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## Carbon reduction programs and lower income households in Australian cities

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### Abstract

This paper presents preliminary findings of a recent research project on the barriers that lower-income households in four Australian cities—Sydney, Adelaide, Hobart, and Darwin—face in reducing their carbon consumption, and the impact of programs implemented by federal and state governments and support organisations to assist such reductions. Following a brief explanation of the methodology (policy reviews, focus group discussions with lower-income households, and interviews with support service providers and advocacy groups), it outlines issues that underlie the complexity of carbon reduction among lower income households. These include housing quality and tenure; health conditions; and user understanding and perspectives on low carbon living and environmental decision-making. This is followed by a review of the types of carbon reduction programs currently available to households living in different Australian jurisdictions. The paper will then reflect on focus group participants' views of their access to these programs, their perceived effectiveness in achieving genuine carbon reduction, and how these programs fit in (or not) to the less formal carbon reduction techniques already employed by lower income households. It also highlights the challenges and limitations support service providers and advocacy groups face in connecting lower-income households to carbon reduction programs. It concludes with a discussion of potential policy avenues to address the barriers to low carbon living and ensure the intended outcomes of these carbon reduction programs are met in the longer term for those on lower incomes.

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## 1. Introduction

In April 2016 the World Bank Group [1] announced a new Climate Change Action Plan, which aims to leverage financial resources to assist developing countries in transforming their sustainability policies and programs to achieving higher impacts. This follows on from the Paris 2015 climate summit, which culminated in an agreement that recommends, amongst other mitigation measures, reducing greenhouse gas emissions to limit potential temperature increases to 2°C above pre-industrial levels, and emphasises the overall negative anthropogenic impacts on global climate [2]. This highlights the importance of low carbon measures on a global scale, and that significant financial investments are needed, particularly in assisting the more economically constrained nations to collaboratively achieve the global reduction targets. Such a philosophy can, and indeed should, be applied at the national level as a means of assisting disadvantaged individuals and households to lower their carbon footprints and thus contribute to each nation's achievement of their nationally determined contributions.

In Australia, numerous programs were set up to assist the general population and businesses big and small in this regard, but their overall effectiveness and impacts are often challenged [3]. This paper focuses on assistance programs set up specifically to facilitate lower income households in Australia in transitioning to low carbon living, and reports on preliminary findings of a research project conducted in eight metropolitan and regional centres. Following this introduction is a brief explanation of the qualitative approach taken, including an explanation of case study selection. The barriers that lower income households noted as preventing them from transitioning to low carbon living are detailed in the next section, followed by a review of the current assistance programs available and lower income households' assessment of the effectiveness of these programs. The challenges that the non-profit sector faced in helping to deliver these programs are also discussed, before concluding with an overview of potential policy avenues to address these barriers at the household and sector level.

## 2. Methodology

This research took a qualitative approach, involving a mix of policy reviews, focus groups with lower income households (defined as those with income in the two lowest quintiles of their respective capital cities) and stakeholder interviews.

A comprehensive review of current and recent (last five years) assistance programs aimed to helping the general population transition to low carbon living was undertaken across all eight Australian State and Territory jurisdictions. These programs were tabulated, with years and jurisdictions of operation, funding source, aims and objectives recorded for comparison. A typology of these programs is included below as part of our discussion.

Focus groups involved lower income households that conformed to one of four household types – young singles aged 18-35, single-parent families, large families of five or more residents, and older singles and couples aged 65 or older – identified by Burke and Ralston [4] as groups particularly vulnerable to energy hardship in Australia. Discussions focused on barriers that these households faced in relation to low carbon living, assistance they received, and suggestions of how assistance programs could be improved. Participants were also asked to complete a one-page survey at the conclusion of the focus groups, providing basic socio-demographic indicators such as age group, gender, household type, and types of assistance programs accessed. Duration of discussions ranged from half to two hours depending on group size, and participants were given gift vouchers and fresh fruit as an appreciation of their input. In all, 23 focus groups with 164 participants were conducted between December 2015 and June 2016.

Stakeholder interviews involved predominantly non-profit sector organisations, including advocacy organisations, social housing providers, and charitable and welfare groups. Discussions focused on their knowledge of support programs, and challenges they (as individual organisations and as a sector) faced in providing the necessary support. Fourteen interviews, ranging from half to one and a half hours, were completed.

