transport Strategy has also meant that the Minister's commitment to review WelTAG in the light of it has been further delayed. We are concerned that, with transport being named as one of the devolved sectors that will be subject to specific carbon reduction targets from 2011, the revision of WelTAG will be done too late on in the process to have any impact on meeting the carbon reduction targets. As the Minister sees this as "an important mechanism by which the carbon impact of potential projects can be assessed" we would have expected some form of revision between the date that our report was published (January 2008) and the publication of our final report.

118. We were pleased at the announcement of the Sustainable Travel Towns pilot in Cardiff and the funding allocated to it. In our report, however, we did highlight that pilots have already been conducted in England and recommended that the scheme should be rolled out in full in Wales without the need for further pilots.

Carbon reduction by industry and public bodies

119. We made eight headline recommendations in our report on carbon reduction by industry and public bodies. Six were accepted either in full, in part or in principle and two were rejected.

Headline recommendations

120. The following table shows the progress of the eight headline recommendations.

Headline Recommendation	Response	Progress to date
<p>1: The Welsh Assembly Government sets targets for carbon reduction in the industrial and business sector in Wales as part of its implementation of the One Wales carbon reduction commitment. Following a five year period of voluntary action by the industrial and business sector in Wales to meet the targets imposed on them, the Welsh Assembly Government implements regulations that require the targets to be met.</p>	<p>Reject</p>	
<p>2: The Welsh Assembly Government should carry out an assessment of the employment opportunities</p>	<p>Accept in principle</p>	<p>The Welsh Government published its Green Jobs Strategy in July 2009.¹⁹ The strategy makes reference to developing skills and innovation through a number of means, including working with Sector Skills</p>

¹⁹ Welsh Government [Green Jobs Strategy](#) July 2009

<p>that could be created in Wales through reducing carbon emissions, which should include an evaluation of the skills needed within the workforce. The assessment and evaluation should inform the Welsh Assembly Government's Green Jobs Strategy.</p>		<p>Councils to identify 'renewables champions'; the needs of the onshore wind power generating companies is said to be a priority area; strengthening the skills base for research and developing innovative solutions and products. No additional funds are identified for the delivery of the strategy.</p> <p>August 2010: Enterprise and Learning Committee reported on the Green Job Strategy in July 2010. The report suggests more still needs to be done in this area.</p>
<p>3: The Welsh Assembly Government to revise/replace current economic strategies to give carbon reduction a high profile and be explicit about how it can act as one of the key principles to sustainable economic growth</p>	<p>Accept</p>	<p>The Green Jobs Strategy (see Headline Recommendation 2) contains the aim of developing a more sustainable economy and capturing potential opportunities in new technology and innovation. In evidence submitted to the Sustainability Committee on the Sustainable Development Scheme, the Welsh Government referred to work being undertaken to investigate the 'decoupling' of economic growth and</p>

		<p>environmental impacts with the Sustainable Development Commission and others.²⁰</p> <p>Update August 2010: Enterprise and Learning Committee reported on the Green Job Strategy in July 2010. The report suggests more still needs to be done in this area.</p>
<p>4: The Welsh Assembly Government to introduce a sliding scale rebate on Business Rates to businesses not covered by any carbon trading scheme who achieve agreed levels of carbon reduction or agreed levels of accreditation in schemes such as The Green Dragon Environmental Standard.</p>	<p>Reject</p>	
<p>5: The Welsh Assembly Government sets targets for</p>	<p>Accept in part</p>	<p>The consultation on a Climate Change Strategy – Programme of Action, published June 2009, the Welsh</p>

²⁰ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009 [Cabinet Committee On Climate Change - Programme of Action to deliver the 3% Target: Summary ff DE&T Phase 2 Submission](#)

<p>carbon reduction across the whole of the Public Sector in Wales as part of its implementation of the One Wales carbon reduction commitment. The Welsh Assembly Government should consider setting those targets in excess of 3% for the public sector in Wales</p>		<p>Government asks for views on the approach to reducing emissions from the public sector, but does not contain a specific target.</p> <p>Update August 2010: The Wales Climate Change Strategy will be published in autumn 2010</p>
<p>6: The Welsh Assembly Government should work closely with the WLGA and other public sector bodies to produce guidelines for local authorities and public bodies on the baselining, collection and reporting of carbon reduction information to ensure a consistent and</p>	<p>Accept</p>	<p>Statistics on the CO2 emissions according to each local authority in the UK were issued by the Department for Energy and Climate Change in September 2009.²¹</p> <p>UK Government published guidance in September 2009.²²</p>

²¹ Department for Energy and Climate Change, [Statistics about Climate Change](#)

²² <http://www.defra.gov.uk/environment/business/reporting/pdf/ghg-guidance.pdf>

understandable approach.		
<p>7: The Welsh Assembly Government should consider making money available to appropriate public bodies to ‘kick start’ capital programmes for achieving carbon reduction. The Welsh Assembly Government should agree a programme of offsetting the capital funding through subsequent savings in energy bills (having regard to substantial changes in fuel prices) at the time of providing the funding.</p>	<p>Accept in principle</p>	<p>A written statement from the Minister on 10 July 2009²³ indicated that a final National Energy Efficiency and Savings plan will be published later in the year.</p> <p>August 2010: The National Energy Efficiency and Savings plan has not yet been published, although key themes from the consultation have been picked up in the Fuel Poverty Statement and the Energy Policy Statement</p>
<p>8: The Welsh Assembly Government reviews and amends where necessary all</p>	<p>Accept in principle</p>	<p>In its consultation on a Climate Change Strategy – Programme of Action, published June 2009, the Welsh Government is consulting on an approach to reducing</p>

²³ Welsh Government, Jane Davidson (Minister for the Environment, Sustainability and Housing), [National Energy Efficiency and Savings Plan Consultation](#), Cabinet Written Statement, 10 July 2009

<p>the targets set for public bodies in Wales to ensure that they are consistent with carbon reduction targets.</p>		<p>emissions from the public sector. The document does not propose a specific target for the sector.²⁴</p> <p>August 2010: The Wales Climate Change Strategy will be published in October 2010</p>
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²⁴ Welsh Government [Climate Change Strategy – Programme of Action Consultation](#) June 2009

Our thoughts on the progress towards implementing the recommendations

121. We acknowledge that there has been an increasing awareness of the need to take action on carbon reduction since we published our report in 2008, especially in the public sector. Our report into Mainstreaming Sustainability in Ministerial Portfolios, published in July 2009 highlighted the progress that has been made by many areas of the public sector in Wales led, in many cases by the relevant Welsh Assembly Government Minister. There is still room for improvement and leadership in some public sector areas and especially across the business sector however.

122. We were disappointed that the Minister rejected our first recommendation but, in hindsight, we should perhaps have been more specific about our intentions regarding this recommendation. It was never our intention to place an increased burden on those companies already covered by the EUETS or CRC but to ensure that any companies not covered by those schemes were given a target to strive for. We also wanted to acknowledge the contribution that the EUETS and CRC companies were making to overall carbon reduction in Wales whilst acknowledging the pitfalls of double counting.

123. We welcome the publication of the Green Jobs Strategy but think that it does not go far enough in fulfilling our second and third recommendations. We are also disappointed that no additional funding has been allocated to the strategy at a time when stimulating the Welsh economy is a high priority for the Welsh Government.

124. We were very disappointed that the Welsh Government's consultation on its carbon reduction strategy did not contain any indicative reduction targets. We hope that the final strategy will not only include sectoral targets, as committed to in the One Wales agreement, but that the importance of the leadership role of public sector in carbon reduction will be acknowledged and a higher target figure set for them.

Carbon reduction from energy production

125. We made six headline recommendations in our report on carbon reduction from energy production. All were accepted either in full, in part or in principle.

Headline recommendations

126. The following table shows the progress of the six headline recommendations.

Headline Recommendation	Response	Progress to date
<p>1: Whilst we acknowledge the lack of powers of the Welsh Assembly Government over fossil fuel energy production in Wales, we recommend that the Welsh Assembly Government, as part of its energy strategy, produce a strategic framework for all energy production in Wales, indicating spatially and in terms of output the preferred energy mix for Wales.</p>	<p>Accept in principle</p>	<p>A Low Carbon Revolution: Wales' Energy Policy Statement²⁵ was published in March 2010. The statement explains how the Welsh Government plans to develop low carbon energy in Wales. It also builds on the Renewable Energy Route Map and the Bioenergy Action Plan for Wales consultation. The response to the Bioenergy Action Plan for Wales consultation was published in December 2009 and a Ministerial Policy Statement on Bioenergy is due to be produced which will be based on the Action Plan and the issues raised in the consultation.²⁶</p>

²⁵ Welsh Assembly Government, [A Low Carbon Revolution: Wales' Energy Policy Statement](#), March 2010

²⁶ Welsh Assembly Government, [Response to the consultation on a Bioenergy Action Plan for Wales](#), website [accessed 25 August 2010]

<p>2: The Welsh Assembly Government undertake a thorough review of the adequacy of the transport infrastructure and grid connection for the construction of both fossil fuel and renewable energy plants in the areas identified in the strategic framework recommended in HL1.</p>	<p>Accept in part</p>	<p>The Department for Energy and Climate Change published a Draft National Policy Statement on Electricity Networks Infrastructure in November 2009.²⁷</p>
<p>3: The Welsh Assembly Government to continue to encourage grid and distribution companies to work co-operatively with developers to develop an integrated approach to connection for large scale</p>	<p>Accept in part</p>	<p>The Department for Energy and Climate Change published a Draft National Policy Statement on Electricity Networks Infrastructure in November 2009.</p> <p>On 15 July 2010 the Minister of State for Energy, Charles Hendry, announced that having considered the responses to the consultation the UK Government will be launching a re-consultation on the draft energy National Policy Statements in Autumn 2010 with a view</p>

²⁷ DECC [Draft National Policy Statement for Electricity Networks Infrastructure](#), November 2009

renewables.		to presenting the finalised National Policy Statements to Parliament for ratification next Spring. ²⁸
4: The Welsh Assembly Government simplifies the number and nature of targets set for carbon reduction and ensures that there is consistency and explicit linkages between targets for renewable energy and carbon reduction.	Accept	The consultation on a Climate Strategy: Programme of Action did not contain any information on simplifying the link between carbon reduction and renewable energy targets.²⁹ Publication of the Wales Climate Change Strategy is expected in Autumn 2010.
5: The Welsh Assembly Government focuses on the achievement of the targets it has set by:	Accept in principle	The Green Jobs Strategy was published in July 2009 and makes specific references to the provision of support for research and development through the Flexible Support for Business fund.³⁰

²⁸ DECC, [Consultation on draft national policy statements for energy \(press release\)](#), 15 July 2010

²⁹ Welsh Government [Climate Change Strategy - Programme of Action Consultation](#) June 2009

³⁰ Welsh Government [Green Jobs Strategy](#) July 2009

<p>Providing sufficient incentives for the research, development and manufacture of renewable energy technologies in Wales;</p> <p>Issuing guidance and advice on ways to achieve the targets; and</p> <p>disseminating widely examples of good practice of organisations and individuals achieving its targets</p>		<p>£34 million of funding for the Low Carbon Research Institute was announced on 2 October 2009.³¹ £15 million of this is Convergence funding.</p> <p>The 2010-11 Supplementary Budget (laid June 2010) included the provision of £4 million from the Strategic Capital Investment Framework (SCIF)for the Low Carbon Region in the Heads of the Valleys.³²</p>
<p>6: The Welsh Assembly Government to explore the potential for local authorities in Wales to issue loans for the</p>	<p>Accept in principle</p>	

³¹ Welsh Government press release, [£34m to meet carbon-cutting targets](#), 2 October 2009

³² Welsh Assembly Government, [Welsh Assembly Government Supplementary Budget 2010 -2011 - Explanatory Note](#), June 2010

installation of domestic microgeneration technology e.g. the Kirklees scheme, or repayment based on feed in tariff revenue.		
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Our thoughts on the progress towards implementing the recommendations

127. We are disappointed at the lack of progress on our headline recommendations which were, by necessity, of a more strategic nature than those in other reports.

128. We feel that, with the consultation by the UK Government on the National Policy Statements for energy, the Welsh Government has missed an opportunity to set out its own aspirations for energy in Wales in the context of the National Policy Statements.

129. Although there have been several consultations in the area of energy, we are disappointed that no policies have emerged as a result of them and that more consultations are planned.

130. We welcome the £34 million funding for the Low Carbon Research Institute and believe that this will provide a valuable resource not only for encouraging low carbon technologies into Wales but also to help to establish Wales as a leader in low carbon research.

131. We are also pleased to see that good progress has been made on several of our other recommendations in this report including guidance on marine renewables by the Minister for Environment, Sustainability and Housing and the extension and further funding of the Low Carbon Building Scheme by the UK Government.

Carbon reduction from land use

132. We made no headline recommendations in this report as this is a relatively new area of investigation for scientist and policy makers alike. Of our twelve recommendations in our report on carbon reduction from landuse, all but one were accepted either fully or in part.

Headline recommendations

133. The following table shows the progress of the recommendations that we think are key to reducing carbon through land use.

Recommendation	Response	Progress to date
<p>3: The Welsh Government should lobby the UK Government and the EU to ensure that carbon reduction is a key objective of any payment scheme covering all farms in the next review of the Common Agricultural Policy</p>	<p>Accept</p>	
<p>4: The Welsh Government should establish a dedicated carbon reduction information service for farmers and land managers</p>	<p>Accept</p>	<p>A press release was issued on 10 August 2009 to announce that the contract for the Farming Connect Climate Change Development Programme has been awarded jointly to Bangor University and IBERS. The press release states that this programme will review existing research, available information and market opportunities and transfer this knowledge to Welsh Farmers.</p>
<p>5: The Welsh Government should support the development and roll out</p>	<p>Accept</p>	<p>See update to recommendation 4</p>

<p>of a carbon footprinting tool which can be accessed and used by all farmers and land managers as soon as possible. The rollout of the tool should be accompanied by the production and provision of advice and help for using the tool which is accessible to all farmers and land managers.</p>		
<p>8: The Welsh Government support the research currently being done into the conservation of carbon in soils in Wales and uses the findings of the research to inform land use and agricultural policy as soon as it becomes available.</p>	<p>Accept</p>	<p>In its response to the Rural Development Subcommittee’s report on the Future of the Uplands, the Welsh Government stated that research to apply the ECOSSE model to land management in areas of Wales is a priority in discussions on the soil management research programme with DEFRA.</p>
<p>9: The Welsh Government</p>	<p>Accept</p>	<p>The Council is yet to reach a political agreement on the</p>

<p>lobbies the UK Government and the EU to ensure that soils are given high level regulatory protection.</p>		<p>EU Soil Framework Directive. The discussions during the Czech Presidency (first half of 2009) failed to result in an agreement.</p> <p>Further discussion on the Soild Framework Directive during the Spanish Presidency in early 2010 again failed to reach agreement, with a group of member states – including the UK – forming a blocking minority in the Council of Ministers.</p>
<p>12: The Welsh Government carries out research into the ways in which it could implement a carbon trading scheme wholly or partly within the land use sector.</p>	<p>Reject</p>	<p>In the UK Low Carbon Transition Plan³³, the UK Government states that the Government will review action taken by agriculture sector in 2012 to decide whether voluntary action to reduce climate change emissions has been sufficient if not mandatory measures will be introduced. The UK Government has stated that it is currently working with farmers, delivery bodies and the Devolved Administrations to develop a shortlist of options for intervention to be triggered in case of insufficient progress. The short list will consider new regulatory, economic and advisory policies.</p>

³³ Department of Energy and Climate Change http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx July 2009

Our thoughts on the progress towards implementing the recommendations

134. Although this was our final report and was published in July 2009, we are pleased with the progress that has already been made on the Farming Connect Climate Change Development Programme and the Minister's announcement of additional funding for carbon abatement measures in her response to the report.

135. We urge the Minister to roll out the Farming Connect Climate Change Development Programme as soon as possible along with the carbon footprinting tool which we believe is key for farmers to start addressing their carbon emissions.

136. We are disappointed that the Minister has rejected our final recommendation, especially as the Climate Change Committee, the UK Government's advisor on climate change included cap and trade schemes as an option to be considered to provide stronger incentives for emissions reduction in the agricultural sector³⁴. We hope that the joint work with the UK Government to develop options for carbon reduction in the agricultural sector will include further consideration of carbon trading.

