



Brotherhood
of St Laurence

Working for an Australia free of poverty

*Carbon use in
poor Victorian households
by local government area*

Bill Unkles and Janet Stanley

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Authors

Bill Unkles is a Director of Saturn Corporate Resources Pty Ltd
Janet Stanley (contact author) is Senior Manager, Brotherhood of St Laurence and Senior Research Fellow, Monash University.

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Brotherhood of St Laurence
67 Brunswick St
Fitzroy Vic. 3065
ABN

Ph: (03) 9483 1183

Internet: www.bsl.org.au

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Introduction

There is growing awareness that significant changes in climate are occurring due to increasing human-generated greenhouse gas emissions. Increasing concentration of carbon and other greenhouse gases in the atmosphere leads to rising temperatures and more extreme, unstable weather. These changes will increasingly have widespread impacts on Australians.

The Australian Government is developing a carbon trading scheme with a price put on carbon and other greenhouse gas generation. Such a scheme is to encourage the movement from carbon-based energy generation to the use of renewable energy sources. The carbon price is yet to be determined in Australia. Stern's report suggests a price of US\$25, but subsequent reports indicate that environmental damage is occurring at a faster rate than anticipated, suggesting a much higher price will be needed (Stern 2006, IPPC 2007, Garnaut Climate Change Review 2008).

Whatever the decided price, the result will be an increase in the cost of using carbon-based energy and thus the prices paid by households. This will occur both directly, from energy use in the home and in vehicle usage, and indirectly, through industry passing on the higher costs of production of goods and services.

Carbon use for 20 Victorian household types was assessed in a study by the National Institute of Economic and Industry Research (NIEIR) for the Brotherhood of St Laurence (NIEIR 2007). The data presented in this paper is drawn from NIEIR estimates of equivalised expenditure by household type in 2006 for each local government area (LGA) in Victoria (2001 boundaries). These estimates were made using microsimulation techniques, using data derived from the ABS Household Expenditure Survey 2001–02, the 2001 Census of Population and Housing and Social Security data bases and the national income and output tables 2001–02. Expenditures were derived for 105 expenditure classifications.

This paper shows the mapping by Victorian and Melbourne LGAs for households classified by the source of their income as poor households. They are defined as households with dependent children where the principal source of income is derived from government pensions and/or benefits. While these households have limited incomes, they are not all the poor households in Victoria. The estimates of carbon use within each Victorian LGA for these households were derived by multiplying the value of expenditure on each item by the estimated carbon content. The estimates of carbon content included both direct carbon content of products and the embedded carbon in that expenditure. The estimates were reviewed to ensure that there was no double counting of carbon in the expenditure categories.

Two maps in the Appendix (Figures A1 and A2) provide the names of LGAs for rural Victoria and Greater Melbourne, and can be used for area identification.

This mapping exercise is to illustrate the point that households vary in their carbon use. The introduction of a carbon price will impact differently on households according to their location, even those households with similar levels of income.

