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Committee Regional Sustainability Committee
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CCP Milestone 1: Regional greenhouse gas emissions inventory

1. Purpose

This report

- proposes a revised regional greenhouse gas emissions inventory for adoption by the Committee
- updates the Committee on progress with the establishment of emissions reduction goals and the selection of strategies to achieve those goals to meet the requirements for Milestones 2 and 3 of the CCP-NZ programme.

2. Significance of the decision

The matters for decision in this report do not trigger the significance policy of the Council or otherwise trigger section 76(3)(b) of the Local Government Act 2002.

3. Background

Greater Wellington (GW) signed up to the Communities for Climate Protection programme (CCP-NZ) in 2006 and achieved Milestone 1 (development of a greenhouse gas emissions inventory) in July 2007. Milestones 2 and 3 entail the establishment of emissions reduction goals and an action plan to achieve these goals.

The CCP programme is split into two sectors – corporate and community. In April 2008 Council approved emissions reduction goals for the corporate sector (i.e. for the carbon emissions the organisation is responsible for directly in carrying out its functions) and a Plan to achieve those goals has been developed

A timeline for development of community sector goals and an action plan can be found at Section 4.4. Although this report only addresses issues of

mitigation (emissions reduction), the regional plan will have a major section on adaptation in response to climate change.

4. Discussion

4.1 Community Sector Inventory

4.1.1 Inventory establishment

In developing a shared regional approach to delivering a community action plan, it was agreed by the regional Emissions Reduction and Adaptation Working Group (ERAWG) that the 2001 emissions inventory was not recent or complete enough to achieve the high standards the participating councils wished to achieve. It was established using data supplied by the International Council for Local Environmental Initiatives – ICLEI – which runs the CCP programme. There has been a great deal of technical development in emissions inventory methodologies since the ICLEI data was produced and ERAWG agreed to recommend an inventory for 2006/07 established by Landcare Research Ltd (LCR) with input and peer review by NIWA.

4.1.2 Advantages of the LCR inventory

In addition to having an inventory which is more up-to-date for developing the Plan, there are a number of advantages to opting for the LCR inventory as opposed to the ICLEI-data-based 2001 inventory previously used.

- The LCR inventory uses 2006 census data where the ICLEI data has yet to be updated from the 2000 statistics
- The LCR inventory is more complete in that it includes agricultural and aviation emissions and forestry sequestration where the ICLEI inventory does not
- A report from LCR accompanying the inventory very clearly documents the assumptions underlying the data collection leading to greater confidence in the final results
- The data collection method allows the automatic generation of sub-inventories at the TA level. This is a considerable help to smaller, less well resourced Territorial Authorities
- The spreadsheets have been set up to allow automatic down-loading of updated data from national databases as this becomes possible (MAF and MfE have plans to make this possible in the near future).

4.1.3 Analysis of the inventory

The regional greenhouse gas footprint comes to 3.8 million tonnes of CO2 equivalent¹ (**3.8M t CO2e**), excluding the forestry offset and is represented graphically in the pie chart on the next page.

By way of comparison, the 2001 inventory total based on the ICLEI-supplied proxy data was **2.1 M t CO2e**. Of the additional **1.7M t CO2e**, **1.4M t CO2e** comes from agricultural and aviation emissions, which were not counted in the 2001 inventory. The rest of the difference is made up by fairly small increases in emissions from some sectors, such as transport, and differences in counting methodologies.

As can be seen from the table below, transport, agriculture and electricity are responsible for 82% of the region's greenhouse gas footprint. Agricultural emissions make up the single biggest segment (31%) even though this is a much smaller percentage than the national average of 48%. Although waste disposal contributes only 6% to the total, it is the one sector where responsibility is the sole province of local government so savings may be more readily achievable.

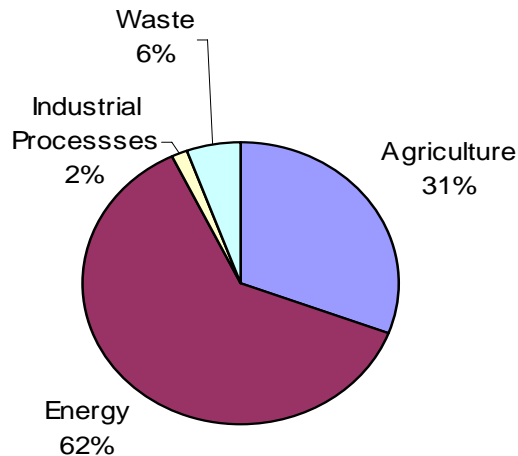
Table 1 Regional GHG emissions 2006/07

Segment	t CO2 e	% of total
Agriculture	1,174,150	31%
Industry	66,070	2%
Waste	219,680	6%
Energy - transport		
Land transport	1,131,349	30%
Aviation Fuel	212,049	6%
Energy - other		
Natural Gas	340,549	9%
Coal	103,328	3%
Electricity	566,338	15%
Total	3,813,513	

The pie chart graphically presents this information aggregated into the sectors used by the Inter-governmental Panel on Climate Change (IPCC).