³⁴ Climate Change Committee <http://www.theccc.org.uk/pdf/TSO-ClimateChange.pdf>
December 2008

Annex A – Update on other recommendations

Residential carbon reduction

Recommendation	Response	Progress to date
<p>7: The Committee recommends that the Welsh Assembly Government revises Planning Policy Wales and the associated guidance to strengthen the requirements for local authorities to include policies aimed specifically at carbon reduction in their Local Development Plans.</p>	<p>Accept</p>	<p>Update: In evidence to the Sustainability Committee on carbon reduction via planning the Minister stated that: “A Planning for Climate Change consultation package was published in 2006 to supplement existing policy. It included a draft Ministerial Interim Planning Policy Statement (MIPPS), proposals to introduce a statutory requirement for design statements, and an approach to a climate change compendium. In response to the issues raised by this consultation, we have consulted on a further change to national planning policy to set minimum sustainable</p>

		<p>building standards and low and zero carbon energy requirements”.³⁵</p> <p>Under the Planning and Energy Act 2008, local authorities can now include ‘reasonable’ policies in their local development plans imposing reasonable requirements for: a portion of energy in developments to be from local renewable or low carbon sources; developments to comply with energy efficiency standards beyond the requirements of building regulations.³⁶</p>
<p>8: The Committee recommends that the Welsh Assembly Government reviews the application process for the installation and use of low carbon technologies in residential buildings with a view to simplifying and</p>	<p>Accept</p>	<p>In evidence to the Sustainability Committee on carbon reduction via planning the Minister for Environment, Sustainability and Housing stated that it was her intention to introduce secondary legislation in summer 2009</p>

³⁵ RoP, 5 March 2009, [Sustainability Committee](#)

³⁶ Office of Public Sector Information, [Planning and Energy Act 2009](#) (accessed on 29 September 2009)

accelerating the process		to extend GPDO to include a wider range of technologies. ³⁷ Extended permitted development rights have been in force since 1 September 2009. ³⁸
9: The Committee recommends that the Welsh Assembly Government works with the Royal Town Planning Institute to develop and promote training, advice and guidance for planners in the areas of low carbon design and the use of microgeneration energy sources.	Accept	In evidence to the Committee on 29 January 2009, the RTPI stated that they have been given Welsh Government funding to facilitate climate change training for officers in local planning authorities. This was due to start in March 2009. ³⁹
10: The Committee recommends that the Welsh Assembly Government works with the Construction Industry Training Board (CITB) and the Sector Skills Council for Construction to	Accept	A Zero Carbon Hub Wales Was established in March 2009 which involves the building industry, housing and voluntary sector. This aim is for this Hub to play a key part

³⁷ RoP, 29 January 2009, [Sustainability Committee](#)

³⁸ Welsh Government website: [Permitted Development Rights for Microgeneration](#) (accessed on 29 September 2009)

³⁹ Sustainability Committee, [Paper SC\(3\)-02-09 Inquiry into Carbon Reduction via Planning](#) , 29 January 2009

develop and promote training, advice and support for the construction industry in the area of low carbon building.		in achieving the aspiration for zero carbon new build by 2011, and the commitment to reducing greenhouse gas emissions by 3% a year from 2011. ⁴⁰
11: The Committee recommends that the Welsh Assembly Government works with the Construction Industry Training Board (CITB) and the Sector Skills Council for Construction to develop and promote training, advice and support for the construction industry in the installation and the use of microgeneration energy sources	Accept	A Zero Carbon Hub Wales Was established in March 2009 which involves the building industry, housing and voluntary sector. This aim is for this Hub to play a key part in achieving the aspiration for zero carbon new build by 2011, and the commitment to reducing greenhouse gas emissions by 3% a year from 2011. ⁴¹
12: The Committee recommends that the Welsh Assembly Government explore mechanisms for creating a market for surplus energy generated	Accept in principle We are already exploring the creation of local energy supply companies, in	Provisions for the implementation of feed-in tariffs are contained in Sections 41-43 of the Energy Act 2008. ⁴² The provisions enable the

⁴⁰ Welsh Government [New zero carbon hub set to make Welsh buildings greener](#), 9 March 2009 (accessed on 29 September 2009)

⁴¹ Welsh Government [New zero carbon hub set to make Welsh buildings greener](#), 9 March 2009 (accessed on 29 September 2009)

⁴² Office of Public Sector Information, [Energy Act 2008](#)

<p>by individual microgeneration plants such as the creation of local energy supply companies with agreed feed-in tariffs.</p>	<p>particular as part of our plans to use Assembly Government owned land to drive forward pathfinder projects for low/zero carbon development. We will also work with the UK Government on the issue of feed-in tariffs, which are a reserved matter. I welcomed the announcement in the Budget that the UK Government will investigate a possible feed-in tariff for renewables and microgeneration in the context of a consultation on the most appropriate support mechanism for microgeneration at individual and community level. The UK Government also announced that it will consider how to address barriers such as planning and grid access.</p>	<p>Secretary of State to introduce feed-in tariffs to encourage small-scale low-carbon generation of electricity. The UK Low Carbon Transition Plan contains a proposal to consult on the implementation of feed-in tariffs, with a view to their being in place by April 2010. A similar scheme for renewable heat is to follow in 2011.⁴³</p>
<p>13: The Welsh Assembly Government should engage with developers as soon as possible to identify the</p>	<p>Accept</p>	<p>In a press release on 26 March 2009 the SDC gave details of the Green Building Charter. The Charter aims to</p>

⁴³ Department of Energy and Climate Change, [The UK Low Carbon Transition Plan](#), July 2009 (accessed on 29 September 2009)

benefits to them of pioneering zero carbon house building techniques in Wales		help achieve the Welsh Assembly Government's aspiration that all new buildings be zero carbon by 2011. It also seeks to make a contribution to the 3% annual reduction in emissions from 2011 onwards. ⁴⁴ See also recommendations 1 and 2.
14: The Committee recommends that the Welsh Assembly Government should identify good practice in the social housing sector and set up a knowledge exchange with private sector developers and builders.	Accept	In a press release on 26 March 2009 the SDC gave details of the Green Building Charter. The Charter aims to help achieve the Welsh Assembly Government's aspiration that all new buildings be zero carbon by 2011. It also seeks to make a contribution to the 3% annual reduction in emissions from 2011 onwards. ⁴⁵ See also recommendations 1 and 2.
15: Where land in the ownership of	Accept in principle	From 1 May 2008 a minimum of Code

⁴⁴ Sustainable Development Commission press release, [Businesses sign up to Green Building Charter](#), 26 March 2009 (accessed on 29 September 2009)

⁴⁵ Sustainable Development Commission press release, [Businesses sign up to Green Building Charter](#), 26 March 2009 (accessed on 29 September 2009)

<p>the Welsh Assembly Government is to be released for residential development, it should be done so at a discounted rate for the construction of zero carbon housing.</p>		<p>level 3 will be required for all new housing promoted or supported by the Welsh Assembly Government or ASGB's, whether: directly procured; the subject of financial support; joint ventures; or projects on land sold, leased or disposed of in any other way for development. This also applies to all new housing on land improved or reclaimed with the Welsh Assembly Government or ASGB funding that is still subject to financial clawback. Registered social landlords are also being invited to identify schemes within their work programmes. This is part of a pilot that aims to develop projects to meet the requirements of higher code levels, namely Code levels 4 and 5. Housing developments promoted or supported by the Welsh Assembly Government will follow this approach. The Building Research Establishment Environmental Assessment Method (BREEAM) is still a</p>
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		requirement for non residential developments promoted or supported by the Welsh Assembly Government. ⁴⁶
16: Where land in the ownership of the Welsh Local Authorities is to be released for residential development, the Welsh Assembly Government should encourage and support local authorities to do so at a discounted rate for the construction of zero carbon housing.	Accept in principle	
17: The Committee therefore recommends that the Welsh Assembly Government consults with Welsh local authorities on the most effective way of measuring CO ₂ emissions from residential properties in their area to establish a true baseline against which each local authority can measure improvement.	Accept in principle Recommendations 17, 18 and 19	

⁴⁶ Welsh Government [Code for Sustainable Homes](#) (accessed on 29 September 2009)

<p>18: The Committee therefore recommends that the performance indicators should contain targets with milestones for improvement, a clear indication of what is being measured (e.g. CO₂ reduction, average energy efficiency of housing stock, number of homes given advice/grants, reduction in the percentage of hard to heat homes). The targets should also reflect the current state of the housing stock within the local authorities' areas and should be tailored accordingly.</p>	<p>Accept in principle – See 17</p>	
<p>19: The Committee also recommends that the Welsh Assembly Government issues guidance to local authorities on methods of achieving their targets e.g. full time dedicated staff to implement household carbon reduction policies, how reductions can be made in private properties, sharing of good practice.</p>	<p>Accept in principle – See 17</p>	

<p>20: The Committee recommends that the Welsh Assembly Government produces a sustained and widespread marketing campaign aimed at encouraging and informing people about the benefits of reducing their energy consumption.</p>	<p>Accept</p>	<p>A booklet, 'Improving your Home - a Climate Change Guide' was published by then Welsh Government on 5 March 2009. The guide is being issued to DIY stores across Wales to help people improve their home and reduce their carbon emissions.⁴⁷</p>
<p>21: The Committee therefore recommends that, the Welsh Assembly Government should continue to fund the Sustainable Energy Network. The network should be expanded and enhanced however to encompass all those organisations providing advice (including the Carbon Trust) into a truly One Stop Shop for all carbon reduction help and advice with additional funding from the Welsh Assembly Government.</p>	<p>Reject</p>	

⁴⁷ Welsh Government [Improving Your Home: A Climate Change Guide](#). (accessed on 29 September 2009)

<p>22: The Committee recommends that the Welsh Assembly Government makes additional funds available for community based carbon reduction projects.</p>	<p>Accept.</p>	
<p>23: The Committee recommends that the Welsh Assembly Government, subject to the outcomes of current trials, supports the UK Government in their efforts to encourage the utility companies to fund the installation of Smart Meters or their equivalent in all households across Wales.</p>	<p>Accept</p>	<p>Part 5 of the Energy Act 2008 contains provisions that enable the Secretary of State to require electricity and gas suppliers to install meters of a specific technical specification (smart meters) (s. 88). Prior to making such modifications to the licensing schemes, the Secretary of State must consult with both Ofgem and all suppliers (s. 89).⁴⁸</p> <p>The UK Low Carbon Transition Plan contains a commitment to roll out smart meters to all homes by the end of 2020.⁴⁹</p>

⁴⁸ Office of Public Sector Information [Energy Act 2008](#)

⁴⁹ Department of Energy and Climate Change, [The UK Low Carbon Transition Plan](#), July 2009 (accessed on 29 September 2009)

<p>24: The Committee recommends that the Welsh Assembly Government produce detailed action plans outlining how they intend each of the targets they have set to be met.</p>	<p>Accept in principle</p>	<p>The Minister consulted on the first phase of a climate change strategy (the high level policy statement) in spring 2009. This defines the 3 per cent target to cut greenhouse gases set out in the 'One Wales' agreement. It will include all 'direct' greenhouse gas emissions in Wales except those from heavy industry and power generation, which are being broadly defined as those installations covered by the EU Emissions Trading Scheme (EU ETS). Therefore the direct emissions from transport, the residential sector, the public sector, waste, agriculture and land use change will be included, along with all business and industrial emissions that are not subject to the EU ETS. Additionally the emissions resulting</p>
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		<p>from electricity consumption in each sector will also be included.⁵⁰</p> <p>The Welsh Government will use the disaggregated greenhouse gas inventory, which reports Wales-specific emissions, as the main data source to set the baseline to measure the 3 per cent target and measure progress. To measure the target, the Welsh government will compare the relevant emissions in each year from 2011 onwards to a baseline. This baseline will be an average of the relevant emissions between 2006 and 2010. Progress against the target will be assessed by a simple comparison between the level of emissions and the baseline.⁵¹</p> <p>The consultation on a Climate Change Strategy: Programme of Action was</p>
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⁵⁰ Welsh Government, [Climate Change Strategy Consultation](#), January 2009

⁵¹ Welsh Government press release, [Welsh Assembly Government consults on targets to cut Greenhouse Gases](#), 9 January 2009

		published on 25 June and will end on 2 October 2009. ⁵²
25: The Committee recommends that the Welsh Assembly Government reports progress on achieving the targets every six months to the Assembly in plenary and to the Sustainability Committee or its equivalent.		
26: The Committee recommends that, in addition to recommendation 16, the Welsh Assembly Government reports to the Committee every six months on its progress in implementing the recommendations from this report that it has accepted.	Accept in part.	

⁵² Welsh Government [Climate Change Strategy – Programme of Action Consultation](#) June 2009

Carbon reduction from transport

Recommendation	Response	Progress to date
5: The Committee recommends that local authorities and public bodies lead by example by providing administration centres and public buildings at locations where there are sustainable modes of transport for workers and visitors.	I fully accept	See Recommendations 7 and 8
6: The Committee recommends that the Welsh Assembly Government gives public sector organisations targets in relation to the procurement of efficient motor vehicles and adoption of green travel plans.	I fully accept	A Cabinet Paper identifies a possible scheme to introduce hybrid vehicle technology in the public sector at a cost of up to £3 million per annum. ⁵³
7: The Committee recommends that the Welsh Assembly Government should urgently revise its statutory	Minister's response: This is a recommendation that I intend to discuss in detail with my Cabinet	In a March 2009 debate on Jenny Randerson's proposed Travel Plans for major developments LCO, the Minister

⁵³ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009
[Cabinet Committee On Climate Change - Programme of Action to deliver the 3% Target: Summary ff DE&T Phase 2 Submission](#)

<p>planning guidance for local authorities to ensure that proposals for development are not permitted where adequate public transport cannot be provided.</p>	<p>colleague the Minister for the Environment, Sustainability and Housing.</p>	<p>for the Environment, Sustainability and Housing outlined proposals to introduce secondary legislation by 2011 to require transport assessments and travel plans for all major developments if there is evidence that the current guidance under TAN18 is not being followed.⁵⁴</p> <p>A consultation on proposals to introduce a requirement for transport assessments to be undertaken for specific types of development was published in June 2009.⁵⁵ Planning Policy Wales was updated in July 2010 to include this requirement.</p>
<p>8: The Committee broadly supports this view and recommends that there is more joined-up thinking across departmental portfolios within the</p>	<p>I fully accept</p>	<p>A Cabinet paper states that a joined up approach to planning (including better working with local authorities and within the Assembly Government)</p>

⁵⁴ [RoP](#) p60-75 18 March 2009

⁵⁵ Welsh Assembly Government, [Consultation on proposals to strengthen Planning Policy Wales to support the requirement for travel plans for specific types of development](#), June 2009

<p>Welsh Assembly Government and local authorities to ensure that decisions on the location of services and facilities take into consideration transport implications.</p>		<p>is being pursued to deliver carbon reductions in transport.⁵⁶</p>
<p>9: The Committee recommends that the Welsh Assembly Government introduces a wide marketing and promotion campaign on the benefits of eco-driving, paying particular attention to cost and safety benefits, rather than environmental aspects.</p>	<p>I recognise the potential of eco-driving to secure significant increases in fuel efficiency, with corresponding reductions in carbon emissions.</p>	<p>A Cabinet paper states that eco-driving is being promoted by the Welsh government as part of the ongoing communications campaign on climate change.⁵⁷</p>
<p>10: The Committee further recommends that the Welsh Assembly Government introduces a pilot scheme in one local authority area where all public sector employees, for whom driving is part of their job, must</p>	<p>Minister's response: Not accepted.</p>	

⁵⁶ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009
[Cabinet Committee On Climate Change - Programme of Action to deliver the 3% Target: Summary ff DE&T Phase 2 Submission](#)

⁵⁷ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009
[Cabinet Committee On Climate Change - Programme of Action to deliver the 3% Target: Summary ff DE&T Phase 2 Submission](#)

undertake an eco-driving course.		
11: The Committee recommends that the Welsh Assembly Government demonstrates its commitment to the Sustainable Travel Towns project by announcing details and levels of funding as a matter of urgency and by rolling-out the project across Wales, including in some rural areas, without further pilots. See recommendation 4 above.	I am fully committed to the Sustainable Travel Towns initiative, which will enable a number of towns throughout Wales to become exemplars in terms of sustainable travel	See Recommendation 4
12: The Committee recommends that the Welsh Assembly Government, local authorities and other public bodies lead the way in encouraging and incentivising home-working amongst their employees and the use of video-conferencing wherever possible.	The recent Wales Transport Strategy recognises the potential of home-working, flexible working hours and video-conferencing to help to minimise the demands on the transport network.	Connecting Wales states: “Existing demands on the transport system reflect the locations of homes, employment, shops and leisure facilities. We aim to reduce those demands, for example by encouraging home-working, flexible working hours, and tele-conferencing as well as full integration of sustainable

		modes of transport into developments. ⁵⁸
13: The Committee recommends that the Welsh Assembly Government provides support and guidance to local authorities on providing incentives to promote and publicise public transport, for example offering a free trial to travel on public transport.	I agree that there is a need to challenge existing perceptions of public transport and the Assembly Government will continue to work with local authorities and transport operators to achieve this.	
14: The Committee recommends that the Welsh Assembly Government reviews its planned expenditure on public transport provision and provides direct funding at an early stage to encourage major improvements in the quality of public transport, before other options such as road pricing can be considered.		See Recommendation 1. Expenditure has been reprioritised to some extent, although roads still account for 63 per cent of the budget.