Poor households

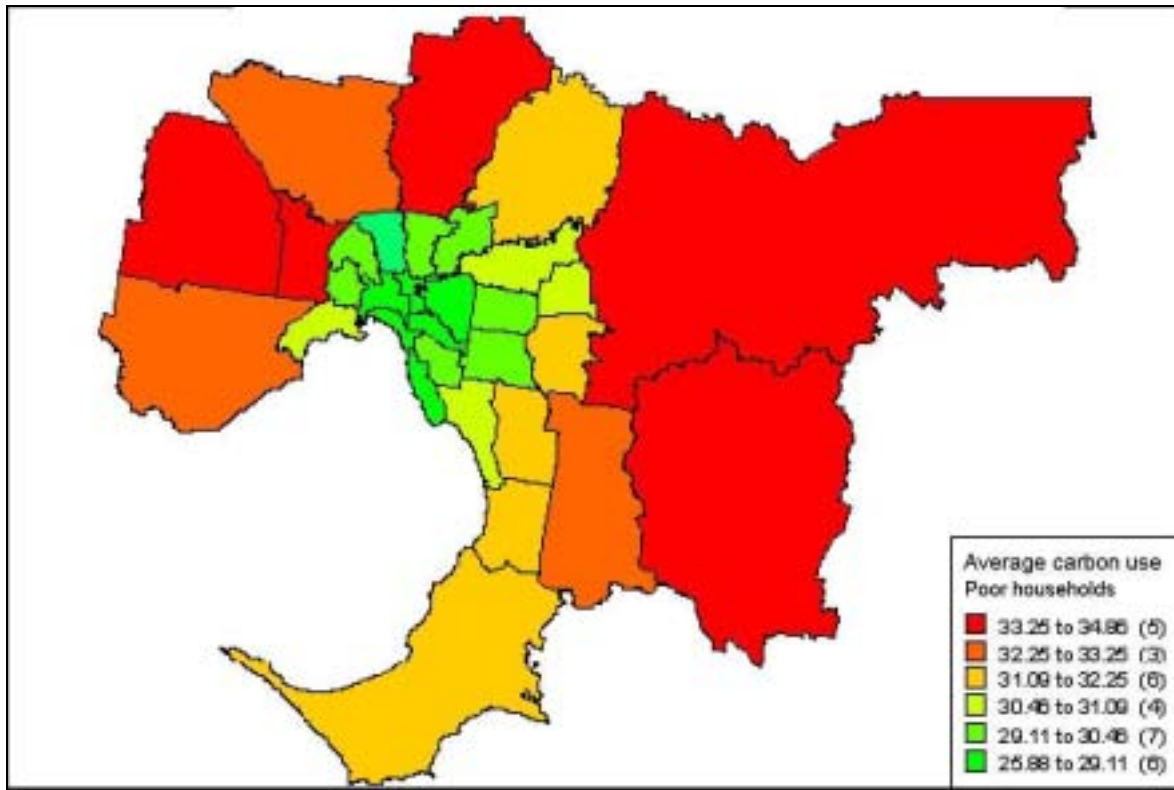
Carbon use

This selected group of poor households represents 12.4% of households in Victoria. The average annual consumption of CO₂ for this group for the whole of Victoria is 34.7 tonnes, a little below the average Victorian household consumption of 36.5 tonnes (NIEIR 2007).

Metropolitan Melbourne

Figure 1 shows the average carbon usage in metropolitan Melbourne for the selected group of poor households. The figures in parentheses on the map legend show the number of LGAs within each range of carbon use.

Figure 1: Average annual use of CO₂ (tonnes) by poor households in Melbourne LGAs 2006



The average carbon use for poor people ranges from 25.9 to 34.9 tonnes annually between LGAs. The highest carbon use tends to be in the outer metropolitan areas of Melbourne, particularly Melton, Brimbank, Yarra Ranges and Cardinia. Poor residents of Whittlesea have CO₂ use 10 % higher than the state average. Carbon use is lower in LGAs closer to the City of Melbourne.

A possible explanation for this is the variability of accessibility to public transport. The poor residents of LGAs with high carbon use, with the exception of Brimbank, have a relatively low expenditure on public transport, but a correspondingly greater expenditure on private vehicles. It is also worth noting that within these areas there are fewer high order service centres such as hospitals, medical specialists, government offices and technical specialists, necessitating travel to obtain these services.

The six LGAs with average carbon expenditures for poor households 10% or more below the state average are Boroondara, Stonnington, Yarra, Bayside, Port Phillip and Melbourne. All are inner middle suburbs with good access to high-quality public transport. In these areas, expenditure on petroleum products, motor vehicles and mechanical repairs tends to be well below the average for this household type, suggesting that they are using public transport. This underscores the importance of public transport in reducing the household use of carbon.