¹ The major greenhouse gases are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). CO2 is considered to have a survival rate in the atmosphere of 1. The other gases have longer survival rates. Internationally, it is an accepted convention that all gases' emissions are converted to CO2 equivalents for the sake of simplicity.

Wellington region's emissions in 2006/07 by sector



At the territorial authority level, ours is revealed as a region of two halves:

- **Metro areas (including Kapiti Coast).** The footprint is dominated by energy emissions – Wellington has the highest with 93% and Porirua the lowest with 75%. Within the energy footprint, electricity contributes between 20% and 25% of the totals. In all the Territorial Authorities except Wellington City, petrol and diesel contribute over half of these energy emissions (52%-62%). This comes as no surprise given that many of the residents of the other Territorial Authorities work in Wellington. The opposite side of that equation is Wellington City's petrol/diesel contribution of 36% of energy emissions. Wellington City's result is somewhat skewed by the presence of the regional airport which means that almost all aviation fuel emissions are attributed to that Territorial Authority. If those emissions are removed from the total to give a better comparison, the city's petrol/diesel emissions remain below 50% of the total but increase to 44%.
- **Wairarapa.** Agricultural emissions dwarf all others contributing between 76% and 84% of the totals in each of the three Territorial Authorities. Of the remainder, energy is once again the big factor. The distribution of emissions within the energy footprint is almost identical in all three districts: 22%-23% from electricity and 72%-73% from petrol/diesel. This high contribution from transport fuels is to be expected in rural areas with long distances to be covered and little by way of public transport provision.

Carbon sequestration in forests in our region is assessed at just under 1.1M t CO₂ e (see Section 4.1.5 for a discussion of how this is determined). This represents 29% of the total emissions, 93% of the agricultural emissions or 97% of the land transport emissions.

4.1.4 Caveats

As with any data set, this inventory is only as accurate as the data entry and underpinning assumptions allow it to be. It has, however, been peer reviewed by NIWA and internally by LCR. Caution should be exercised with relation to the following:

- **Solid and liquid waste.** Emissions factors have been used derived from national average efficiency ratings for waste disposal at different types of facilities. Actual emissions from individual facilities may vary considerably.
- **Transport.** Two major methods are widely accepted for establishing emissions from vehicles. The first uses information from annual vehicle registration data to establish kilometres travelled by each vehicle (VKT) and then applies an average emissions factor per kilometre. The second uses data on petrol/diesel/LPG sales in a given area and applies an emissions factor per litre of fuel. There is some dispute as to which of these methods is more accurate. The LCR inventory uses the second.

Clearly, whichever method is used, some of the emissions will occur outside of the inventory area. It is assumed that these emissions are offset by the emissions from vehicles registered, or fuel bought, in other areas. In a region like Wellington with a significant proportion of emissions relating to the daily commute into Wellington City, this assumption may skew results for both the destination and point of origin Territorial Authorities.

- **Energy.** Figures are more likely to be accurate for the regional inventory rather than for individual Territorial Authorities. Electricity data is based on grid supply points rather than Territorial Authority boundaries, and coal and gas use are apportioned on a population basis.
- **Forestry.** The inventory only accounts for sequestration in exotic plantations, and exotic and indigenous regenerating scrub of fairly narrowly-defined types. Sequestration rates for different age classes of radiata pine, ranging from 0.5t/ha to 42t/ha, are known and used. There is a great deal of scientific debate over sequestration rates for indigenous forest cover and for old growth forests. The LCR inventory has adopted the conservative approach of applying a zero rate to all indigenous forest except manuka/kanuka scrub. In the case of manuka/kanuka, the lowest scientifically established rate of 1.9 C tonnes/ha/year has been used.

This conservative approach means that, for example, the 20,000 ha of regenerating native bush on the eastern Hutt hills is not included as it contains a mix of species which disqualify it from the national databases. Nor is the considerable area under forest in the Tararua, Rimutaka and Haurangi Forest Parks included although there is some suggestion that old growth forest may not necessarily be in a steady state with regard to carbon sequestration. However, further research is needed before data is available which is reliable enough to include in inventories of this type.

While the implications of these uncertainties and areas of dispute should be acknowledged, the value of an inventory such as this is in enabling the monitoring of trends. As long as the underpinning assumptions are clear and the areas of uncertainty noted, a consistent counting methodology will give a reliable picture of progress made in reducing emissions.

4.1.5 Territorial Authority Feedback

The 7 territorial authorities in the region that participate in CCP-NZ have been consulted about this inventory and, with the exception of Porirua City Council, have agreed to use it on the basis that it gives a more robust and complete picture of emissions than the previous inventory.