⁵⁸ [Welsh Assembly Government. *One Wales: Connecting the Nation. The Wales Transport Strategy \(April 2008\)* \[on 13 May 2009\]](#)

<p>15: The Committee recommends that once the Local Transport Bill becomes law, the Welsh Assembly Government issues guidance to local authorities to ensure that they use Quality Bus Partnerships and Quality Contract Schemes, to encourage bus operators to give priority to reducing the carbon emissions of their vehicles.</p>	<p>The Welsh Assembly Government will issue guidance on bus Quality Partnership and Quality Contract schemes once the Local Transport Bill has been enacted.</p>	<p><i>The Local Transport Act 2008</i> received Royal Assent in November 2008. A consultation on Operational Guidance for Improving Local Bus Services based on the Act was issued in December 2008⁵⁹.</p>
<p>16: The Committee recommends that the Welsh Assembly Government provides the necessary funding and guidance to local authorities to introduce pilot schemes across rural Wales, such as community buses, car-sharing and taxi-bus schemes.</p>	<p>In 2007-08 the Welsh Assembly Government provided over £10 million to local authorities for socially necessary bus services and community transport schemes.</p>	<p>A Cabinet paper states that the government is reviewing its support provided to local authorities and bus operators for local bus services with a view to developing new mechanisms that will incentivise fuel and carbon efficiency.⁶⁰</p>
<p>17: The Committee recommends that</p>	<p>The Welsh Assembly Government will</p>	<p>Update: A Rail forward programme</p>

⁵⁹ Welsh Assembly Government, [Consultation on Operational Guidance for Improving Local Bus Services](#), December 2008

⁶⁰ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009

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<p>the Welsh Assembly Government provides significant investment in new and extended platforms, in rolling stock and in ensuring that the infrastructure can also support the expected growth in passenger numbers and the increasing transfer of freight from road to rail.</p>	<p>continue to work with Network Rail, the train operating companies and other partners to ensure that the capacity of the rail network is expanded to meet the expected growth in passenger and freight demand.</p>	<p>was announced by the Minister in December 2008.⁶¹ A Cabinet paper says that revenue support is currently around £170 million per annum and capital about £30 million.⁶² The paper says that more funding is needed to speed up delivery of the programme. The Wales Freight Strategy was published in May 2008.⁶³ The paper also says that consideration is being given to the scope for electrification of the rail network. The final Network Rail Route Utilisation Strategy for Wales was also published in November 2008.⁶⁴ This sets out proposals for improvements to the railway infrastructure over the next ten years.</p>
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⁶¹ Welsh Assembly Government, [Rail Forward Programme](#), December 2008

⁶² *ibid*

⁶³ Welsh Assembly Government, [One Wales: Connecting the nation The Wales Freight Strategy](#), May 2008

⁶⁴ Network Rail, [Wales Route Utilisation Strategy](#), May 2008

<p>18: The Committee recommends that the Welsh Assembly Government works closely with Network Rail and the train operating companies to enhance timetabling for rail passengers and reduce journey times to allow more flexibility and encourage uptake.</p>	<p>The Welsh Assembly Government will continue to work closely with Network Rail and the train operating companies to enhance timetabling and journey times, including the delivery of our ‘One Wales’ commitment to reduce rail travel time between North and South Wales.</p>	<p>See Recommendation 17 above.</p>
<p>19: The Committee recommends that the Welsh Assembly Government works closely with local authorities and transport providers to promote integrated ticketing for existing travel options across bus and rail journeys, whilst ensuring co-ordination of timetables and minimising connection waiting times.</p>	<p>The Welsh Assembly will continue to work closely with local authorities and transport providers to promote integrated ticketing and improved co-ordination of timetables.</p>	<p>A Cabinet paper says that the TrawsCambria long distance coach service is being developed to provide a service that is fully integrated with the rail network.⁶⁵ Costs are about £5 million per annum in revenue support plus £3 - £4 million to upgrade facilities at key interchanges. The One Wales Delivery Plan (December 2008)⁶⁶ says the following: “Management Board in place and</p>

⁶⁵ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009
[Cabinet Committee On Climate Change - Programme of Action to deliver the 3% Target: Summary ff DE&T Phase 2 Submission](#)

⁶⁶ Welsh Assembly Government, One [Wales Delivery Plan 2007-2011](#), December 2008

		<p>recruiting Network Manager. Will publish 5 year programme for improving the network and on arrangements for integrated ticketing.</p> <p>Migration to Smartcards for concessionary bus fares scheme progressing and smartcards are being issued. In addition infrastructure developed for smartcard project will support more general integrated ticketing.”</p>
<p>20: The Committee recommends that the Welsh Assembly Government encourages local authorities to show leadership in the implementation and promotion of bus lanes and safe and convenient park and ride facilities.</p>	<p>I will continue to encourage local authorities to develop integrated transport in their areas, including the provision of bus priority measures and park and ride facilities.</p>	<p>See Recommendation 2 in relation to Regional Transport Plans. Future funding for integrated transport will be through the four regional transport consortia, rather than individual local authorities. A Cabinet paper says that plans are being developed to put strategic ‘Park and Ride’ facilities on the Cardiff road network.⁶⁷ The</p>

⁶⁷ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009
[*Cabinet Committee On Climate Change - Programme of Action to deliver the 3% Target: Summary ff DE&T Phase 2 Submission*](#)

		estimated capital cost is in the order of £40 million. Park and Share sites are also being considered for longer journeys, with an estimated capital cost of £30 million.
21: The Committee recommends that the Welsh Assembly Government considers introducing Green Fleet Reviews in Wales.	I will consider whether the introduction of a scheme in Wales would be both affordable and represent a cost-effective means of reducing carbon emissions. The earliest possible implementation date would be 2009-10.	
22: The Committee recommends that any future non-local road-pricing scheme should be integrated across the United Kingdom, but with regional and local flexibility as to how it is applied.	The development of a national road pricing scheme is a matter for the UK Government. I understand that no decisions have been taken on widespread pricing yet. I will continue to work closely with the UK Government on road pricing issues	The Local Transport Act 2008 received Royal Assent in November 2008. A Cabinet Statement ⁶⁸ from the Minister explains the implications of the Act for road pricing as follows: On road pricing, the Act contains a Measure power that provides the

⁶⁸ Welsh Assembly Government, Ieuan Wyn Jones, Deputy First Minister and Minister for the Economy and Transport, Cabinet Written Statement, [Local Transport Act 2008](#), 27 November 2008

	<p>and the development of any national scheme.</p>	<p>National Assembly with legislative competence in relation to pricing schemes on the strategic road network. The Assembly Government has yet to decide what role, if any, road pricing may play in addressing current and future transport challenges. This power will however enable us to adopt a coherent approach towards any road pricing proposals that may come forward within Wales or any future UK scheme. We have made it clear that, if we were to introduce road pricing, it would be in the context of new road developments in the areas with the worst congestion problems.</p> <p>Our approach is entirely consistent with the further development of the devolution settlement. The Act simply devolves the issue to Wales, as has already been done in Scotland and Northern Ireland.</p>
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		On local road pricing, the Act broadly maintains the status quo in Wales, but with some updating of the statutory framework to ensure that any local schemes that are developed are consistent and interoperable. The Welsh Ministers will retain an approval role for local schemes, as well as a power to hold or cause an inquiry to be held in relation to a charging scheme.
23: The Committee recommends that the Welsh Assembly Government does not approve any local road-pricing schemes unless it can be demonstrated that adequate alternative public transport provision is available.	Under the Transport Act 2000, the Welsh Ministers need to approve the relevant 'scheme order' before a local road pricing scheme can commence.	See Recommendation 22
24: The Committee recommends that any future road-pricing schemes relate to the environmental credentials of vehicles and number of passengers	Within the existing statutory framework for local pricing schemes, there is scope for charging authorities to differentiate charges by vehicle	See Recommendation 22

<p>and that adequate support is provided to public transport in order to anticipate increased demand.</p>	<p>class. However, as mentioned above, I am keen for local authorities to have the flexibility to tailor any local road pricing schemes to meet their objectives. This may include the imposition of price differentials for different classes of vehicles, but there is a need to be realistic about the challenges of detection and enforcement.</p>	
<p>25: The Committee recommends that the Welsh Assembly Government works closely with the UK Government to explore taking forward action in the non-devolved areas of transport, such as the technical efficiency of vehicles, carbon content of fuels and reduced speed limits.</p>	<p>The Welsh Assembly Government will continue to work closely with the UK Government, as well as our other partners, to explore the full range of options for putting transport onto a less carbon-intensive path.</p>	<p>A Cabinet paper states the Welsh government supports the Renewable Transport Fuels Obligation and EU Regulations on CO2 emissions from new cars.⁶⁹</p>
<p>26: The Committee recommends that</p>	<p>The Welsh Assembly Government is</p>	<p>The Enterprise & Learning Committee</p>

⁶⁹ Sustainability Committee, SC(3)-07-09 Paper 4, Annex 4: 2 April 2009
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<p>the Welsh Assembly Government considers fully the proposal by Sustrans to introduce a Walking and Cycling Paths Legislative Competence Order, with a view to placing a duty on the Welsh Assembly Government to develop and maintain a network of traffic-free shared-use paths across Wales.</p>	<p>currently considering the proposal by Sustrans to introduce a Walking and Cycling Paths Legislative Competence Order.</p>	<p>has taken evidence on a proposed LCO in relation to footpaths and cycle routes.⁷⁰ The Minister told the committee that he did not support the need for the LCO as Welsh Ministers already have the necessary powers in this area.⁷¹</p>
<p>27: The Committee recommends that the Welsh Assembly Government reports to the Committee every six months on its progress in implementing those recommendations from this report that it has accepted.</p>	<p>I will be putting arrangements in place to report to the Assembly on a regular basis on progress in taking forward the Wales Transport Strategy and the National Transport Plan.</p>	

⁷⁰ Enterprise and Learning Committee, [*Proposed Draft \(Legislative Competence\) \(Traffic Free Routes\) Order 2009*](#)

⁷¹ Enterprise And Learning Committee Paper EL(3)-02-09 (p1), [*Proposed LCO For "The Provision For Imposing Duties On Highway Authorities In Wales In Relation To The Development And Maintenance Of Networks Of Highways For The Use Of Users Other Than Motor Vehicles."*](#), Welsh Assembly Government Written Evidence, 22 January 2009

Carbon reduction from industry and public bodies

Recommendation	Response	Progress to date
<p>1: The Welsh Assembly Government should ensure that there is sufficient support, including financial incentives and advice available to enable the low carbon technologies developed by bodies such as the Low Carbon Research Institute in Wales to be manufactured in and marketed from Wales.</p>	<p>Accept in principle</p>	<p>The Green Jobs Strategy was published in July 2009 and makes specific references to the provision of support for research and development through the Flexible Support for Business fund. No additional funds are identified.⁷²</p> <p>August 2010: Enterprise and Learning Committee reported on the Green Job Strategy in July 2010. The report suggests more still needs to be done in this area. The Flexible Support for Business fund is being revised following an announcement by the Minister for Economy and Transport about the structure of the Department for Economy and Transport.</p>
<p>2: The Welsh Assembly Government should set targets for the percentage of low carbon technologies developed</p>	<p>Reject</p>	

⁷² Welsh Government [Green Jobs Strategy](#) July 2009

<p>by bodies such as the Low Carbon Research Institute in Wales that go on to be manufactured in Wales and should use incentive schemes to enable those targets to be reached.</p>		
<p>3: The Welsh Assembly Government should work in partnership with the Higher and Further education sectors, the sector skills councils, professional development bodies and schools and colleges to ensure that appropriate training and skills are available to meet the needs of companies developing in the low carbon technology market as part of its Green Jobs</p>	<p>Accept</p>	<p>The Green Jobs Strategy, published in July 2009, makes reference to developing skills and innovation via a number of means, including working with Sector Skills Councils to identify ‘renewables champions’. The needs of the onshore wind power generating companies is said to be a priority area and the strategy also mentions the need to strengthening the skills base for research and developing innovative solutions and products. No additional funds are attached to the strategy.⁷³</p>

⁷³ Welsh Government [Green Jobs Strategy](#) July 2009

Strategy.		
4: That any Welsh Assembly Government targets for carbon reduction in industry should not penalise early adopters either by setting unrealistic targets that they cannot achieve because of the savings they have already made or by offering incentives for carbon reduction which they will not be able to access.	Accept	
5: The Welsh Assembly Government should urge the UK Government to support the proposed amendments to Phase 3 of the EUETS to link state and sectoral targets to overall EU emissions targets.	Accept	
6: The Welsh Assembly Government should commission research in order	Reject	The Carbon Reduction Commitment is due to commence in April 2010.

<p>to produce an evidence base for the establishment of an emission trading scheme in Wales by the end of 2009 through the powers given to it in Section 47 of the Climate Change Act 2008 with a view to using the scheme to contribute towards achieving national, UK and EU targets.</p>		<p>August 2010: The CRC Energy Efficiency Scheme was launched in April 2010, with registration for the scheme due to finish on 30 September 2010. Information on those organisations registered can be found at: http://www.environment-agency.gov.uk/business/topics/pollution/117652.aspx</p>
<p>7: The Welsh Assembly Government should use the powers given to it in Schedule 4 of the Climate Change Act 2008 to require all businesses that are not covered by any national trading scheme to produce a carbon appraisal to establish a baseline for their trading agreement. The carbon appraisals should be carried out by the Carbon Trust.</p>	<p>Reject</p>	

<p>8: The Welsh Assembly Government should establish a One Stop Shop for information and advice on carbon reduction. The one stop shop should take a pro active role in raising awareness of carbon reduction issues and giving help and advice to all business sectors.</p>	<p>Accept</p>	
<p>9: There should be clear and accurate information made available to business through the Carbon Trust (until the establishment of the body recommended in recommendation 8) on the differing roles undertaken and funding opportunities provided by the Welsh Assembly Government, UK Government and the EU.</p>		

<p>10: The Welsh Assembly Government should work with the UK Government and other agencies to ensure that any Wales and UK wide requirements for measuring, benchmarking and reporting systems for carbon reduction should require data recording and reporting to be undertaken in the same way.</p>	<p>Accept</p>	<p>A consultation on emissions reporting methods by organisations was issued in by DECC and DEFRA in June 2009.⁷⁴ S83 of the Climate Change Act requires that this guidance be published by 1 October 2009.</p>
<p>11: The Welsh Assembly Government to review other policies which impact on economic development and carbon reduction (e.g. planning policies) with a view to aligning them to the revised economic polices.</p>	<p>Accept in principle</p>	

⁷⁴ Department for Energy and Climate Change, press release, [DECC launches guidance on how to measure and report your greenhouse gas emissions](#), June 2009 (accessed on 28 September 2009)

12: The Welsh Assembly Government should ensure that good practice in procurement is shared through the Value Wales initiative and should encourage small, medium and large scale businesses to interact and share ideas.	Accept	
13: The Welsh Assembly Government work together with the WLGA to ensure that local authorities in Wales fulfil their role as key leaders in carbon reduction	Accept	
14: The Welsh Assembly Government should issue guidance to local authorities on the ways in which the targets in	Accept in principle	The National Energy Efficiency and Savings Plan was issued for consultation in the spring of 2009. ⁷⁵ Part Four of the consultation considered how the public sector can provide leadership and momentum and

⁷⁵ Welsh Government, [National Energy Efficiency and Savings Plan Consultation](#), March 2009 (accessed on 29 September 2009)

<p>the Energy Efficiency Performance Indicator could be achieved.</p>		<p>encourage local authorities to get more involved in energy efficiency programmes. A written statement on 10 July 2009 indicated that a final National Energy Efficiency and Savings plan will be published later in the year.⁷⁶</p> <p>August 2010: The National Energy Efficiency and Savings plan has not yet been published, although key themes from the consultation have been picked up in the Fuel Poverty Statement and the Energy Policy Statement</p>
<p>15: The Welsh Assembly Government should consider rolling out the support currently given to all local authorities to develop energy strategies.</p>	<p>Accept in principle</p>	<p>The Assembly Government accepts this recommendation in principle.</p> <p>We are considering the support offered to local authorities to promote action to tackle climate change as part of work on developing the Climate Change Strategy</p> <p>We do not intend to require the development of local authority energy strategies.</p>

⁷⁶ Welsh Government, Jane Davidson (Minister for the Environment, Sustainability and Housing), [National Energy Efficiency and Savings Plan Consultation](#), Cabinet Written Statement, 10 July 2009

<p>16: That the new performance indicator for energy usage be included in the Core Asset Management Suite of indicators to ensure the connections are made between managing the local government estate and reducing carbon emissions.</p>	<p>Reject</p>	
<p>17: That the Welsh Assembly Government identifies at an early stage those local authorities and public bodies who will come under the Carbon Reduction Commitment and works with those organisations to ensure that they have sufficient expertise and resources to meet the requirements of the scheme.</p>	<p>Accept in principle</p>	<p>The Carbon Reduction Commitment is due to commence in April 2010.</p> <p>August 2010: The CRC Energy Efficiency Scheme was launched in April 2010, with registration for the scheme due to finish on 30 September 2010. Information on those organisations registered can be found at:</p> <p>http://www.environment-agency.gov.uk/business/topics/pollution/117652.aspx</p> <p>All local authorities in Wales have been registered</p>

Carbon reduction from energy production

Recommendation	Response	Progress to date
<p>1: The Welsh Assembly Government indicate the renewable energy mix that will be required in Wales to meet the 2020 targets which does not include a scheme in the Severn Estuary and lobbies the UK Government to do the same.</p>	<p>Reject</p>	<p>A shortlist of five options for generating power in the Severn Estuary was published for further consideration in July 2009. Detailed studies of these options are currently being developed. The options include the Shoots Barrage, the Beacheley Barrage, the Fleming Lagoon, the Bridgwater Bay Lagoon and the Cardiff-Weston Barrage.⁷⁷</p>
<p>2: The Welsh Assembly Government to lobby the UK Government with its views on the use of Carbon Capture and Storage technology to ensure that any new fossil fuel power stations built in Wales are CCS ready and that any new fossil fuel power stations built are</p>	<p>Accept</p>	<p>The UK Secretary of State for Energy and Climate Change announced in April 2009 that any new coal fired power stations would need to be built Carbon Capture Ready. The Energy Act 2010 received Royal Assent on 8 April 2010 and contains provisions for the creation of a financial incentive, funded by electricity suppliers, to support up to four Carbon Capture and Storage (CCS) commercial-scale demonstration projects. The demonstration</p>

⁷⁷ DECC [Severn Tidal Power: Potential Schemes](#)

<p>close to areas where satisfactory carbon storage can take place.</p>		<p>programme is progressing and a policy framework has been set out which includes no new coal without CCS, and a long-term transition to clean coal. In March 2010 funding was awarded to E.ON and Scottish Power for design and development studies as part of the competition to build one of the world's first commercial scale CCS demonstration plants.</p> <p>Also in March 2010 the Office of Carbon Capture and Storage was launched by the UK Government which has been tasked with facilitating the delivery of CCS within the UK and the Clean Coal: An Industrial Strategy for the development of carbon capture and storage across the UK was published which focuses on how to make the most of the opportunities provided by the development and delivery of CCS. In July 2010 The UK Government published initial guidance documents on EU Funding Mechanism 'NER300' for CCS and Renewable Projects.⁷⁸</p>
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⁷⁸ DECC, UK energy supply, [Carbon Capture and Storage](#), website [accessed 25 August 2010]