Focus group discussions and interviews were recorded digitally and professionally transcribed. The transcripts were analysed thematically using a grounded theory approach.

## 2.1. Case studies

Qualitative fieldwork was conducted in the capital cities of the four Australian jurisdictions of New South Wales (henceforth NSW), South Australia (henceforth SA), Tasmania (henceforth TAS) and the Northern Territory (henceforth NT) as well as four regional centres within commutable distance to these capital cities. The capital cities were chosen according to the contrasting local climate that they represent, as denoted by the different climate zones they are located within Australia [5], with the ‘warm temperate’ zone further differentiated by the level of humidity for the two cities selected for this zone. As such, the population of each field site would have contrasting energy needs, especially in relation to heating and cooling, in addition to differing bargaining powers consumers may have with their energy provider, and different levels of service access and transport connectivity. An overview of the case study sites is included below in Table 1.

Table 1. Case study overview. [6] Lower income households defined as those with weekly family income within the two lowest quintiles of their respective capital cities.

Climate zone	Jurisdiction	Metropolitan			Non-metropolitan		
		Capital city	No. of family households	% lower income households	Regional centre	No. of family households	% lower income households
Warm temperate (humid)	NSW	Sydney	1,025,506	45%	Raymond Terrace	3,892	55%
Warm temperate (dry)	SA	Adelaide	295,782	44%	Murray Bridge	3,717	55%
Cool temperate	TAS	Hobart	50,563	46%	New Norfolk	1,344	57%
Hot humid summer, warm winter	NT	Darwin	24,631	49%	Katherine	1,162	50%

## 3. Lower income barriers to low carbon living

Australian and international literature alike highlights a number of barriers lower income households face in taking up low carbon living [7, 8]. These can be broadly grouped into two categories: economic limitations and behavioural change.

Economic limitations refer to lower income households’ ability to financially afford adaptive or mitigative strategies for low carbon living. Most notably these strategies may involve the purchase and installation of costly new technologies (e.g. photovoltaic panels for electricity generation [9]). While recent developments have led to reduction in costs or cheaper alternatives [10, 11], these were still typically out of reach for most lower income households. As Chester and Morris [8] explained, the cost of new technologies, and increases in energy prices following industry privatisation, has had adverse prohibitive effects not only on the take-up of low carbon living but also on the daily wellbeing of these lower income households. Behavioural change requires the changing of daily and longer-term habits of individuals (and societies more generally) in a move away from non-renewable resources. Semenza et al. [12], however, highlighted a number of external factors that impede this move, noting government policies as one of several such impeding factors, despite individuals’ general support of low carbon living.

### 3.1. Economic limitations

Our Australian evidence, collected through focus group discussions with lower income groups, echoes such international findings. Lower income households recalled the increasing costs of energy and initial outlay required in implementing green technologies as the most prohibitive barriers. Chester [13] highlighted that domestic electricity prices in two of eight Australian jurisdictions more than doubled between 2007-08 and 2013-14, while in the other six prices increased by at least 76%. Despite this, Simhauser, Nelson and Doan [14] found that on average

households in none of the five income quintiles spent more than 7% of their disposable income on energy, and therefore are below the internationally-recognised definition of energy hardship (more than 10% of household disposable income spent on energy).

The qualitative impacts of increasing energy costs in Australia, however, could not be overlooked. Our lower income household participants highlighted a range of compensating behaviours in order to combat increasing energy prices, ranging from avoiding the use of heating and cooling, going without food (and, on a few occasions, medication), and frugal monitoring of their energy usage.

Avoiding heating and cooling was the most common compensating behaviour recalled by our participants. They often talked about putting on more layers of clothing and wrapping themselves in blankets as alternatives to using heating. Most of them discussed turning on their heater ‘only when absolutely necessary,’ while a few would not even do that under any circumstance in fear of an unaffordable energy bill. For a number of households in TAS, where the majority of electricity is generated through hydropower, they had resorted to using fireplaces (of either collected or more cheaply-purchased wood), meaning that they had replaced a carbon-neutral source with a much more carbon-intensive one, as this older person in TAS explained: “Wood is probably not on the good end but if you have no money, you can’t really always stick to your own beliefs about the environment.” In addition to wood-burning fireplaces, many of our participants discussed going to bed early as one means of keeping their heating and energy costs down: “We go to bed early so that we don’t use the power. We’ll go to bed at seven o’clock.” In one extreme case in TAS, an older woman explained that during winter she would go to bed as soon as she came home from volunteering, at four-thirty in the afternoon.