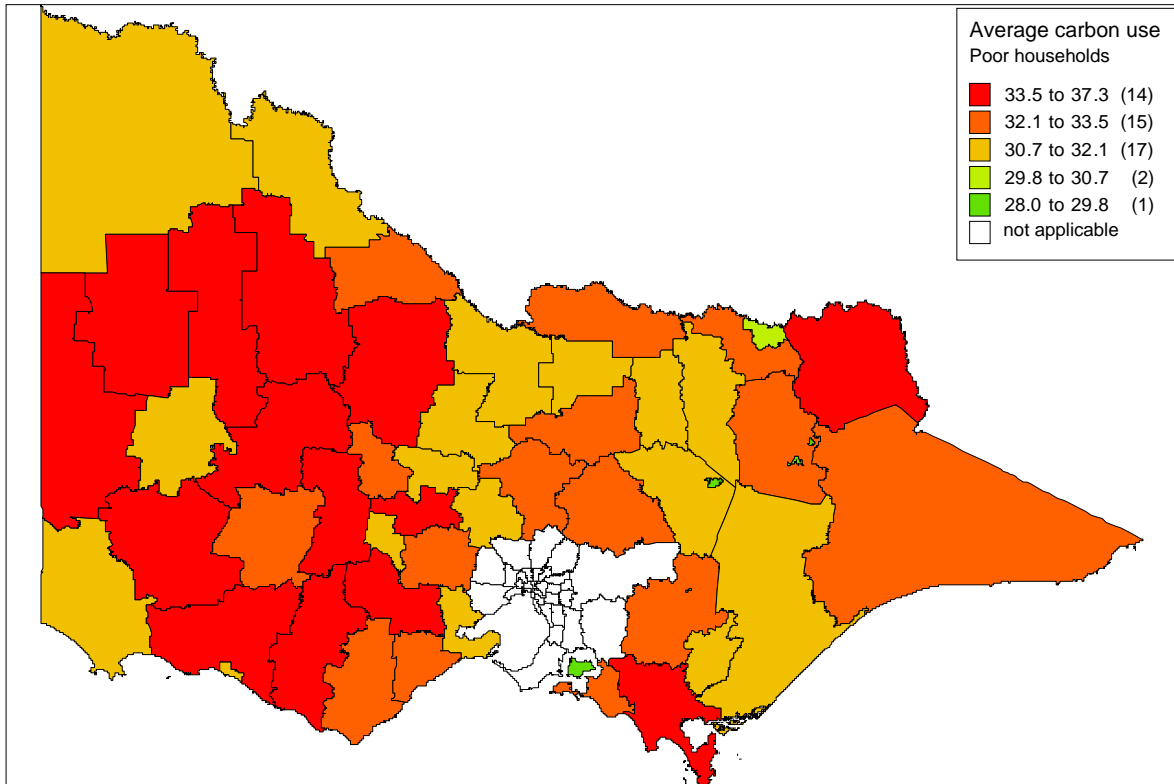
While households in Boroondara and Bayside have below average expenditure on road transport, Darebin and Maribyrnong residents have a relatively high expenditure on road transport but relatively low totals for consumption of carbon. Given that Darebin and Maribyrnong are fairly well served by public transport, the reasons for this need further investigation. It may be that there

are public transport gaps for some essential trips, necessitating car ownership, but as is the general pattern with car ownership in poorer families, fewer car trips are made than in wealthier car-owning households, thus reflecting the lower carbon usage.

Rural Victoria

The average carbon expenditure for poor households in rural Victorian LGAs is shown in Figure 2. The figures in parentheses on the map legend show the number of LGAs within each range of carbon use.

Figure 2: Average annual use of CO₂ (tonnes) by poor households for rural LGAs in Victoria 2006



The average annual use of CO₂ per Victorian LGA for this selected group of poor households ranges from 28 to 37.3 tonnes. This is a much higher carbon use than in metropolitan Melbourne.

The LGAs where the estimated average CO₂ use for poor households is more than 10% higher than the Victorian average for this household type are West Wimmera, Golden Plains, Yarriambiack, Loddon, Hindmarsh and Buloke.

One common feature of these LGAs is the absence of a major service centre and the limited availability of public transport. Hence residents need to travel long distances by car to meet anything greater than the immediate local service needs. In each of these areas, petroleum product purchases account for over 4% of total expenditures compared with a Victorian average of 3.4% for this type of household. Similarly, expenditure on the purchase of motor vehicles (4.3% to 5.8%) exceeds the Victorian average of 3.4%. Expenditure on electricity by the households in these LGAs is close to the state average but gas expenditure is slightly lower, reflecting the unavailability of mains gas in these areas.