<p>3: The Welsh Assembly Government to issue guidance to communities and developers on the use of monies gained from community benefit agreements on carbon reduction and/or sustainable projects (e.g. community heating schemes, home insulation, development of community energy action plans) and of match funding available from the Welsh Assembly Government and EU funding streams.</p>	<p>Accept in principle</p>	
<p>4: The Welsh Assembly Government establish and publicise a database of existing community benefit schemes which can be used by communities wishing to enter into such schemes to identify good practice.</p>	<p>Accept in principle</p>	

<p>5: The Welsh Assembly Government to issue guidance on and provide funding for the development of community energy action plans.</p>	<p>Accept in principle</p>	<p>In oral evidence to the Enterprise and Learning Committee's Green Jobs inquiry, the Minister for ESH referred to the community-scale renewable energy development programme.⁷⁹</p> <p>On 22 January 2010 the Minister for ESH announced the launch of the Community Scale Renewable Energy Programme. The programme is being backed by over £7 million from the EU's European Regional Development Fund.</p>
<p>6: The current TAN8 should be urgently revised to include all forms of renewable energy including marine renewables.</p>	<p>Reject</p>	<p>A Ministerial Policy Statement on Marine Energy in Wales was published in July 2009, suggesting a range of actions for stakeholders in the sector to support or prepare for a number of projects being developed.⁸⁰ The Marine Act received royal assent in November 2009 and will simplify the process of consents for marine, wave and tidal renewables projects.⁸¹</p> <p>The Welsh Government's Energy Policy Statement was</p>

⁷⁹ Enterprise and Learning, [25 November 2009](#), para 127

⁸⁰ Welsh Government <http://wales.gov.uk/docs/desh/policy/090714energymarinestateen.doc>

⁸¹ DEFRA <http://www.defra.gov.uk/environment/marine/legislation/sectors/industry.htm>

		<p>published in March 2010 and all the UK Government's draft National Policy Statements (including renewables) are set to be re-consulted on in Autumn 2010. In June 2010 the Minister for ESH announced that the Welsh Government will be issuing a new draft planning policy on renewable energy for public consultation in the Summer, with the intention of updating TAN8 as appropriate subsequently.⁸²</p>
<p>7: The Welsh Assembly Government should issue guidance to local authorities on the use of policies for carbon reduction in Local Development Plans.</p>	<p>Accept in principle</p>	<p>Under the Planning and Energy Act 2008, local authorities can now include 'reasonable' policies in their local development plans imposing reasonable requirements for: a portion of energy in developments to be from local renewable or low carbon sources; developments to comply with energy efficiency standards beyond the requirements of building regulations⁸³.</p> <p>In June 2010 the Welsh Government published TAN 22: Planning for Sustainable Buildings. The TAN provides an introduction to sustainable buildings</p>

⁸² Welsh Assembly Government, Jane Davison (Minister for Environment, Sustainability and Housing), [Planning for Renewable Energy](#), Cabinet Written Statement, 8 June 2010

⁸³ Office of Public Sector Information, [Planning and Energy Act 2009](#) (accessed on 29 September 2009)

		and the standards of assessment, the design solutions that may be employed in meeting these standards and further design guidance on delivering low carbon buildings. It also provides guidance for Local Development Plans (LDP). ⁸⁴
8: The Welsh Assembly Government to continue to encourage grid and distribution companies to work co-operatively with developers to develop an integrated approach to connection for large scale renewables.	Accept	
9: The Welsh Assembly Government to lobby the UK Government to: Implement the Renewable Heat Incentives Scheme as soon as possible;	Accept in part	The UK Renewable Energy Strategy clarified the Government's plans for the Renewable Heat Incentive and Feed in Tariffs (also known as Clean Energy Cash-backs). The Feed in Tariffs (FITs) scheme went live on 1 April 2010. It is hoped FITs will encourage deployment of additional low carbon electricity generation, particularly by organisations,

⁸⁴ Welsh Assembly Government, [Technical Advice Note 22: Sustainable Buildings](#), June 2010

<p>Ensure that any renewable obligations scheme in Scotland does not operate at the expense of investment in schemes in England and Wales.</p>		<p>businesses, communities and individuals who are not traditionally engaged in the electricity market and that it will allow many people to invest in small scale low carbon electricity, in return for a guaranteed payment both for the electricity they generate and export.⁸⁵ In February 2010, the UK Government published a consultation on the proposed design of the Renewable Heat Incentive (RHI) scheme. The consultation period closed on the 26 April 2010.⁸⁶ The RHI is due to be launched in April 2011. In the UK Government's Annual Energy Statement published on 27 July 2010 it stated that the Government is currently considering the responses to the consultation and they will set out detailed proposals on how to take forward action on renewable heat through the Spending Review.^{87 88}</p>
<p>10: The Welsh Assembly Government lobby the UK</p>		

⁸⁵ DECC, UK energy supply, The energy mix, Renewable energy, [Feed-in Tariffs](#), website [accessed 25 August 2010]

⁸⁶ DECC, Consultations, [Consultation on the Renewable Heat Incentive \(RHI\)](#), website [accessed 20 July 2010]

⁸⁷ DECC, UK energy supply, [Annual Energy Statement](#), website [accessed 20 July 2010]

⁸⁸ DECC, UK energy supply, [Annual Energy Statement](#), website [accessed 20 July 2010]

<p>Government to ensure that any large scale biomass schemes approved in Wales are appropriate in terms of being CHP schemes and in terms of not contributing to carbon emissions through transport and other emissions.</p>		
<p>11: That it is made a prerequisite for any small and medium scale biomass schemes be CHP schemes.</p>		
<p>12: That the revised Wood Energy Business Scheme (WEBS) supports CHP.</p>	<p>Accept in part</p>	
<p>13: The Welsh Assembly Government takes a lead in promoting the Low Carbon Buildings Programme in Wales and lobbies the UK Government to renew the Low Carbon Buildings Programme after</p>	<p>Accept in principle</p>	<p><i>The Chancellor announced an additional £45 million for the Low Carbon Buildings Programme up to 2011 in the 2009 budget statement.</i></p> <p>http://www.hm-treasury.gov.uk/d/bud09_completereport_2520.pdf</p>

2010 in addition to the proposed system of feed in tariffs for renewable energy generation.		<i>As of 24 May 2010, the Low Carbon Building Programme has been closed to all new applications.</i> ⁸⁹
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Carbon reduction from land use

Recommendation	Response	Progress to date
1: The Welsh Government should review the funding for Glastir annually to ensure that sufficient funding is in place to cope with demand.	Accept in principle	
2: The Welsh Government should promote the economic benefits of the carbon saving measures contained within Glastir as part of the scheme	Accept and announces new funds.	Minister's announcement in her response to the Committee about money available through Glastir. Welsh Government confirms land carbon management to be one of six

⁸⁹ DECC, Low Carbon Buildings Programme, [Microgeneration for your home](#), website [accessed 25 August 2010]

		areas of concern addressed by targeted element of Glastir scheme. All-Wales scheme includes provision for maintaining bogs and grassland.
6: The Welsh Government should develop methods of sharing new scientific advances with farmers and landowners with a view to promoting their positive effect on carbon reduction as well as economic benefits.	Accept	See update to recommendation 4
7: The Welsh Government should agree a baseline figure of the amount of carbon currently held in organic soils in Wales and that figure should be used by all the organisations working on the issue in Wales.	Accept:	
10: The Welsh Government support the research currently being done into carbon fluxes in soils for tree planting in Wales and uses the findings of the	Accept	Minister's response to the Committee Report states that more Forest Research has been done since the

<p>research to inform land use and agricultural policy as soon as it becomes available.</p>		<p>inquiry.</p>
<p>11: The Welsh Government support the Forestry Commission in establishing and marketing wood products as alternative materials on a commercial scale.</p>	<p>Accept</p>	

Review of the Sustainability Committees Reports on Carbon Reduction in Wales

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Aim

The aim of this review is to provide information on where Wales currently stands, at 2009, on carbon emissions and opportunities for reduction based on the headline recommendations set out in the five reports for the sectors of residential, transport, industry and public bodies, energy production and land use.

The potential impact of the Sustainability Committees recommendations have been calculated wherever relevant and appropriate information has been available. The information that has been is presented in 3 additional documents:

- 1) Annex A – Residential - Residential sector assumptions and baseline figures,
- 2) Annex B – transport – Transport sector assumptions and baseline figures,
- 3) Excel spreadsheet presenting figures for all headline recommendations.

Background

The UK target for CO₂ reductions is 34% below 1990 emissions by 2020 (WAG, 2009) while the Welsh Assembly Government intend to achieve a 3% annual reduction from 2011 based on a baseline of the average emissions from 2006-2010 (WAG, 2009). In the longer term we have to aim for at least 80% reductions by 2050 (UK Royal Commission for Environmental Pollution, 2000)

The built environment, its construction and operation, accounts for a major part of fossil fuel energy use and the associated CO₂ emissions. It also accounts for a large proportion of material resource use and waste production, and associated emissions. Buildings and their supporting infrastructures are said to be responsible for emitting about 50% of CO₂ emissions, possibly rising to 70% if urban transportation is included. Countries recognise that they are not going to meet carbon reduction obligations from renewable energy alone and therefore energy efficiency is crucial across the different sectors of the built environment.

Figure 1 illustrates baseline 1990 and 2006-2010 CO₂ emissions for the residential, transport and public sectors. The UK and WAG targets for 2020 are prepresented for each sector. The 2006-2010 baseline has been calculated based on identified trends and is subject to change depending on the actual data reported at the end of the period, such changes will also affect the WAG 2020 target.

The predicted WAG target CO₂ reduction is greater than the UK target for the industrial and public sector, but smaller for the residential and transport sectors.

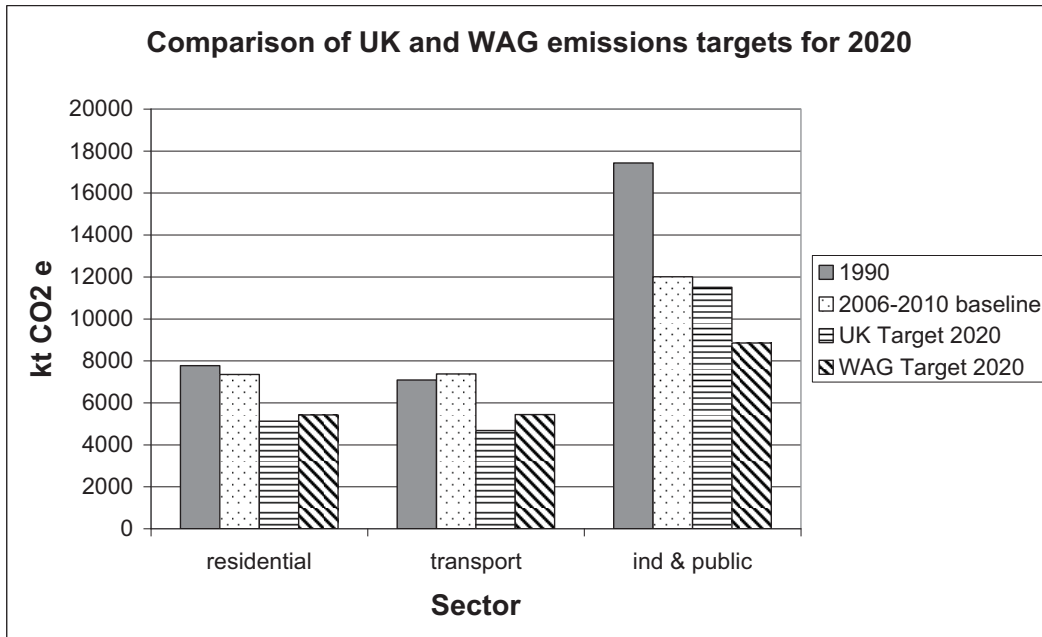


Figure 1 - Comparison of UK and WAG baseline and emission targets for 2020

Figure 2 shows that approximately 38% of Welsh CO₂ emissions are not under the competence of WAG (for example, Corus, large scale energy generation such as Aberthaw). The industrial and public sector is responsible for 28% of emissions, whilst residential and transport sectors are each responsible for 17%.

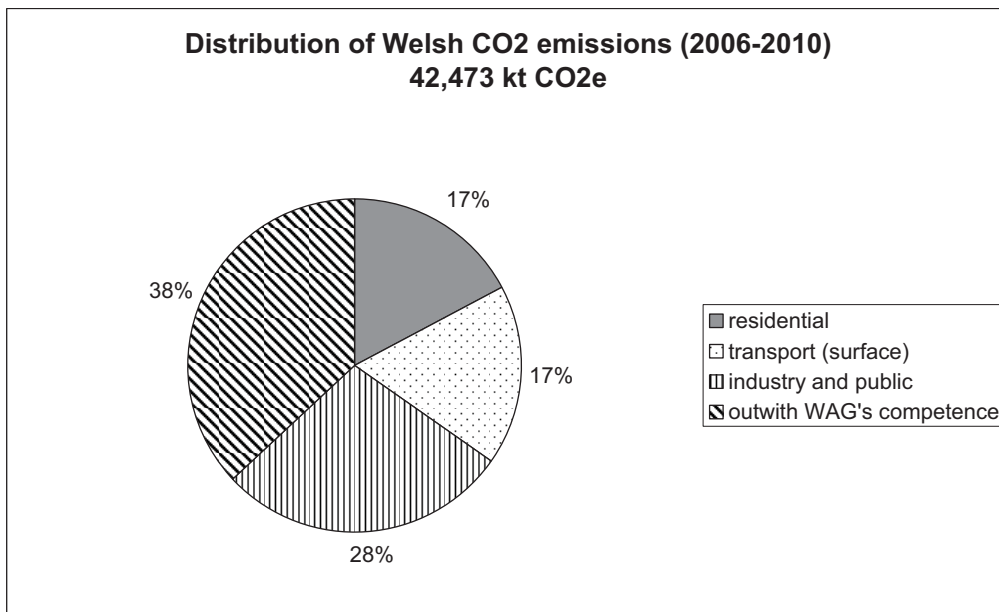


Figure 2 - Distribution of Welsh CO₂ emissions (2006-2010)

Residential Headline Recommendations

Although energy efficiency of new build domestic buildings has increased by 70% from 1990 to 2005, residential sector emissions decreased by only 1% over that period. This is due to the overall increase in the number of construction of residential buildings.

Table 1 provides a summary of the sustainability committees headline recommendations regarding the residential sector. Details of the assumptions and calculations made are given in Annex A.

New Build

Table 2 shows a forecast (including potential conflicts) to 2020 based on the four headline recommendations relating to new buildings. Although headline recommendations 1-4 will reduce the impact of new buildings, they will not actually reduce CO₂ emissions for the sector.

Refurbishment

Table 3 shows a forecast to 2020 for two potential scenarios relating to the refurbishment of 'hard to heat' homes.

Scenario 1 shows the likely CO₂ emission reductions if an investment of £80.35M was used to retrofit 3,214 'hard to heat' homes per year.

Scenario 2 shows the increased impact of investing £111.40M to retrofit 4,456 homes per year.

The Warm Front Scheme annual report (DECC, 2009) indicates that it has managed to assist 233,594 households in 2008/09. However, refurbishments involved in this scheme are standard and include 35% of households received boiler replacements, 25% loft insulation and 12% cavity wall insulation. To reach the scenarios considered above, more difficult and time consuming measures will need to be employed.

Renewable microgeneration

Table 4 shows the CO₂ reductions which have been obtained from renewable microgeneration programmes in 2006-2008. Due to the small contribution from renewable microgeneration the units for this table are t CO₂ (other tables are in kt CO₂).

Table 5 shows a forecast to 2020 for eight different types of renewable microgeneration which are likely to be supported by headline recommendation 6. Again, due to the small contribution from renewable microgeneration the units for this table are t CO₂ (other tables are in kt CO₂).

Table 6 shows a forecast to 2020 for two potential scenarios relating to the installation of renewable microgeneration technologies. Both scenarios assume that zero carbon new dwellings are required by 2013 and that CO₂ emissions from 'hard to heat' homes are reduced by 3% per annum through retrofit.

CO₂ emission reductions are calculated for Scenario 1 assuming that the funding level of Low Carbon Building Programme (LCBP) Phase 1 (£843,098 for 770 units) for residential buildings continues.

For Scenario 2 the assumed budget is doubled, but does not result in significantly better carbon emissions reductions compared to Scenario 1.

The application process is likely to hold up the installation of renewable microgeneration technologies as an energy efficiency assessment is required, even for those buildings which have recently been assessed and upgraded through the Warm Front scheme.

Transport Headline Recommendations

CO₂ emissions from the transport sector increased by 12% between 1990 and 2007 in Wales. There are 1.2 million households in Wales and 29% of households own two or more cars (National Statistics). Assuming average emissions of 0.2 kg CO₂ per vehicle km then transport CO₂ emissions can be reduced by 0.1kt CO₂ for every 1km reduction in travel by 0.5 million vehicles.

The impact of the sustainability committee headline recommendations regarding the transport sector have been summarised in Table 7. Details of the assumptions and calculations made are given in Appendix B.

Table 8 compares the UK, WAG and SC targets. For WAG to achieve an annual 3% reduction of transport CO₂ emissions (221.3kt CO₂e), 0.5 million vehicles would each need to travel 2,213 km less every year, without increasing the CO₂ emissions from alternative transport modes.

It should be noted that to achieve the UK target of a 34% reduction of CO₂ emissions from the sector by 2020 based on 1990 figures, it is likely that a 3.66% annual reduction based on the 2006-2010 average would be required.

Transport budget

Changes in the transport budget suggested by headline recommendation 1 will be the funding opportunity that enables the other headline recommendations to be implemented. For this reason CO₂ savings have not been calculated for headline recommendation 1; however, an analysis of the currently available budget details has been made.