The lack of financial resources meant that our participants were forced to come up with innovative, sometimes ingenious ways of keeping warm. A small number used their pets as foot-warmers or to keep their beds warm. A few also used hot water bottles to warm their beds before going in. A small number used bubble wrap to insulate their windows, especially if they were renters and had limited power in making physical changes to their dwellings.

Cooling in summer was more challenging for our participants. Going out and hanging around in air-conditioned shopping centres was one preferred method, though some worried about impulse buying and thereby creating a false economy: “you go to the shops, you end up spending money. So it’s kind of a lose-lose.” More energy efficient and (lower cost, both in terms of purchase and operation) ceiling and pedestal fans were more commonly used as cooling devices than air-conditioners: “I only use the ceiling fan in the room, whatever room I’m in.” As in heating, the use of air-conditioners was often only in extreme circumstances; in some cases this means no air-conditioning until the temperature was well over 40°C: “I’ve got ceiling fans in my bedroom and in the lounge room. I find that they do work but when it gets to 42, 43°C, you haven’t got a hope.”

Most participants prioritised paying their energy bills over other costs. As a result, their ability to afford daily essentials could be restricted. Most participants recalled having little funds left for grocery shopping, or reducing the amount and/or quality of food they purchased. In more extreme cases, skipping meals became a regular practice for a number of participants: “I mainly skip meals. I’ve gone four days without eating...because I’ve had a bill I’ve got to pay. I’ve had three days when I’ve had six spoonfuls of sugar each night and that’s my tea. It’s just a matter of having to get by.” For others, assistance from charitable organisations was often needed: “[Interviewer: They help you. If you don’t mind, what are they helping you with? The power bills or...] No, they’re helping me with my food.” Participants found assistance with food presented better value as energy bill assistance was often limited by the number of times they could access per year or the concession amount was less than sufficient: “I just find it’s easier to go there and ask for a food voucher or food assistance, and then just use your money to pay for your bill.” On some occasions participants had forgone medication or asked for cheaper alternatives – “well you get cheaper medications” – but to most, medication was too important a sacrifice to make and instead tried reducing their costs elsewhere: “I consider medication to be too important. We make sure we have our medication.”

Most participants also developed very frugal habits in order to reduce their energy consumption in fear of escalating costs. Such compensating behaviours included not having lights on, not having appliances on stand-by mode, switching off or lowering the temperatures of their water heaters, and limiting use of clothes dryers.

### 3.2. Behavioural change

Behavioural change is predicated on a wide range of factors. According to Moloney, Horne and Fien [3: 7615], behavioural change often requires influences on individuals' "awareness, knowledge, values, attitudes, behaviour, rational thought processes, emotional states and entrenched habits," all of which play a role to varying extent. Additionally, Jackson [15: iii] argued that "individual behaviours are deeply embedded in social and institutional contexts" so that authorities play a significant role in influencing individual behaviours, such as through mandating policies. As such, the neoliberal approach adopted by many western societies – including Australia – may have a detrimental impact on achieving low carbon living and achieving real gains in carbon reduction behaviours. As Jackson [15: 13] argued, we are often "'locked-in' to a process of unsustainable consumption over which [we] have very little individual control" thanks to long-held social norms and also unsustainable policy settings.

Our participants showed overwhelming support for the idea of low carbon living. They cited a small number of motivations, most especially about providing a cleaner environment for the future generation. Financial circumstances and their tenure, however, generally prevented them from practicing their ideal.

When asked what more they could foresee themselves doing to lowering their carbon consumption, more than half the participants said there was little to nothing more they could do. This was partly in reflection of their already frugal monitoring of their current energy usage, but also noting that any additional change may further compromise their already diminished quality of life. Many participants also noted their tenure being a significant barrier, the majority being social or private renters, and therefore had little ability to make physical changes (such as insulation) to their dwelling. A small number had asked their landlord for sustainable upgrades, some even offered to pay for such upgrades, but in general these requests were turned down: "The landlord wasn't interested in insulation. We offered to put solar panels but he wouldn't hear of it and not interested in insulating the ceilings which is a pity." The current Australian state/territory tenancy legislations, therefore, present a significant barrier to lower income households adopting behaviour changes for low carbon living.

