



Demonstration Project Case Study

Project Title: Refining emissions estimates for the forestry operations supply chain

Description

NRW's net carbon status calculation included a high-level analysis of emissions associated with the organisation's supply chain, based on industry average emission factors for categories of goods and services purchased. This indicated that a number of forestry operations delivered by contractors feature amongst the top emissions sources, including forest harvesting, timber haulage, forest restocking and forest road maintenance. This spend based assessment involved applying the same generic forestry spend emission factor to the range of forestry operations, and did not therefore provide an accurate indication of the relative emissions contribution of each activity. We carried out a case study to better estimate emissions associated with all forestry operations to enable NRW to target its mitigation efforts.

Method

We worked with forestry colleagues to identify a list of forestry activities undertaken either in-house or by contractors on the Welsh Government Woodland Estate (WGWE). After an internal discussion on data availability and staff resource, it was decided that using data for the South West (SW) Region to develop activity specific emission factors for NRW's forestry operations was the most efficient approach to estimate whole Estate emissions. Based on operations in the SW, the aim was to produce emission factors such as litres of fuel used per m³ of timber harvested to enable them to be scaled up to the whole of the Estate using readily available metrics.

This involved estimating the material and machinery requirement to carry out the SW Region work programme in the financial year 2015/16 e.g. full time equivalent harvester / forwarder machinery needed to remove the full 250,000 m³ harvested in the SW region in 2015/16; quantity of timber and wire needed to construct the 20,000 metres of fences replaced in the SW in 2015/16. All data on machine and material requirements, and average fuel use were collated based on records held for the SW region, interviews with NRW managers and contractors working in the Region.

Using these emission factors developed for the SW Region and data on number of units of each activity delivered across the whole Estate, total emissions for the year were calculated for the WGWE e.g. multiplying the ground preparation emissions factor per tree planted in the SW by the number of trees planted on the whole Estate. Total emissions were allocated between NRW, contractors and standing sales based on the proportion of each activity carried out by each.

NRW's first attempt at refining supply chain hotspot emissions estimates

Provides improved understanding of forestry operations emissions to help target mitigation efforts

Total project cost: staff time only

Staff involved

NRW operational resource managers

NRW forestry operations staff for marketing, management and engineering

NRW SW forestry contractors





Outcomes

The results show that timber haulage is the main source of operational emissions on the WGWE, with approximately half arising from haulage by contractors and half from haulage of timber sold as standing trees. Forest civil engineering activities are the second largest source of emissions on the WGWE, primarily from the provision of harvesting facilities, grading roads and aggregate haulage. Over half of all WGWE forestry operation emissions arise from work completed by contractors on NRW's behalf, demonstrating the importance of utilising procurement frameworks and contracts as a means of influencing the organisation's indirect, supply chain emissions. Next steps are to work with forestry colleagues to identify potential mitigation measures, such as use of biofuel in forestry plant, strategic logistics using GPS trackers in lorries, and to determine how measures can be integrated as requirements into relevant contracts and frameworks. Supplier engagement may also help to determine possible innovative mitigation measures and how contractors can help to deliver these.

Wider Benefits

- This case study demonstrates the benefits of refining estimates of emissions associated with supply chain hotspots to help target mitigation efforts. This approach could be replicated in other emissions hotspots identified to improve the evidence base associated with supply chain emissions.
- Efforts to refine forestry operations emissions estimates have fostered collaborative working between teams internally.

Learning

- Refining emissions estimates for supply chain hotspots is a balance between accuracy of results and resource availability – the figures produced in this case study improve upon the spend based approach but do not reflect supplier specific emissions. This approach was felt to be the most detailed possible given the time and staff resource available. Significant additional resources would be required to produce supplier specific emissions estimates.
- Working with colleagues and getting input from contractors in this way to refine emissions estimates opens communication to allow further collaboration on the identification and delivery of mitigation options.

Evidence & information

<http://www.ghgprotocol.org/standards/scope-3-standard>

<http://www.cornwalldevelopmentcompany.co.uk/assets/file/Low%20Carbon/CAC%20Info%20sheets/13.03.28%20CAC%20Info%20sheet%209.pdf>