Tables B2 and B3 (Annex B – Transport) show a detailed breakdown of the WAG transport budgets for 2009-10 and 2010-11. Areas identified as definitively reducing road transport are:

- improve public transport (rail),
- develop sustainable travel,
- improve road safety and impact on the environment.

These areas only account for 53.9% of the 2009-10 budget and 58.4% of the 2010-11 budget.

Although easing congestion on high volume roads can reduce emissions in the short term, the induced traffic effects can increase long term emissions.

Guidelines for future reductions

Headline recommendations 2-4 indicate potential methods of implementing guidelines to reduce transport sector CO₂ emissions in the future. These extend from influencing the personal decisions of the population to influencing major expenditure on transport infrastructure. These are considered as a package.

Three specific actions have been proven to be effective (Gross, Heptonstall et al. 2009) and are within the scope of the headline recommendations could be considered:

- support for non-motorised modes (walking / cycling),
- eco-driving & speed enforcement,
- travel plans (personal, schools and workplace).

The potential CO₂ reduction, cost effectiveness and key issues of these actions are illustrated in Table B4 (Annex B – Transport). Other related policies can be expected to reduce transport CO₂ emissions by an additional 20% of the whole savings caused by the above three policies. Table 9 indicates the potential savings which could have been obtained for 2009 and 2010 if the policies had been adopted. There is limited data on the cost effectiveness of these options, with ranges from £30-500 per t C saved. It should be noted that the recommended TravelSmart campaign would support the development of personalised travel plans.

Any transport CO₂ reductions could be mitigated by increased road traffic resulting from congestion reduction (e.g. new roads) and resurfacing.

Industry and Public Bodies Headline Recommendations

The CO₂ emissions from Industry and Public Bodies (excluding areas outside WAG's competence) reduced by 31% between 1990 and 2007.

Although CO₂ emissions from the overall sector have decreased significantly since 1990, the trends vary within the sector (see Figure 3):

- Although commercial emissions have decreased slightly since 2003, the most recent figures (2007) show an increase of 56% compared to 1990.
- Public service emissions fell by an average of 2.6% annually between 2003 and 2007; however, they have only fallen by 14% since 1990.
- Emissions relating to 'Industry other combustion' and 'waste' reduced by 43% and 53% respectively between 1990 and 2003. However, recent reductions have fallen to an average of 2.2% and 1.2% annually. This is likely to be because the majority of easy wins have been accomplished.
- Although the most recent figures on emissions relating to "Industry other processes" show a reduction since 1990, emissions have actually increased by an average of 0.5% annually between 2003 and 2007.

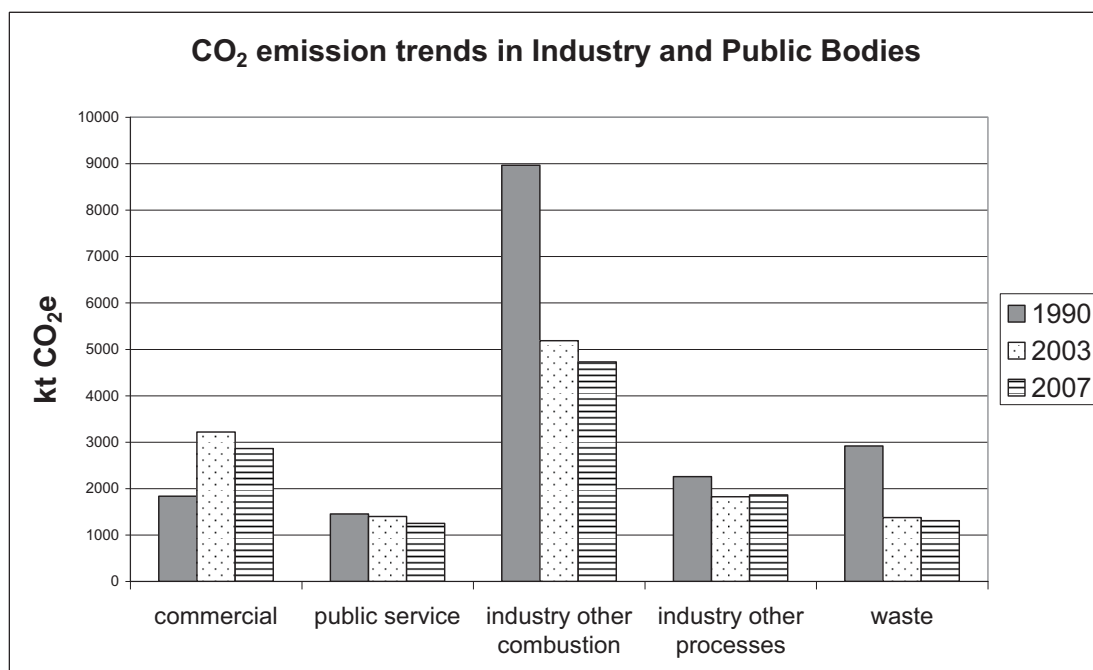


Figure 3 - CO₂ emission trends in Industry and Public Bodies

The proportion of CO₂ emissions from 'industry other combustion' has decreased from 51.4% in 1990 to 39.4% in 2007. This may be due to the replacement of coal with 'cleaner' fuels like gas and nuclear and the contraction of industry in Wales. Perhaps of more concern is the increase of 'commercial' emissions from 10.5% in 1990 to 23.8% in 2007.

The impact of the sustainability committee headline recommendations regarding the Industry and Public Bodies sector have been summarised in Table 10. To ensure a consistent dataset for all calculations, the 'end user' dataset from http://www.airquality.co.uk/archive/reports/cat07/0911121009_DA_End_Users_GHGI_data_1990-2007_v1_naei.xls has been used.

One Wales Carbon Reduction Commitment

Using the stated dataset for headline recommendation 1, a reduction of 2,198 kt CO₂e (2008-2011) is likely, this would be an 18.3% reduction in the Industry and Public Bodies sector against 2007 figures.

Using the stated dataset *for* headline recommendation 5, a 3% pa reduction by public bodies should result in a CO₂ reduction of 436 kt CO₂e (2008-2020). The benefits of increasing the target for the public sector:

- by 1% pa results in an additional 74 kt CO₂ reduction (2008-2020)
- by 2% pa results in an additional 142 kt CO₂ reduction (2008-2020).

'Kick Start' Capital Programmes

With regards to headline recommendation 7, the Sustainability Committee have based previous calculations on a Scottish scheme which has a funding baseline of £1,000 for 0.7t CO₂ pa reduction. In Wales, the Carbon Trust uses a funding baseline of £1000 for 1.5t CO₂ pa reduction. The calculations based on the Scottish scheme can only be applied to Wales if the funding baseline of £1,000 for 0.7t CO₂ pa reduction is accepted.

Table 11 compares the UK, WAG and SC targets and indicates that the UK target is likely to be exceeded if WAG/SC policies are implemented successfully. Table 12 shows a comparison between the UK and WAG targets for 2020 for the individual areas within the sector. This indicates that commercial area is not likely to achieve the UK target.

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Annex A - Residential sector

Headline Recommendation 1: The Committee recommends that, through a Ministerial Interim Planning Policy Statement (MIPPS), the Welsh Assembly Government require developments of over 5 dwellings and all commercial developments to produce at least 10% of their energy requirements though on site renewable energy or local decentralised sources.

Key assumptions

- Only carbon savings from residential new build are calculated,
- On average 8,313 new residential dwellings were built per annum in Wales between 2006 and 2009¹, of which 8,000 are assumed to be in developments of 5 dwellings and greater,
- Based on the first two quarters' data of new build in 2009¹ (33% fall of the starting rate), there are only likely to be 4,900 new residential dwellings built in Wales in 2010 because of the recession. 4,690 are assumed to be in developments of 5 dwellings and greater,
- Typical new build to current Building Regulations emit 2.15 tonnes of CO₂ per annum between 2006 to 2009^{2,3}, of which approximately 45% from gas and 55% from electricity⁴
- Carbon emissions are 0.194kg CO₂ per kWh from gas, 0.422kg CO₂ per kWh from electricity⁵
- All new build in 2010 attains a 10% reduction in energy use in order to reduce the cost of providing 10% of on-site energy generation (no such improvement in 2009 because the recommendation was only accepted in principle by the WAG),
- On-site renewables generate electricity.

Benchmarking figures

Year	Annual CO ₂ emission per new dwelling (t CO ₂)	Annual energy consumption per new dwelling (kWh)
1990	7.2	
(2006-2009)	2.15	7789
2010	1.61	5833

Headline Recommendation 2: The Committee recommends that, through a Ministerial Interim Planning Policy Statement (MIPPS), the Welsh Assembly Government require developments of less than 5 dwellings to reduce their predicted CO₂ emissions by at least 25% based on current building regulations through improvements to the energy performance of buildings, and/or the efficient supply of heat, cooling and power.

Key assumptions

- Only carbon savings from residential new build are calculated,
- On average 8,313 new residential dwellings are built per annum in Wales between 2006 and 2009¹, of which 313 are assumed to be in developments of less than 5 dwellings ,
- Based on the first two quarters' data of new build in 2009¹ (33% fall of the starting rate), there are only likely to be 4900 new residential dwellings built in Wales in 2010 because of the recession. 210 are assumed to be in developments of less than 5 dwellings,
- Typical new build to current Building Regulations emit 2.15 tonnes of CO₂ per annum between 2006 to 2009^{2,3}, of which approximately 45% from gas and 55% from electricity⁴
- All new build in 2010 achieves 25% reduction of annual CO₂ emission, which is the Level 3 of the Code for Sustainable Homes (no such improvement in 2009 because the recommendation 2 was only accepted in principle by the WAG),

- On-site renewables generate electricity.

Benchmarking figures

Year	Annual CO ₂ emission per new dwelling (t CO ₂)
1990	7.2
(2006-2009)	2.15
2010	1.61

Headline Recommendation 3: The Committee recommends that Building Regulations are devolved to the Welsh Assembly Government as a matter of urgency.

Key assumptions

- Building Regulations will be devolved to Welsh Assembly Government by 2011, and the ‘zero carbon’ policy will be in operation in 2012 then achieved in 2013,
- Only carbon savings from residential new build are calculated ,
- Approximately 7,649 new residential dwellings are built per annum in Wales (average annual new build 2006-2010),
- New build in 2011 and 2012 to Building Regulations of the time averagely emits 1.61 tonnes of CO₂ per annum (based on the 2010 UK Building Regulation target⁶),
- Carbon emissions from zero carbon dwellings are zero or better.

Benchmarking figures

Year	Annual CO ₂ emission per new dwelling (t CO ₂)
1990	7.2
(2011-2012)	1.61
2013-2020	0

Headline Recommendation 4: The Committee recommends that the Welsh Assembly Government adopts the Code for Sustainable Homes with immediate effect. We also recommend that, when Building Regulations are devolved, those which would enable the highest level of the Code for Sustainable Homes to be enforced should be revised first.

Key assumptions

- Level 4 of the Code for Sustainable Homes is attained by 2011-2012 (assuming that Building Regulations are devolved in 2011 but zero carbon target is not achieved before 2013),
- Approximately 7,649 new residential dwellings are built per annum in Wales (average annual new build 2006-2010),
- New build in 2011 and 2012 to Building Regulations of the time averagely emits 1.2 tonnes of CO₂ per annum (Level 4 is 44% reduction from the average energy performance of new build in 2006-2010).

Benchmarking figures

Year	Annual CO ₂ emission per new dwelling (t CO ₂)
1990	7.2
(2011-2012)	1.2
2013-2020	0

Headline Recommendation 5: The Committee recommends that the Welsh Assembly Government should fund a programme of retrofitting of all existing hard to heat homes so that they meet one of the agreed levels in the Code for Sustainable Homes.

Key assumptions

- 'Hard to heat' homes are those with solid walls that are not on the gas network⁷.
- 37%⁸ of the 1.32 million dwellings⁹ were 'hard to heat' in 2008 which is about 492,100 such properties
- There will be no increase of 'hard to heat' properties. Based on the average level of 2006-2008, 3,487 dwellings per annum will be retrofitted in 2009 and 2010.
- It needs £25,000 per property to make 60% CO₂ reduction (from 11.67 t CO₂ to 4.67 t CO₂) per property per year¹⁰
- The annual CO₂ emission reduction rate caused by retrofit is 0.4% of the residential sector in 2009 and 2010 (based on the average level of 2006-2008): no further improvement because this recommendation was rejected by the WAG.

Benchmarking figures:

- Average hard to heat properties annual CO₂ emission 2006-2010
5719.4 kt CO₂
- Average annual CO₂ savings from retrofit (2006-2010)
24.4 kt CO₂

Future mandatory reduction according to different targets:

- *Scenario 1, UK target: 34% CO₂ reduction till 2020 against the 1990 baseline*
Require the retrofit of 3214 properties per year, which is equal to at least 22.5 kt CO₂ reduction every year from 2011 on and £80.35 million investment per year based on the average expenditure and emission level of 2006-2010.
- *Scenario 2, Wales target: 3% CO₂ reduction every year from 2011 to 2020 against the 2006-2010 average baseline*
Require the retrofit of 4456 properties per year, which is equal to at least 31.2 kt CO₂ reduction every year from 2011 on and £111.40 million investment per year based on the average expenditure and emission level of 2006-2010.

Problems:

1. If a more accurate investment figure is required, this calculation is not reliable enough, because the '£25,000 60% CO₂ reduction' assumption is very rough and does not take any feasibility issue into account. New work by Technology Strategy Board may help to support this in near future. To reach greater reductions in CO₂ savings a higher level of investment will be required (at least £50,000).
2. The retrofit of 32,14 or 4,456 'hard to heat' dwellings will be difficult to achieve. Detailed calculation about the retrofit period and work force requirement is not possible unless more detailed information could be obtained from Warm Front scheme/elsewhere.

Headline Recommendation 6: The Committee recommends that the Welsh Assembly Government actively promotes the Low Carbon Building programme in Wales and provides additional grants for microgeneration schemes in existing housing

Key assumptions

- The microgeneration targets of 20,000 heating and 10,000 electricity units by 2012 and 100,000 heating and 200,000 electricity units by 2020 are achieved in equal steps from 2009/10¹²,
- Carbon emissions from gas are 0.194kg CO₂ per kWh; from electricity are 0.422kg CO₂ per kWh⁵

- The typical energy load for space heating and hot water in a 'common dwelling' defined by the LCBP is 17,115 kWh¹³
- The average electricity load is assumed as 4390 kWh per year per household¹³
- All other funding programmes keep the same increasing rate as the Low Carbon Building Programme, and the self-installed rate keeps the same level as the average one in 2006-2008,
- All the energy savings from PV and Wind Turbines take place of electricity, and those from solar thermal, biomass and GSHP displace gas.
- By August 2008, there were 6,411 installations in total number (for both residential and public sectors). Among the 6,411 units, in the residential sector there were 453 units funded by Low Carbon Building Programme phase I, 463 units funded by Clear Sky programme, 106 units funded by Major PV Demonstration Programme¹³
- Restrained by the data resources, calculations are not based on continuous data records,
- Assume the funding level of LCBP 2010 would be similar to 2009, therefore the total technologies installed number in 2010 is assumed to keep the same increasing rate as in 2009.
- There is no data for other programmes, so assume that they keep the same increasing rate as the LCBP (table A4),
- Assume the Major PV Demonstration Programme keeps the same increasing rate as the Low Carbon Building Programme in 2009 and 2010,
- The Clear Skies List was the original list of registered microgeneration products and installers that could be used when applying for microgeneration grant funding, and the Microgeneration Certification Scheme has now replaced the Clear Skies List¹⁵,
- In the Microgeneration Certification Scheme all the available grants are from Low Carbon Building Programme¹⁵, therefore to avoid double accounting from 2009 on there will be no new figures for this programme.

Benchmarking figures

Technology	Number	Capacity / kWp	Energy/ MWh/year	Reference Date (Approx)
Solar PV	155	550	468	Aug 2008
Micro-CHP	10-48	332	N/A	Dec 2006
Wind	142	267	234	Dec 2007
Micro-Hydro	18	207	907	Aug 2008
Solar Thermal	5,590-5,830	11,700-12,200	7,500-7,870	July 2008
Biomass	63	1,260	3,920	Aug 2008
GSHP	155	1,008	2,653	Aug 2008
ASHP	N/A	N/A	N/A	Aug 2008

Table A1 - Total installations in Wales, by technology¹³

Technology	Total Committed £	Total Committed	Total Paid £	Total Paid	Total Apps	Paper Apps	Online Apps
Air Source Heat Pump	36,000.00	40	12,600.00	14	47	0	47
Biomass Room Heater/Stove (Automated Wood Pellet Feed)	2,609.00	5	2,189.00	4	9	0	9
Ground Source Heat Pump	94,582.00	79	78,982.88	66	113	20	93
Small Scale Hydro	2,500.00	1	2,500.00	1	4	2	2
Solar Photovoltaic	472,486.00	145	313,266.11	79	170	24	146
Solar Thermal Hot Water	207,234.00	519	186,034.38	466	640	147	493
Wind Turbine	165,757.00	80	145,157.91	71	185	56	129
Wood Fuelled Boiler System	128,468.00	87	102,368.00	69	117	16	101
Total for all technologies	1,109,636.00	956	843,098.28	770	1285	265	1020

Table A2 - The LCBP funded installations in Wales, by technology¹⁴

Technology	Accumulated figure to August 2008	Accumulated figure to December 2009	Net increase in 2009
Air Source Heat Pump	0	40	40
Biomass	42	92	50
Ground Source Heat Pump	36	79	43
Small scale Hydro	1	1	0
Solar Photovoltaic	36	145	109
Solar Thermal	284	519	235
Wind Turbine	54	80	26
Total of technology	453	956 (2.1 times more than the accumulated level in 2008)	503

Table A3 - The LCBP phase I funded installations in Wales, by year^{13,14}

Technology	Accumulated figure to August 2008	Accumulated figure to December 2009
Stream 1	95	200
Stream 1	11	24
Total	106	224

Table A4 - The Major PV Demonstration Programme funded installations in Wales, by year^{13,14}

Technology	Accumulated figure to August 2008	Accumulated figure from September 2008 to December 2009
Air Source Heat Pump	0	0
Biomass	22	0
Ground Source Heat Pump	32	0
Small scale Hydro	2	0
Solar Photovoltaic	0	0
Solar Thermal	387	0
Wind Turbine	20	0
Total of technology	463	0

Table A5 - The Clear sky Programme funded installations in Wales, by year^{13,14}

Accumulated figure to	Aug 2008	Dec 2009	Dec 2010	Dec 2011	Dec 2012
Number	992	1180	1801	2422	3043

Table A6 - The projection of funded installations in residential sector in Wales, by year*

*This projection is based on the current funding budget and exist projects' increasing rate

Problem The available statistical data shows that CO₂ savings outcome is still too far from effectively influencing the whole residential sectors carbon reduction target, although in 2009 the LCBP almost funded double projects than the accumulated level till August 2008.

