

Lowland Drainage and Carbon Dioxide Emissions in West Norfolk

Small Fish was asked by the West Norfolk Partnership Management Group to further investigate the distribution of lowland drainage emissions proportioned to West Norfolk, which account for 16% (281 kt) of its total carbon dioxide emissions.

Lowland wetlands in England were drained many years ago for agricultural purposes and continue to emit carbon from the soil. Bradley (1997) described the methods used to estimate these emissions but details of the exact locations are not given; the area is described as the East Anglian Fen and Skirtland (and limited areas in the rest of England). Using a map of peatland in England, Centre for Ecology and Hydrology (CEH) allocated emissions to the Local Authorities falling within and around East Anglia with larger areas of peatland.¹

The Management Group raised the following queries regarding the lowland drainage methodology and the findings are outlined below.

- 1. Is the carbon dioxide emissions figure annual or does it account for emissions released over time (i.e. can West Norfolk expect a similar amount of emissions in this category each year)?**

The carbon dioxide emissions result from historical lowland drainage, so these are annual figures that are declining gradually over time. Therefore, although the land use change is historic, it continues to release carbon dioxide emissions annually and the figure in the DEFRA estimates is for 2004 only, not an accumulation of emissions over time.

- 2. Does the model assume that the entire district of King's Lynn and West Norfolk is peatland that has been drained/reclaimed?**

No. Work by Ian Bradley of NSRI estimated that there is 1500 km² of lowland fen or peatland that has been drained in the past and is still emitting carbon dioxide. He states that the drained area is mostly in the East Anglian Fen and Skirtland with limited areas in the rest of England.

The draft method that CEH used for the most recent calculations assigned this drained area between local authorities based on land area below sea level (assumed to result from previous drainage) and the area of remaining peat (from a published map of lowland peatland). Using this method, King's Lynn and West Norfolk is estimated to have around 229 km² of drained lowland (with the total area of West Norfolk estimated to be 1513 km²) or 15% of the total area. CEH would be very interested to hear if the West Norfolk Partnership has more detailed information on the distribution and area of drained lowland.

¹ *Local and Regional CO2 Emissions Estimates for 2004 for the UK: Report by AEA Energy and Environment for Defra, November 2006.*