Porirua City Council has opted to continue to use the ICLEI-data-based 2001 inventory for internal purposes as they believe the advantages to using an inventory based on an international methodology outweigh the advantages of the LCR inventory. They also disagree with the method used by Landcare Research to calculate the emissions from the vehicle fleet. Porirua City Council staff believe the VKT method (see explanation under Transport heading in previous section) is more accurate and since transport emissions make up 55% of Porirua's total, such considerations are material.

ERAWG has agreed a working arrangement with PCC that the LCR inventory will be used for the purposes of the regional plan.

Masterton, Carterton and South Wairarapa District Councils were pleased to be offered a robust inventory with little effort required on their part. Given the agricultural base to their economies, their major response to climate change will necessarily focus on the adaptation issues.

Upper Hutt City Council does not participate in CCP-NZ but the corporate management team has been briefed on the inventory.

4.1.6 ICLEI Feedback

Before ERAWG finally agreed to recommend this inventory methodology, feedback was sought from ICLEI as to its acceptability for the purposes of the CCP-NZ programme.

ICLEI staff briefly reviewed the operation of the emissions calculator developed by Landcare, and found that it was producing acceptable results for the CCP-NZ emission inventory.

There is still no news on a timeline for new software from ICLEI to meet the new GHG Protocol requirements. ICLEI are keen to work with regional councils to help develop the future tools for councils if that option is available.

4.1.7 A note on carbon neutrality

ICLEI strongly advocates for the adoption of a goal of carbon neutrality by local authorities participating in its programmes. While this is a laudable aspiration, ERAWG does not recommend specifying this goal for the region for the following reasons:

- The technical side of inventory establishment is still in the early stages of development as can be seen by the differences in the regional inventory between 2001 and 2006/07. Until national and/or international standards for carbon accounting are agreed, the target is almost certain to move each time an inventory is conducted.
- Any council claiming to have achieved (or even aiming for) carbon neutrality is likely to have to spend a great deal of time defending its inventory methodology and other aspects of its climate change response in reaction to queries, both hostile and benign. In the context of a shared regional plan, coordination of responses to these queries could be more resource-intensive than the matter merits.
- Carbon neutrality forces a focus on emissions reduction. Adaptation issues and initiatives are likely to attract less attention as a result but are at least as important in the regional context.
- There are a number of ways of achieving carbon neutrality. One which has been used in a number of cases internationally is to limit the scope of what is being counted (i.e. only taking responsibility for a limited range of emissions). This has rather tarnished the credibility of such claims and produced a somewhat cynical reaction amongst the educated public.
- Almost inevitably offset mechanisms would need to be sought to achieve full carbon neutrality. The most obvious source of such offsets in the Wellington region would be forestry. However, as has been noted in Section 4.1.4, there are problems with accounting for these offsets. Further, the validity of this approach has been questioned internationally as identifying a true “gold plated” offset is a fraught matter. If a reliable off-setting mechanism could be identified, entering the scheme would almost certainly cost considerable amounts of money and the Working Group is reluctant to recommend such a course of action in the current environment.

4.2 Timeline

At its meeting of 15 October 2008, the Committee noted a draft timeline for the development of the regional community climate response plan. More recent feedback from Territorial Authorities indicates that if this is to be a genuinely shared plan for the region, they will need to develop their own initiatives to contribute to the achievement of the goals and consult with their communities about them. Where funding is required, this will mean including the initiatives in an annual plan consultation round.

A revised timeline reflecting these needs is as follows:

Table 3 Community Action Plan development timetable

Action	Date	Comment
Strategy and goals development	Nov2008 – Mar 2009	ERAWG to develop. Regional Strategy Committee to be updated at February meeting.
Regional inventory	February 2009	Regional Sustainability Committee adopts proposed inventory
Initial draft of Plan developed	March 2009	
Input from councils in region	April 2009	Discussion of approach and proposed goals and strategies for inclusion in Plan discussed with TAs, both politicians and CEOs
Expert stakeholder input	May 2009	Workshops/focus groups with expert stakeholder groups to obtain quality input and advice from broad range of community groups.
Research	March – August 2009	Investigation of feasibility of proposed initiatives, preliminary costings etc
Draft community action plan	August 2009	ERAWG to develop Plan post community consultation and discuss with TAs.

Emissions reduction goals and action plan adopted as proposal	September – December 2009	Work plans and funding implications discussed as part of early LTCCP work in all councils.
Community consultation	March – May 2010	Any initiatives with funding implications discussed with their communities by the councils as part of the annual plan process
Final Plan adopted	June 2010	All councils sign off on regional plan for response to climate change

5. Recommendations

That the Committee:

1. ***Receives the report.***
2. ***Notes the information contained in the report.***
2. ***Approves adoption of the Landcare Research Ltd inventory of regional emissions for 2006/07.***
3. ***Approves the adoption of 2006/07 as the base year for measuring reductions in community greenhouse gas emissions for the region.***

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