Only 7 of the 49 rural LGAs have a carbon consumption below the Victorian average. The lowest carbon use areas include Wodonga and the alpine resort areas. Municipalities further from

Melbourne with a larger urban centre, such as Horsham, Ballarat, Greater Bendigo, Greater Shepparton, Benalla and Wangaratta, have carbon consumption closer to the Victorian average.

Conclusions

This mapping exercise indicates the spatial variation in carbon use, even for households with similar incomes. Much of the explanation for this variance in use appears to cluster around transport and urban planning issues. In both metropolitan Melbourne and the rest of the state, the data suggests that people with low incomes tend to use public transport where it is available, in preference to expenditure on private vehicles. However, in areas with no or poorer public transport, there is an increased expenditure on private vehicles and related products.

The problem of mobility for poor households is compounded in some LGAs by lack of local infrastructure such as specialist services and shopping and business centres. This raises the important issue of how people living on low incomes can be assisted both through the provision of public transport and through improved urban planning, so that the need to travel is reduced. This mapping of carbon use shows the importance of these factors for improving the well-being of low income Australians, as a good public transport system will reduce their costs of mobility. The provision of public transport also reduces the total carbon usage by households.

These findings support other research on low income households and public transport which identifies the outer LGAs in Australian cities as transport-disadvantaged (Currie & Senbergs 2007b, Hurnie 2006). Currie and Senbergs rated the supply of public transport according to Census Collector Districts. The lowest public transport availability scores were for Mornington Peninsula, Casey, Cardinia, Yarra Ranges and Nillumbik. This is a similar pattern to the high carbon usage in metropolitan Melbourne found in this study, with the exception of Mornington Peninsula which did not have the highest category of carbon use. It is likely that poor people living in the Mornington Peninsula travel less, the area being more self-sufficient for services.

Work by Currie and Senbergs (2007a) also shows that some transport-disadvantaged Victorian households are 'forced' into car ownership in order to achieve mobility. They found that 20,831 metropolitan Melbourne households with a weekly income below \$500 run two or more cars. A study on the bus service use in Pakenham, Victoria, has shown that people are using new bus services when they are made available and this has reduced their social exclusion (Bell et al. unpub.).

Imposing a carbon price will not only disproportionately adversely impact low-income households (NIEIR 2007), but will also have a greater adverse impact on those low-income households which have limited or no access to public transport, as well as those households in neighbourhoods affected by poor urban planning. A carbon price will have a greater adverse impact in many parts of rural Victoria than in metropolitan Melbourne, because of the more extensive lack of public transport. Assuming no ameliorating factors, such as behavioural change and government assistance, at a carbon price of A\$35/tonne, the additional cost to this group of poor households in the 5 highest average carbon use metropolitan LGAs will range from \$1164 to \$1220 a year. Given the same scenario, the additional cost in the 14 highest average carbon use rural Victorian LGAs will range from \$1173 to \$1306 a year.

Solutions lie in improved urban planning and improved public transport. As Davison (2008) noted, it is no longer good enough to release new residential land without a transport plan. The real need to reduce carbon usage also necessitates urban planning which requires less travel for people to reach services. For example, all railway stations should be surrounded by more intensive housing developments which include low-income housing.

A study of the transport needs for groups of people at risk of social exclusion in the regional area of Warrnambool made a series of recommendations to improve the availability and effectiveness of

public transport (Stanley & Stanley 2004). These included increased frequency and span of route bus services; new services; improved provision for users, such as three-hour tickets instead of two-hour tickets; regulatory reform, such as allowing members of the public on school bus services and improved system planning through the establishment of Regional Accessibility forums.

A price on carbon is vital policy to encourage movement away from goods and services with a high carbon content. However, this needs to be introduced with supporting policy which addresses the regressive nature of such a price and specifically assists poor households to move to low-carbon alternatives.

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Figure A2 Local Government Areas in rural Victoria



Source: Municipal Association of Victoria website November 2007. Used by permission.