Reference

- 1 Welsh Housing Statistics Quarterly Bulletin 07-09
(<http://wales.gov.uk/topics/statistics/headlines/housing2009/?lang=en>)
- 2 Average energy efficiency (SAP only) of new homes in England & Wales by region (updated in Nov 2009) (<http://www.communities.gov.uk/publications/corporate/statistics/dso2-5>)
- 3 MINIMISING CO2 EMISSIONS FROM NEW HOMES, A review of how we predict and measure energy use in homes (<http://www.aecb.net/PDFs/NewHomesCO2Savings25May06.pdf>)
- 4 Local and Regional CO2 Emissions Estimates for 2005-2007
(http://www.decc.gov.uk/en/content/cms/statistics/climate_change/climate_change.aspx)
- 5 The Government's Standard Assessment Procedure for Energy Rating of Dwellings 2005
(<http://projects.bre.co.uk/SAP2005/pdf/SAP2005.pdf>)
- 6 Building Regulations Energy efficiency requirements for new dwellings: A forward look at what standards may be in 2010 and 2013
(<http://www.communities.gov.uk/publications/planningandbuilding/energyefficiencynewdwellings>)
- 7 National Assembly for Wales
(<http://www.assemblywales.org/5184cb73296aceee2208323a52de7b20.pdf>)
- 8 Thinking globally and acting locally sets Wales on path to sustainability
(<http://www.planningresource.co.uk/rtpi/790374/Thinking-globally-acting-locally-sets-Wales-path-sustainability>)
- 9 Statistical headlines, releases and bulletins 2000-2009
(<http://wales.gov.uk/topics/statistics/headlines/housing2009/?lang=en>)
- 10 Carbon Reduction from Energy Production, Sustainability Committee p28
(http://www.assemblywales.org/sc_3_-carbon_reduction_energy.pdf)
- 11 Welsh Assembly Government, Microgeneration action plan launched, 20 March 2007
(<http://wales.gov.uk/news/archivepress/enterprise/2007/1422044/?lang=en>)
- 12 Welsh Assembly Government, Microgeneration action plan launched, 20 March 2007
(<http://wales.gov.uk/news/archivepress/enterprise/2007/1422044/?lang=en>)
- 13 Numbers of microgeneration units installed in England, Wales, Scotland, and Northern Ireland
(<http://www.berr.gov.uk/files/file49151.pdf>)
- 14 The Low Carbon Programme Statistics [assessed on 31st Dec 2009]
(<http://www.lowcarbonbuildings.org.uk/Information-for-Installers/Statistics-tool>)
- 15 The Microgeneration Certification Scheme – Available Grants [assessed on 25th Dec 2009]
(<http://www.microgenerationcertification.org/Home+and+Business+Owners/Available+Grants>)

**Review of the Sustainability Committees Reports on Carbon Reduction in Wales
January 2010**

Annex B - Transport sector

Headline recommendation 1: The Committee recommends that the Welsh Assembly Government takes a much stronger lead by placing carbon reduction at the heart of the Wales Transport Strategy and by increasing funding for sustainable transport from around 50 per cent to around 70 per cent of the transport budget, in line with Scotland.

Background information

Table B1- The budget intentions and the relevant actions¹

Ieuan Wyn Jones said in his oral evidence¹ that ‘for revenue and capital budgets combined, the percentage split between roads and other transport is 50:50 in 2009-2010 and 46:54 in 2010-2011’; and ‘all other cash transport budgets have been classified as ‘other transport’, that is all transport other than roads. This will include walking and cycling as well as public transport.’

Table B2 - Transport draft budget 2009-2010¹

Table B3 - Transport draft budget 2010-2011¹

- **From above figures we can see that the split of budget is still about half and half between road and other transport,**
- **Among the budgets, those which could reduce CO₂ emissions (within the red panes in table B2 and B3) are actually only 53.9% (344860/639958) in 2009-2010 and 58.4% (359746/615654) in 2010-2011, while other areas within the budget may actually encourage more road travel (building new roads for better connections, resurfacing existing roads etc.).**

Headline recommendation 2: The Committee recommends that the Welsh Assembly Government ensures that the National Transport Plan and Regional Transport Plans include specific and measurable objectives to cut carbon emissions and that sufficient funding is provided to the Regional Transport Consortia to be able to deliver these objectives.

Headline recommendation 3: The Committee therefore recommends that the Welsh Assembly Government reviews the use of WelTAG as a matter of urgency to ensure that carbon reduction is the main objective when assessing projects.

Headline recommendation 4: The Committee recommends that the Welsh Assembly Government conducts a pilot scheme in Wales based on the Sustrans’ TravelSmart programme to assess its impact, before considering its roll-out across Wales.

Problems

1. If calculated individually, these three headlines are very easily lead to double accounting,
2. These headlines are too general for making quantitative assessment, therefore more specific assumptions about the relevant policies need to be made.

There are many policies involved in WelTAG, National Transport Plan and Regional Transport Plans. However, the existing research about the relationship between policy interventions and behavioural & technological change² shows that the influence of some policies are hard to measure while others do not guarantee positive outcomes. Therefore, in this calculation we can only make quantitative assessment on those policies which have been proven to be effective and which are supported by existing research outcomes.

The current available calculations within the planned actions of the WAG's Climate Change Strategy Consultation are:

- Support for non- motorised modes (walking/cycling),
- Eco-driving & speed enforcement,
- Travel plans (personal, schools, and workplaces),

Table B4 shows these actions' impacts and cost effectiveness.

Policy /measure	Potential CO2 impact	Evidence for cost –effectiveness	Key issues & problems
Support for non- motorised modes (walking /cycling)	Substantial: E.g. 2MtC per year (6% of UK transport emissions). If UK reached levels common in other northern EU countries.	No specific data on £/tC saved; possibly highly cost-effective.	Safety, routing and prioritisation are keys. Road reallocation and dedicated routes improve perceived safety. Evidence from London that improved provision combined with penalties for car use can have great impact. Destination shifting may be induced and will raise long run potential. More research needed on abatement cost.
Eco-driving & speed enforcement	Substantial: 10-15% reductions in UK emissions from eco-driving; 2-3% savings in total UK transport emissions from motorway speed limit enforcement. Highly cost-effective car for training & campaigns: less than£20/tC saved.	Mixed evidence on cost of speed enforcement.	Potential for swift results from both eco-driving and speed limits/enforcement. More research needed on securing longevity of eco-driving training. Safety benefits from speed constraint. Political acceptability of speed limit enforcement may be a barrier.
Travel plans: personal, schools, & workplace	Modest/substantial: 5-10% reductions in UK car usage from Personal Travel Plans; good evidence of impact from school / workplace plans (6-30% reduction).	No specific data on£/tC saved. Unclear cost-effectiveness for Personal Travel Plans; variable for schools/workplaces (below £30 to over £500 per tC).	Some concerns re Personal Travel Plan evidence quality. Provision of alternative modes crucial. Safety issues for school plans. Effective marketing needed. Hard policies - parking restrictions, penalties & subsidies are key. Limited level of workplace plan uptake. Large companies easier to target than SMEs. More research needed on emissions savings and abatement cost.

Table B4 - Summary table on impact, cost effectiveness²

Key assumptions

- The transport policy implementation in Wales will be as effective as the wider UK scale research indicates,

- **Support for non-motorised modes – Wales achieves 75% of the progress in other northern EU countries, thereby saving 2.5% of Wales’ transport emissions,**
- **Eco-driving saves 3.5% of Wales’ transport emissions,**
- **Personal transport plans save 3% of Wales’ transport emissions,**
- **Supporting policies to those specified in Table B4 could reduce the transport CO2 emissions by a further 20% of the whole savings caused by the above three policies which equals to 2.1% of the transport sector,**
- **These benefits could be mitigated by increased road traffic resulting from efforts to reduce congestion (e.g. new roads) and resurfacing.**

Benchmarking figures

Because the WAG’s transport budget did not adopt the committee’s headline recommendations, the following figures are based on current budget level and existing policies.

- **Annual transport carbon emission in 1990:
7091 kt CO2e**
- **Average annual transport carbon emission in 2006-2010:
7377.4 kt CO2e**
- **Possible accumulated carbon reduction in 2011-2020 based on current budget level and policies:
2213 kt CO2e (would be 27.2% reduction in 2020 against 1990 level)**
- **Possible accumulated carbon reduction in 2011-2020 based on these three headline recommendations:
2582 kt CO2e (would be 32.4% reduction in 2020 against 1990 level)**

According to Lee Waters’s statement, ‘By rolling-out TravelSmart to the 18 largest Welsh conurbations we estimate could save some 22 thousand tonnes of carbon a year [80.8 kt CO2]-the equivalent of 1% of carbon emissions from all transport for the cost of around half of mile of road.’³

This headline recommendation is a suggestion for a specific policy, and the potential savings will be overlapped with the above three headlines, so the involved savings will not be taken into account in the reduction of whole sector in our calculation.

1 Leuan Wyn Jones, Analysis of Draft Budget Figures for Transport, Oct 2009

2 Technology and Policy Assessment Function of the UK Energy Research Centre, What policies are effective at reducing carbon emissions from surface passenger transport? A review of interventions to encourage behavioural and technological change. [assessed on 19th Dec 2009] (http://www.indiaenvironmentportal.org.in/files/TPA_transport_final.pdf)

3 Lee Waters, Enterprise and Learning Committee, EL(3) 23-09 (p3) : 11 November 2009. (<http://www.assemblywales.org/bus-home/bus-committees/bus-committees-scrutiny-committees/bus-committees-third-els-home/bus-committees-third-els-agendas.htm?act=dis&id=150827&ds=12/2009>)

Table 1 - Summary of impact of Residential Sector Headline Recommendations

Area	Headline recommendation	baseline figure for 1990	source of figure	method of calculation	assumptions	Most recent figure available	source of figure	method of calculation	assumptions	CO2 savings	% of total savings for sector	STATUS	
Residential 2008	sector emissions for Wales	7770 ktCO2	http://www.airquality.co.uk/archives/reports/cat07/0911120930_DA_End_Users_Report_2007_issue_1.pdf			7691 ktCO2 (2005)	http://www.airquality.co.uk/archives/reports/cat07/0911120930_DA_End_Users_Report_2007_issue_1.pdf			79 kt CO2 (1990-2005)	1.02		
	improvements due to building regulations (dwellings)	7.2t CO2 / yr / dwelling		calculated from known building regulation energy improvement of 70% from 1990 to 2005 with further 20% energy improvement in 2006	2.15 t CO2 / yr /dwelling from houses built to 2006 building regs	2.15 t CO2 / yr /dwelling	www.communities.gov.uk/publications/corporate/statistics/dse2-5	Welsh new build SAP rating of 76.95 for 80m2 average floor area The Environmental Impact Rating (EI rating) is related to the annual CO ₂ emissions by: CF = (CO ₂ emissions)/(TFA + 45) (3) if CF >= 28.3 EI rating = 200 - 95 × log ₁₀ (CF) (4) if CF < 28.3 EI rating = 100 - 1.34 × CF (5) where the CO ₂ emissions are calculated in box (112) or box (119*) and TFA is the total floor area of the dwelling as in box (5).	80m2 average floor area	788 kt CO2 (1990-2009)		http://www.assemblywales.org/bus-home/bus-committees/bus-committees-third1/bus-committees-third-sc-home/inquiries_sd/inquiries_-_carbon_reduction/carbon_reduction-household/carbon-wag_residential_response.htm	
	improvements due to building regulations (commercial buildings)	127 kg CO2 / yr / m2	http://www.euroace.org/presentations/EP_130602.pdf	calculated from known building regulation improvement of 70% from 1990 to 2006	57 kg CO2 / yr m2	57 kg CO2 / yr m2	http://www.euroace.org/presentations/EP_130602.pdf	annual commercial floor area constructed figures for 1999 and 2005 http://www.communities.gov.uk/planningandbuilding/planningbuilding/planningstatistics/livetables/tablescommercialindustrialfloors/	701,000m2 constructed pa (1990-1999), 315350m2 constructed pa (2000-2009)	711 kt CO2 (1990-2009)			
	Headline Recommendation 1: The Committee recommends that, through a Ministerial Interim Planning Policy Statement (MIPPS), the Welsh Assembly Government require developments of over 5 dwellings and all commercial developments to produce at least 10% of their energy requirements through on site renewable energy or local decentralised sources.	7.2t CO2 / yr / dwelling		calculated from known building regulation improvement of 70% from 1990 to 2006	2.15 t CO2 / yr /dwelling from houses built to 2006 building regs	2.15 t CO2 / yr /dwelling		10% energy efficiency discounted then 10% electricity generated through renewables	saving of 0.46 t CO2/yr /dwelling from 2010 for 4690 dwellings	2.2 kt CO2/yr from 2010	3 kt CO2 / yr from 2010	Reduce CO2 impact of new buildings but do not actually cause a cut in CO2 emissions for the sector.	accepted subject to analysis
		127 kg CO2 / yr / m2			57 kg CO2 / yr m2	57 kg CO2 / yr m2	http://www.euroace.org/presentations/EP_130602.pdf	10% energy efficiency discounted then 10% electricity generated through renewables	saving of 19.0 kg CO2/yr /m2 from 2010 for 159,000 m2				
	Headline Recommendation 2: The Committee recommends that, through a Ministerial Interim Planning Policy Statement (MIPPS), the Welsh Assembly Government require developments of less than 5 dwellings to reduce their predicted CO2 emissions by at least 25% based on current building regulations through improvements to the energy performance of buildings, and/or the efficient supply of heat, cooling and power.	7.2t CO2 / yr / dwelling		calculated from known building regulation improvement of 70% from 1990 to 2006	2.15 t CO2 / yr /dwelling from houses built to 2006 building regs	2.15 t CO2 / yr /dwelling		25% carbon reduction	saving of 0.54 t CO2/yr /dwelling from 2010	0.11 kt CO2 / yr			accepted subject to analysis
	Headline Recommendation 3: The Committee recommends that Building Regulations are devolved to the Welsh Assembly Government as a matter of urgency.	7.2t CO2 / yr / dwelling		calculated from known building regulation improvement of 70% from 1990 to 2006	2.15 t CO2 / yr /dwelling from houses built to 2006 building regs	2.15 t CO2 / yr /dwelling		zero carbon	saving of 2.15 t CO2/yr /dwelling from 2012	0 kt CO2 / yr			accepted - negates any further benefits from HR1 and HR2
	Headline Recommendation 4: The Committee recommends that the Welsh Assembly Government adopts the Code for Sustainable Homes with immediate effect. We also recommend that, when Building Regulations are devolved, those which would enable the highest level of the Code for Sustainable Homes to be enforced should be revised first.	7.2t CO2 / yr / dwelling		calculated from known building regulation improvement of 70% from 1990 to 2006	2.15 t CO2 / yr /dwelling from houses built to 2006 building regs	2.15 t CO2 / yr /dwelling		25% carbon reduction	2010/11 saving of 0.54 t CO2/yr /dwelling 2012 onwards - saving of 1.61 t CO2/yr / dwelling	0 kt CO2 / yr			accepted in principle - negates any further benefits from HR1, HR2 and HR3
	Headline Recommendation 5: The Committee recommends that the Welsh Assembly Government should fund a programme of retrofitting of all existing hard to heat homes so that they meet one of the agreed levels in the Code for Sustainable Homes.	14.3t CO2 / yr / dwelling 6807 ktCO2	www.sbsa.gov.uk/archive/pdf/BSA200906.pdf		assuming the poorest figure of 14.3 t CO2 / yr / dwelling (mid terraced house) represents housing in its 1990 condition Scotland	13.1t CO2 / yr / dwelling (2005) 6446 ktCO2	www.sbsa.gov.uk/archive/pdf/BSA200906.pdf	0.82% of hard to heat housing stock treated every year (tackling 2576 houses per year from 1999 to 2005 and 3487 houses per year from 2006 to 2008)	£25k = 60% reduction of CO2 emissions, assume refurbishment continuing at same rate as 2006 to 2008	1108 ktCO2 (1999 - 2008)	14.3		rejected, so assume no escalation beyond current retrofit programme - 452,720 houses remain to be treated
	Headline Recommendation 6: The Committee recommends that the Welsh Assembly Government actively promotes the Low Carbon Building programme in Wales and provides additional grants for microgeneration schemes in existing housing. Calculation also appropriate to Energy Headline 6	0	www.decc.gov.uk/en/content/cms/statistics/publications/ecuk/cuk.aspx				www.berr.gov.uk/files/file49151.pdf		figures per system are assumed rather than monitored	2.9 kt CO2 (2006-2008)	0.04		accepted in part

Table 2 - New Build (Residential Headlines 1 - 4)

new UK Building Regulations in operation		can only take one of the figures, or else double calculated	can only take one of the figures, or else double calculated	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Notes and assumptions	
savings from new buildings		2006-2009	2010											Notes and assumptions	
HR 1 (residential)	net CO2 savings against 2005	4.32 ktCO2 savings per year	2.16 ktCO2 <i>(building performance improves; however, number of new buildings reduces sharply because of the recession and resulting savings reduce)</i>	savings will be superseded by HR 3 or 4 in 2011-2020											
	reduction against 2005	-20.0%	-30.0%												
	reduction against 1990	-70.1%	-73.9%												
HR 1 (commercial)	net CO2 savings against 2005	28 ktCO2 savings per year	37 ktCO2 savings											<i>This calculation for commercial buildings is included here because it follows the same assumptions and shares the same data resources.</i>	
	reduction against 2005	-70.0%	-92.5%												
	reduction against 1990	-82.4%	-95.6%												
HR 2	net CO2 savings against 2005	0.17 ktCO2 total savings per year	0.11 ktCO2 savings	savings will be superseded by HR 3 or 4 in 2011-2020											
	reduction against 2005	15.5% <i>although the emission per dwelling reduced by 20%, the total emission increased because the dwelling amount increased by 45%</i>	-41.4%												
	reduction against 1990	-56.5%	-77.9%												
HR 3 (residential)	net CO2 savings against 06-10 average level	—	—	3.3 ktCO2 savings per year	12.4 ktCO2 savings per year										Assumptions: 1. The Building Regulations will be devolved to Welsh Assembly Government at the end of 2011, therefore the zero carbon could be achieved in 2013; 2. All the new dwellings built in 2011 and 2012 follow the UK 2010 Building Regulations
	reduction against 06-10 average level	—	—	-21.0% (more reduction than -3%)	-100% (more reduction than -3%)										
	reduction against 1990	—	—	-79.0%	-100% (more reduction than -3%)										
HR 3 (commercial)	net CO2 savings against 06-10 average level	—	—	4.32 ktCO2 savings per year	5.4 ktCO2 savings per year										<i>This calculation for commercial buildings is included here because it follows the same assumptions and shares the same data resources.</i>
	reduction against 06-10 average level	—	—	-44.4% (more reduction than -3%)	-100% (more reduction than -3%)										
	reduction against 1990	—	—	-92.1%	-100% (more reduction than -3%)										
HR 4 (new dwelling)	net CO2 savings against 06-10 average level	—	—	6.5 ktCO2 savings per year	9.2 ktCO2 savings per year										Assumptions: 1. The Building Regulations will be devolved to Welsh Assembly Government at the end of 2011; 2. All the new dwellings built in 2011 and 2012 follow the Code for Sustainable Homes Level 4
	reduction against 06-10 average level	—	—	-41.4% (more reduction than -3%)	-100% (more reduction than -3%)										
	reduction against 1990	—	—	-84.4%	-100% (more reduction than -3%)										

**Table 3 - Refurbishment (Residential Headline 5)
Reduction from the retrofit of 'hard to heat' buildings between 2006 and 2020**

year		2006-2008	2009	2010	year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2011-2020 average	notes	Assumptions
HR 5 (residential) scenario 1 UK target	annual emission of this sector	5733.1 kt CO2	5723.1 kt CO2	5723.1 kt CO2	annual emission of this sector	5696.9 kt CO2	5651.9 kt CO2	5584.4 kt CO2	5494.4 kt CO2	5381.9 kt CO2	5246.9 kt CO2	5089.4 kt CO2	4909.4 kt CO2	4706.9 kt CO2	4481.9 kt CO2	—	If this net reduction can not be achieved, the WAG would not be able to meet the UK's 'at least 34% CO2 reduction against 1990 baseline' target in residential sector.	The basic assumption for both of the two scenarios is that: 1. There will be no increase of 'hard to heat' dwellings after 2008; 2. There would be £25,000 spent on each 'hard to heat' dwelling's retrofit, and the annual CO2 emission of each 'hard to heat' dwelling would improve from 11.67 tonnes CO2 per year to 4.67 tonnes CO2 per year ; 3. The improved performance could last in each and every year for the next 20 years (Warm Front Scheme Annual Report 2008 - 2009, page 4, http://www.warmfront.co.uk/files/wf%20annual%20report%202008%202009.pdf)
	CO2 reduction from last year's retrofit	24.5 ktCO2 reduction per year	24.3 ktCO2 reduction	24.3 ktCO2 reduction	the minimum requirement of CO2 reduction from retrofit per year	22.5 kt CO2	45 kt CO2	67.5 kt CO2	90 kt CO2	112.5 kt CO2	135 kt CO2	157.5 kt CO2	180 kt CO2	202.5 kt CO2	225 kt CO2	123.75 kt CO2 per year		
	annual reduction rate against 2005	-11.1%	-11.6%	-11.6%	annual reduction rate against 06-10 average level	-0.39%	-0.79%	-1.18%	-1.57%	-1.97%	-2.36%	-2.75%	-3.15%	-3.54%	-3.93%	-2.164% per year		
	net reduction rate against 1990	-15.8%	-16.3%	-16.3%	reduction against 1990	-16.31%	-16.97%	-17.96%	-19.28%	-20.93%	-22.92%	-25.23%	-27.88%	-30.85%	-34.16% (-34% required)	—		
HR 5 (residential) scenario 2 WAG target	annual emission of this sector	5733.1 kt CO2	5723.1 kt CO2	5723.1 kt CO2	annual emission of this sector	5688.2 kt CO2	5625.8 kt CO2	5532.2 kt CO2	5407.4 kt CO2	5251.4 kt CO2	5064.2 kt CO2	4845.8 kt CO2	4596.2 kt CO2	4315.4 kt CO2	4003.4 kt CO2	—	If this net reduction can not be achieved, the WAG would not be able to meet its '3% reduction target' in the residential sector.	This scenario needs at least £111.40 million's investment on 4456 properties' retrofit per year
	CO2 reduction from last year's retrofit	24.5 ktCO2 reduction per year	24.3 ktCO2 reduction	24.3 ktCO2 reduction	the minimum requirement of CO2 reduction from retrofit per year	31.2 kt CO2	62.4 kt CO2	93.6 kt CO2	124.8 kt CO2	156 kt CO2	187.2 kt CO2	218.4 kt CO2	249.6 kt CO2	280.8 kt CO2	312 kt CO2	171.6 kt CO2 per year		
	annual reduction rate against 2005	-11.1%	-11.6%	-11.6%	annual reduction rate against 06-10 average level	-0.55%	-1.09%	-1.64%	-2.18%	-2.73%	-3.27%	-3.82%	-4.36%	-4.91%	-5.46%	-3.0% per year (-3.0% required)		
	net reduction rate against 1990	-15.8%	-16.3%	-16.3%	reduction against 1990	-18.8%	-21.3%	-23.8%	-26.3%	-27.5%	-29.3%	-31.1%	-32.9%	-34.7%	-36.6%	—		

NOTES

As a result of the changes, households that are connected to the gas grid are now eligible for grants of up to £3,500, up from £2,700, while those in areas off the gas grid can apply for funding of up to £6,000, an increase of £2,000----- **Grants distributed through the Warm Front scheme, 23 Apr 2009 (<http://www.businessgreen.com/business-green/news/2240959/government-boosts-green>)**

1. From April 2008 to March 2009, Warm Front delivered energy efficiency improvements across a wide range of households. In total, 233,594 households (in the UK) received assistance, and the budget level of the Warm Front scheme funding over the 2008-11 period was £174m for the whole UK (Warm Front Scheme Annual Report - 2008 - 2009, <http://www.warmfront.co.uk/files/wf%20annual%20report%202008%202009.pdf>);
2. It is not possible for all dwelling retrofits in Wales to get grants according to the conditions of Warm Front scheme;
3. Even if all of the 'hard to heat' dwellings in this calculation could get the £6,000 grants, there would still be a $(25,000-6,000) \times 3214 = £60.07$ million gap for the 34% reduction target, or $(25,000-6,000) \times 4456 = £84.67$ million gap for the annual 3% reduction target.
4. In addition, according to Warm Front, (<http://www.warmfront.co.uk/files/Wwhat%20to%20Expect%20Oct09%20V1.pdf>), insulation work would take up to three months between registration and commissioning. At least $3214/4 = 804$ properties or $4456/4 = 1114$ properties would be renovated quarterly. This is intensive work and would require significant training of workforce to undertake the levels of refurbishment required, but would create lots of job opportunities long term.

**Table 4 - Renewable microgeneration (Residential Headline 6)
CO2 savings from existing microgeneration programmes 2006-2008**

Renewable technologies	2006-2008				Break down by funding stream (t CO2 per year)				Assumptions
	source of figure	assumptions	method of calculation	figure	Major PV Demonstration Programme	Clear sky Programme	Low Carbon Building Programme	notes	
PV	Numbers of microgeneration units installed in England, Wales, Scotland, and Northern Ireland (http://www.berr.gov.uk/files/file49151.pdf) Table 3 - Table 10, page 9-12	none	direct reference	201 t CO2/yr	Stream 1: 78 t CO2/yr Stream 2: 97 t CO2/yr	—	Phase 1: 27.6 t CO2/yr Phase 2: 14.2 t CO2/yr	units * 0.767 t CO2 or KWh*0.422	General assumptions: 1. Because of the absence of detailed information, we can only use the LCBP's calculation outcomes to assume the CO2 savings by the Clear sky programme; 2. The CO2 savings per system are: Solar thermal - 0.35 t CO2/yr Biomass - 3.3 t CO2/yr for boiler system and 1 t CO2/yr for room heater Wind turbine - 1.5 t CO2/yr Hydro power - 9.4 t CO2/yr GSHP - 5 t CO2/yr 3. All the energy savings from PV and wind turbines take the place of electricity, and those from solar thermal, biomass and GSHP take the place of gas; 4. The emission factor is 0.422 for electricity and 0.194 for gas;
Solar thermal		1. use the middle figure in the range; 2. all the energy savings displace gas (space or water heating)	$(7500+7870)*1000/2*0.194=1491$	1491 t CO2/yr	—	135	Phase 1: 99.4 t CO2/yr Phase 2: 16.6 t CO2/yr	units * 0.35 t CO2 or KWh*0.194	
Biomass		all the energy savings displace gas (space or water heating)	$1080*1000*0.194=210$	210 t CO2/yr	—	57	Phase 1: 138.6 t CO2/yr	units * 3.3 t CO2	
Wind turbine		none	direct reference	101 t CO2/yr	—	30	Phase 1: 81 t CO2/yr	units * 1.5 t CO2	
Hydro power		none	direct reference	390 t CO2/yr	—	19	Phase 1: 9.4 t CO2/yr	units * 9.4 t CO2	
Ground Source Heat Pump		all the energy savings displace gas (space or water heating)	$2653*1000*0.194=515$	515 t CO2/yr	—	160	Phase 1: 180 t CO2/yr Phase 2: 26.5 t CO2/yr	units * 5 t CO2 or KWh*0.194	
Air Source Heat Pump		none	no such technology in Wales before 2009	0	—	—	—	—	

**Table 5 - Renewable microgeneration (Residential Headline 6)
Predicted CO2 emission reductions through renewable technologies from 2006 to 2020**

units: t CO2 per year

Headline recommendation	Renewable technologies	2006-2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Notes (for the assumptions from 2010 to 2020)
Headline 6: The Committee recommends that the Welsh Assembly Government actively promotes the Low Carbon Building programme in Wales and provides additional grants for microgeneration schemes in existing housing. (only the savings from Major PV Demonstration Programme Stream 1, Clear Skies Programme and Low Carbon Building Programme phase 1 can be accounted for in these calculations)	PV	105.6	105.84	106.10	116.7	128.4	141.2	155.3	170.9	188.0	206.8	227.4	250.2	275.2	Highly supported by funding and relevant policies, therefore assumed 10% rolling increase per year
	Solar thermal	234.4	234.48	234.57	258.0	283.8	312.2	343.4	377.8	415.6	457.1	502.8	553.1	608.4	
	Biomass	195.6	195.77	195.94	199.9	203.9	207.9	212.1	216.3	220.7	225.1	229.6	234.2	238.8	The fuel supply chain is not easy to establish in the near future, therefore assume 2% rolling increase per year
	Wind turbine	111	111.04	111.08	113.3	115.6	117.9	120.2	122.6	125.1	127.6	130.1	132.8	135.4	This technology is not very attractive on a domestic scale, therefore assume 2% rolling increasing per year
	Hydro power	9.4	9.4	9.41	9.9	10.4	10.9	11.4	12.0	12.6	13.2	13.9	14.6	15.3	This technology is highly restrained by local resource, but will get more attention in the future, therefore assume 5% increase per year
	Ground Source Heat Pump	340	340.22	340.46	374.5	412.0	453.1	498.5	548.3	603.1	663.5	729.8	802.8	883.1	Highly supported by funding and relevant policies, therefore assume 10% rolling increase per year
	Air Source Heat Pump	0	0.16	0.35	0.4	0.5	0.6	0.7	0.9	1.1	1.3	1.5	1.8	2.2	Has not been implemented prior to 2009, but may be an important technology in the future, therefore assume 20% rolling increase per year
	Annual sum of CO2 offset	996	997	998	1072.7	1154.5	1243.9	1341.7	1448.8	1566.1	1694.5	1835.2	1989.4	2158.4	These CO2 savings can not be achieved only through existing funding, local authorities' loans will play a very important role.

Table 6 - Renewable microgeneration (Residential headline 6)
Scenarios illustrating the impact of increasing funding for microgeneration technologies

units: kt CO2 per year

Scenario 1	Sources of CO2	2006	2007	2008	2009	2010	Sources of CO2	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	against 1990 baseline	notes
General assumption: 1. zero carbon in new dwellings would be achieved in 2013; 2. the retrofit level achieves the WAG's '3% reduction target'; 3. the investment on renewable technologies would increase based on the current budget level.	new build dwellings	—	—	17.87	17.87	15.38	new build dwellings	12.4	12.4	0	0	0	0	0	0	0	0	1990 baseline: 7770 kt CO2 predicted emission in 2020: 5463.4kt CO2 predicted reduction rate: (5463.4-7770)/7770=-29.69% can not achieve the UK's 34% reduction target in the whole domestic sector	The CO2 emission from existing dwellings is based on the WAG's '3% CO2 reduction target' in retrofit of 'hard to heat' buildings, this target would make 36.6% CO2 reduction in 'hard to heat' dwellings sector until 2020 against the 1990 baseline
	existing dwellings	—	—	7197.00	7187.70	7175.27	existing dwellings	7150.4	7088.0	6994.4	6869.6	6713.6	6526.4	6308.0	6058.4	5777.6	5465.6		
	installation of micro-generations	—	—	-1.00	-1.00	-1.00	installation of micro-generations	-1.1	-1.2	-1.2	-1.3	-1.4	-1.6	-1.7	-1.8	-2.0	-2.2		
	Sum	7892.00	7221.00	7213.87	7204.57	7189.65	Sum	7161.7	7099.2	6993.2	6868.3	6712.2	6524.8	6306.3	6056.6	5775.6	5463.4		
Scenario 2	Sources of CO2	2006	2007	2008	2009	2010	Sources of CO2	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	against 1990 baseline	notes
General assumption: 1. zero carbon in new dwellings would be achieved in 2013; 2. the retrofit level achieves the WAG's '3% reduction target'; 3. the investment on renewable technologies would increase based on the WAG's microgeneration installation target. 4. on average each heating unit offsets 20% of the 17,115 kWh space heating and hot water load (the common load of current building), and each electricity unit offsets 1,860 kWh (one person's annual consumption in 2007)	new build dwellings	—	—	17.87	17.87	15.38	new build dwellings	12.4	12.4	0	0	0	0	0	0	0	0	1990 baseline: 7770 kt CO2 UK targeted emission in 2020: 7770*(1-0.34)=5128.2 kt CO2 Predicted reduction rate: 5459.4 kt CO2, (5459.4-7770)/7770=-29.74% have less influence on the final outcome, which means the current investment level on microgeneration installation is till far from the effective level (the expenditure of LCBP phase 1 in 2009 is £843,098.28)	1. According to the WAG's microgeneration installation target, there would be 20,000 heating units and 10,000 electricity units installed by 2012, and 100,000 heating units and 200,000 electricity units by 2020;however, this target is not only for installations in residential sector, and the 2012 target seems very hard to achieve based on current statistic data. 2. The target only defines the number of units but different technologies have diverse savings, so it is safer to assume the future situation by total CO2 savings rather than newly installed units and their individual CO2 savings. 3. In this scenario the calculation makes an extreme assumption that from 2011 on each year the CO2 reduction due renewables would be 20% more than the previous year (this is almost double the current level)
	existing dwellings	—	—	7197.00	7187.70	7175.27	existing dwellings	7150.4	7088.0	6994.4	6869.6	6713.6	6526.4	6308.0	6058.4	5777.6	5465.6		
	installation of micro-generations	—	—	-1.00	-1.00	-1.00	installation of micro-generations	-1.20	-1.44	-1.73	-2.08	-2.49	-2.99	-3.59	-4.30	-5.17	-6.20		
	Sum	7892.00	7221.00	7213.87	7204.57	7189.65	Sum	7161.6	7098.9	6992.6	6867.5	6711.1	6523.4	6304.4	6054.1	5772.4	5459.4		

Notes

- The above calculation shows that to achieve the UK's '34% carbon reduction by 2020 against the 1990 baseline' target WAG would need to achieve its own policy of 'zero carbon new dwelling' in 2013, '3% annual retrofit of 'hard to heat' dwelling' from 2011, and 'microgeneration installation of 20,000 heating units and 10,000 electricity units installed by 2012, and 100,000 heating units and 200,000 electricity units by 2020' which is a great challenge.
- Based on the current implementation status, the barriers of 'zero carbon new dwelling' and the microgeneration installation target are more complicated and tougher than the ones of retrofit sector. Therefore, our research suggests that effort is concentrated on retrofit sector before 2013.
- From the above figures we can also see that people's lifestyle actually plays a basic role in carbon reduction. If the current 'luxurious life style' continues, a heavy price will be paid for the carbon reductions. On the contrary, if the public get enough awareness of the climate change issue and make efforts together, targets could be achieved without such large investments.

Table 7 - Summary of impact of Transport Sector Headline Recommendations

Area	Headline recommendation	baseline figure for 1990	source of figure	method of calculation	assumptions	Most recent figure available	source of figure	method of calculation	assumptions	C savings	% of total savings for sector	STATUS	Notes	
	sector emissions	7091 kt CO2e	http://www.airquality.co.uk/archives/reports/cat07/091121009_DA_Enr Users_GHGI_data_1990-2007_v1_naei.xls		ignoring air and water transport	7947 kt CO2e (2007)	http://www.airquality.co.uk/archives/reports/cat07/091121009_DA_Enr Users_GHGI_data_1990-2007_v1_naei.xls		ignoring air and water transport	856kt increase since 1990	12% increase since 1990			
Transport	<p>Headline Recommendation 1: The Committee recommends that the Welsh Assembly Government takes a much stronger lead by placing carbon reduction at the heart of the Wales Transport Strategy and by increasing funding for sustainable transport from around 50 per cent to around 70 per cent of the transport budget, in line with Scotland.</p>	this is the financial vehicle for the headline recommendations below - as such no CO2 reductions calculated											accepted in part, but transport budget decreased causing difficulty with assigning more funds to public transport	
	<p>Headline Recommendation 2: The Committee recommends that the Welsh Assembly Government ensures that the National Transport Plan and Regional Transport Plans include specific and measurable objectives to cut carbon emissions and that sufficient funding is provided to the Regional Transport Consortia to be able to deliver these objectives.</p>												accepted	http://www.assembly.wales.org/bus-home/bus-committees/bus-committees-third1/bus-committees-third-sc-home/inquiries_sd/inquiries_-_carbon_reduction/carbon_transport/carbon_wag_transport_response.htm
	<p>Headline Recommendation 3: The Committee recommends that the Welsh Assembly Government reviews the use of WelTAG as a matter of urgency to ensure that carbon reduction is the main objective when assessing projects.</p>										specific policies stated in Table 9: 1003.4 ktCO2 in 2009 1008.1 kt CO2 in 2010	specific policies stated in Table 9: 12.6% saving pa	accepted in part	
	<p>Headline Recommendation 4: The Committee recommends that the Welsh Assembly Government conducts a pilot scheme in Wales based on the Sustrans' TravelSmart programme to assess its impact, before considering its roll-out across Wales.</p>						potential saving of 80.8kt CO2	http://www.assembly.wales.org/bus-home/bus-committees/bus-committees-scritiny-committees/bus-committees-third-49-home/bus-committees-third-49-agencies.htm?act=info&id=150827&res=122009		0.2kgCO2/vehicle km			accepted in part	

Table 8 - UK, WAG and SC target comparison of passenger transport CO2 emissions reduction

kt GHGs (CO2 equivalent)	Baseline	Year										Notes	Comments
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
UK target (34% reduction till 2020 against 1990 level)	1990	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	1. $7091 \times (1-0.34) = 4680.1$ 2. $(4680-7377)/10 = -269.7$ -34%	1. only 3% reduction per year from 2011 on can not meet the UK's '34% target' in the surface transport sector; 2. no economic roll on, one year's investment can not benefit the next year's emission reduction; 3. if the committee's headline recommendations could be fully adopted and implemented from 2011 on, it may be able to exceed the UK's '34% target' in 2020.
Annual net reduction	—	-269.7	-269.7	-269.7	-269.7	-269.7	-269.7	-269.7	-269.7	-269.7	-269.7		
Annual passenger transport GHGs emissions (vehicle+train)	7091	7107.3	6837.6	6567.9	6298.2	6028.5	5758.8	5489.1	5219.4	4949.7	4680.0		
WAG target (3% annual reduction against 2006-2010 average level)	2006-2010 average level	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	1. $7377 \times 0.03 = 221.3$ 2. $(5164.4-7091)/7091 = -27.2\%$	
Annual net reduction	—	-221.3	-221.3	-221.3	-221.3	-221.3	-221.3	-221.3	-221.3	-221.3	-221.3		
Annual passenger transport GHGs emissions (vehicle+train)	7377	7156.1	6934.8	6713.5	6492.2	6270.9	6049.6	5828.3	5607.0	5385.7	5164.4		
Sustainability Committee's target (3.5% annual reduction against 2006-2010 average level)	2006-2010 average level	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	1. $7377 \times 0.035 = 258.2$ 2. $(4795.4-7091)/7091 = -32.4\%$	
Annual net reduction	—	-258.2	-258.2	-258.2	-258.2	-258.2	-258.2	-258.2	-258.2	-258.2	-258.2		
Annual passenger transport GHGs emissions (vehicle+train)	7377	7119.2	6861.0	6602.8	6344.6	6086.4	5828.2	5570.0	5311.8	5053.6	4795.4		

Table 9 - Potential transport CO2 emission reductions 2009/2010

2009 (without consideration of positive policies)					2010 (without consideration of positive policies)				
Indicator title	source of figure	assumptions	method of calculation	figure	Indicator title	source of figure	assumptions	method of calculation	figure
Annual carbon emission of transport sector	no available data	<p>Assumption for Road transport:</p> <p>1. Emissions still increase due to rising population and number of vehicles;</p> <p>2. Carbon reduction caused by sustainable transport strategies calculated below and not included in this calculation;</p> <p>3. Use the 5 year average figure as the baseline of future figures.</p> <p>Assumption for Rail transport:</p> <p>1. Emissions still increase due to rising population and use of trains;</p> <p>2. Increase in train uses rises each year (2008-1.1, 2009-1.2, 2010-1.3);</p> <p>3. Use the 5 year average figure as the baseline of future figures.</p>	Rail Transport: 370.3 kt CO2 Road Transport: 7594.2 kt CO2 $370.3+7594.2= 7964.5$	7964.5 ktCO2	Annual carbon emission of transport sector	no available data	<p>Assumption for Road transport:</p> <p>1. Emissions still increase due to rising population and number of vehicles;</p> <p>2. Carbon reduction caused by sustainable transport strategies calculated below and not included in this calculation;</p> <p>3. Use the 5 year average figure as the baseline of future figures.</p> <p>Assumption for Rail transport:</p> <p>1. Emissions still increase due to rising population and use of trains;</p> <p>2. Increase in train uses rises each year (2008-1.1, 2009-1.2, 2010-1.3);</p> <p>3. Use the 5 year average figure as the baseline of future figures.</p>	Rail Transport: 385.2 kt CO2 Road Transport: 7622.7 kt CO2 $385.2+7622.7= 8007.9$	8007.9ktCO2
savings from policies in 2009					savings from policies in 2010				
Support for non- motorised modes (walking/cycling)	What policies are effective at reducing carbon emissions from surface passenger transport? A review of interventions to encourage behavioural and technological change. (http://www.indiaenvironmentportal.org.in/files/TPA_transport_final.pdf)	1. Wales achieves 75% of the levels common in other northern EU countries;	$7964.5*2.5%=199.1$	199.1 ktCO2	Support for non- motorised modes (walking/cycling)	What policies are effective at reducing carbon emissions from surface passenger transport? A review of interventions to encourage behavioural and technological change. (http://www.indiaenvironmentportal.org.in/files/TPA_transport_final.pdf)	1. Wales achieves 75% of the levels common in other northern EU countries;	$8007.9*2.5%=200.1$	200.1 ktCO2
Eco-driving & speed enforcement		2. This improvement could save 2.5% of Wales' transport emissions	$7964.5*5%=398.2$	398.2 ktCO2	Eco-driving & speed enforcement		1. 3.5% reductions in Wales' emissions from eco-driving;	$8007.9*5%=400.4$	400.4 ktCO2
Travel plans: personal, schools, & workplace		2. 1.5% savings in total Wales' transport emissions from motorway speed limit enforcement.	$7964.5*3%=238.9$	238.9 ktCO2	Travel plans: personal, schools, & workplace		2. 1.5% savings in total Wales' transport emissions from motorway speed limit enforcement.	$8007.9*3%=240.2$	240.2 ktCO2
other policies		1. 6% reduction in Wales' car usage from PTPs;	$(199.1+398.2+238.9)*0.2=167.2$	167.2 ktCO2	other policies		1. 6% reduction in Wales' car usage from PTPs;	$(200.1+400.4+240.2)*0.2=168.1$	168.1 ktCO2
		2. 20% reduction of impact in schools/ workplace sectors therefore assume this policy would cause 3% reduction of the Wales transport emissions in total					2. 20% reduction of impact in schools/ workplace sectors therefore assume this policy would cause 3% reduction of the Wales transport emissions in total		
		20% of the total savings from above three policies					20% of the total savings from above three policies		

Table 10 - Summary of impact of Headline Recommendations for Industry & Public Bodies Sector

Sector	Headline recommendation	baseline figure for 1990	source of figure	method of calculation	assumptions	Most recent figure available	source of figure	method of calculation	assumptions	C savings	% of total savings for sector	Status	Notes	
Industry and public bodies	sector emissions	17,431 kt CO2e	http://www.airquality.co.uk/archive/reports/cat07/0911121009_DA_End_Users_GHGI_data_1990-2007_v1_naei.xls	End User Inventories: commercial + public service + industry other combustion + industry other processes + waste	only including devolved competencies (excluding iron & steel industry)	12,008 kt CO2e (2007)	http://www.airquality.co.uk/archive/reports/cat07/0911121009_DA_End_Users_GHGI_data_1990-2007_v1_naei.xls		only including devolved competencies (excluding iron & steel industry)	5,423 kt CO2e since 1990	31%		main source of reduction is use of gas for industrial combustion in preference to solid fuels	
	Headline Recommendation 1: The Welsh Assembly Government sets targets for carbon reduction in the industrial and business sector in Wales as part of its implementation of the One Wales carbon reduction commitment. Following a five year period of voluntary action by the industrial and business sector in Wales to meet the targets imposed on them, the Welsh Assembly Government implements regulations that require the targets to be met.						assumptions - accept WAG assumptions for voluntary and compulsory CO2 reductions. data for commercial, industry other combustion and industry other processes from 'end user' dataset http://www.airquality.co.uk/archive/reports/cat07/0911121009_DA_End_Users_GHGI_data_1990-2007_v1_naei.xls			198 kt CO2e 2008-2011 (voluntary) 2,000 kt CO2e 2011-2020 (compulsory) 2,198 kt CO2e 2008-2020 (total)	18.3% against 2007 sectoral emissions	rejected		
	Headline Recommendation 2: The Welsh Assembly Government should carry out an assessment of the employment opportunities that could be created in Wales through reducing carbon emissions, which should include an evaluation of the skills needed within the workforce. The assessment and evaluation should inform the Welsh Assembly Government's Green Jobs Strategy	If additional input from Warm Front is obtained, calculations made for Residential Headlines 5 & 6 may help WAG to calculate the potential contribution of these headlines to the WAG Green Jobs Strategy										accepted in principle		
	Headline Recommendation 4: The Welsh Assembly Government to introduce a sliding scale rebate on Business Rates to businesses not covered by any carbon trading scheme who achieve agreed levels of carbon reduction or agreed levels of accreditation in schemes such as The Green Dragon Environmental Standard.	no research found to back up specific assumptions on numbers of businesses which will exceed 3% CO2 savings to qualify for business rate rebates										rejected - significant part now covered by Carbon Reduction Commitment	http://www.assembly.wales.org/gbus-home/bus-guide-docs-pub/bus-business-documents/bus-business-document.doc http://www.assembly.wales.org/gbus-home/bus-guide-docs-pub/bus-business-documents/bus-business-document.doc	
	Headline Recommendation 5: The Welsh Assembly Government sets targets for carbon reduction across the whole of the Public Sector in Wales as part of its implementation of the One Wales carbon reduction commitment. The Welsh Assembly Government should consider setting those targets in excess of 3% for the public sector in Wales.	1,452 kt CO2e	http://www.airquality.co.uk/archive/reports/cat07/0911121009_DA_End_Users_GHGI_data_1990-2007_v1_naei.xls	public service			1,250 kt CO2e (2007)	http://www.airquality.co.uk/archive/reports/cat07/0911121009_DA_End_Users_GHGI_data_1990-2007_v1_naei.xls		public service	2008-2020: baseline (3% pa) - 436 kt CO2e +1% pa +74 kt CO2e +2% pa +142 kt CO2e	% saving against 2007 sectoral emissions 3.6% 4.2% 4.8%	accept in part	
	Headline Recommendation 7: The Welsh Assembly Government should consider making money available to appropriate public bodies to 'kick start' capital programmes for achieving carbon reduction. The Welsh Assembly Government should agree a programme of offsetting the capital funding through subsequent savings in energy bills (having regard to substantial changes in fuel prices) at the time of providing the funding.						Carbon Trust loan £1,000 for ever 1.5 t CO2 per annum reduction (www.carbontrust.co.uk/cut-carbon-reduce-costs/products-services/loans/pages/projects-qualify.aspx). Scottish scheme used as basis of original SC calculations allows a lower threshold of £1,000 for 0.7 t CO2 per annum				assuming the lower threshold is adopted, accept SC assumptions of 26.5 kt CO2 over 10 years	0.15% CO2 reduction	accept in principle	

Table 11 - Industry and public sector GHGs emissions reduction target comparison

kt GHGs (CO2 equivalent)	Baseline		Year										Notes	Comments
UK target (34% reduction till 2020 against 1990 level)	1990		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	1. $17431*(1-0.34)= 11504.5$ 2. $(11504.5-12003)/10= -49.9$ -34% against 1990	1. 3% reduction per year from 2011 would exceed the UK's '34% target' in the WAG's competence of industry and public sector; 2. different from retrofit in residential sector, one year's investment can not benefit the next year's emission reduction.
Annual net reduction	—	—	-49.9	-49.9	-49.9	-49.9	-49.9	-49.9	-49.9	-49.9	-49.9	-49.9		
Annual sector GHGs emissions	17431	—	11953.1	11903.2	11853.3	11803.4	11753.5	11703.6	11653.7	11603.8	11553.9	11504.0		
WAG target (3% annual reduction against 2006-2010 average level)		2006-2010 average level	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	1. $12003*0.03=-360.1$ 2. $(8402.3-17431)/17431= -51.8\%$ against 1990	
Annual net reduction	—	—	-360.1	-360.1	-360.1	-360.1	-360.1	-360.1	-360.1	-360.1	-360.1	-360.1		
Annual sector GHGs emissions	—	12003	11643.2	11283.1	10923.0	10562.9	10202.8	9842.7	9482.6	9122.5	8762.4	8402.3		
Sustainability Committee's target (based on the headline recommendations)		2006-2010 average level	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	1. 3.5% reduction annually from 2011 on in industry other combustion, industry other processes and commercial sectors; and 4.0% reduction annually from public services and waste sectors. (432.4 kt CO2e) 2. $(7660.4-17431)/17431= -56.1\%$ against 1990	
Annual net reduction	—	—	-432.4	-432.4	-432.4	-432.4	-432.4	-432.4	-432.4	-432.4	-432.4	-432.4		
Annual sector GHGs emissions	—	11985	11552.5	11120.0	10687.6	10255.1	9822.7	9390.2	8957.8	8525.3	8092.9	7660.4		

Table 12 - Industry & Public Sector Emissions Breakdown

units: kt GHGs (CO2 equivalent)

Sector	differencnt target	1990 baseline	2006- 2010 average baseline	estimated emissions in 2020 based on target
commercial X	UK 34% reduction against 1990	1837	—	1212.4
	the WAG's annual 3% reduction against 06-10 average	—	2825 (154% against 1990)	1977.5
Public services √	UK 34% reduction against 1990	1452	—	958.3
	the WAG's annual 3% reduction against 06-10 average	—	1255 (86% against 1990)	878.5
Industry other combustion √	UK 34% reduction against 1990	8967	—	5918.2
	the WAG's annual 3% reduction against 06-10 average	—	4819.2 (54% against 1990)	3373.4
Industry other processes √	UK 34% reduction against 1990	2257	—	1489.6
	the WAG's annual 3% reduction against 06-10 average	—	1814.1 (80% against 1990)	1269.9
waste √	UK 34% reduction against 1990	2918	—	1925.9
	the WAG's annual 3% reduction against 06-10 average	—	1290 (44% against 1990)	903.0
Sum √	UK target	17431.0	—	11504.5
	WAG target	—	12003.3 (69% against 1990)	8402.3 (48% against 1990)

Notes

1. Influenced by previous policies and combined with the impact of recession, to 2010 Wales may already achieve 31% reduction in the areas within WAG's competence. If the 3% annual reduction could be guaranteed from 2011 on, the total emissions of these five sectors may achieve 52% reduction as a whole in 2020 against 1990 baseline. However, almost all the easy wins have been taken already except in commercial sector, therefore it is not guaranteed that such a prediction can really be achieved in 2020.

2. Among the above five sectors, WAG has strong influence in commercial, public service and waste sector. Waste sector has already exceeded the target in advance, public sector has already made significant progress, while the latest emission levels in the commercial sector would be over 50% worse than in 1990. Therefore, providing public services and involving more businesses whilst cutting down their emissions will be the biggest challenge of WAG in the coming years.