Due to their limited financial circumstances, many participants could not foresee any additional significant behavioural change without assistance from the government. Some participants were very direct about how they would like to be assisted: "Give me a [solar power] generator; I'll set up my house well." For most others, additional information on assistance programs and means through which they could help themselves (rather than continually relying on external financial assistance) was high on their wish list, but such information was often not always readily available. Many participants and several stakeholders recalled that while information about low carbon living and assistance program was made available by various state and non-profit organisations, it was most typically made available online only. Many participants noted this was a significant barrier as internet access was often an unaffordable luxury: "I don't have internet hooked up at my place either because it costs too much. I can't afford it. It's a luxury." Many participants, especially older people, also had low computer literacy, while others recalled not knowing what kind of information to look for on the occasion that they were online.

For many participants, despite their general ideological support for low carbon living, and with unfavourable previous experiences of seeking assistance, there was a sense of resignation regarding their ability to act out such ideological support and as such they had given up looking for assistance or information, or making further adaptive changes: "they're not going to help, I can't afford it, why bother looking?" Additionally, pride and embarrassment were also noted as psychological barriers to our participants adopting behavioural changes. Pride as a barrier was particularly prominent amongst male and older participants, as this young male in NSW explained: "I can't speak for everyone, but I know as a male, I don't like to ask for help or assistance. [...] I'd rather struggle than ask for assistance." Some participants identified this as a generational issue, as this older participant in TAS elaborated: "We come from a different time where you don't ask for charity." A small number of participants who were previously in employment also explained the embarrassment of needing to seek assistance as a deterrent for them doing so: "Coming from working fulltime, with a fulltime job, to having nothing, is well I've always been able to rely. I've always been able to pay my bills and put petrol in my car and buy food and stuff. Now not to be able to do that, it's kind of embarrassing, isn't it? I don't really want to ask anybody for help."

In the next section, we provide an overview of the types of assistance available for lower income households in transitioning to low carbon living and these households' assessment of their effectiveness.

#### 4. Carbon reduction programs currently available in Australia

Since the late 1980s various levels of Australian governments – Commonwealth, state, territory and local – have introduced a mix of policies and programs aimed at reducing carbon emission. These included voluntary measures, regulatory measures, trading schemes and wide ranging funding schemes. While some of them were aimed at helping lower income households to reduce their carbon consumption such as information on carbon reduction practices, low cost retrofitting and interest-free loans for purchasing energy efficient appliances, others aimed at easing the burden of high energy prices [16, 17].

Australia's carbon reduction initiatives started in 1986 with the introduction of more flexible voluntary adaptation schemes such as energy labelling. This became mandatory in 1992 and by 1999 progressed to having minimum standards of energy efficiency for domestic appliances such as refrigerators, freezers and washing machines. Today, Australia has a comprehensive national policy framework with multiple schemes and programs implemented through all three levels of government to reduce carbon emission [18].

Some of the Commonwealth policies were designed to specifically support lower income households. Most of these programs were, however, time-bound and had limited funding. During the last few years, from 2012 in particular, the Commonwealth Government introduced a number of programs to assist lower income households practice low carbon living. With the change of government in 2013, and the abolition of the carbon pricing scheme introduced in 2011 (which funded many of the assistance programs mentioned above), most of these programs had either been discontinued or are in the process of being wound down [19, 20]. The Low Income Energy Efficiency Programme was one such example. Launched in 2012, it funded a consortia of local councils, community organisations and energy companies to trial various energy saving models to assist lower income households. Twenty projects were funded in all, but funding was discontinued in 2013, with the last of the funded projects due to wind up by 30 June 2016 [21, 22].

States and territories have also introduced a range of carbon reduction programs [23]. Some of the notable ones include the NSW Home Power Savings Program which provided advice and a kit with low cost and small energy efficiency retrofits (such as showerheads and draught excluders). The NSW Energy Savings Scheme, the Australian Capital Territory's Outreach Energy and Water Efficiency Program, SA's Residential Energy Efficiency Scheme, and Victoria's Energy Efficiency Target are some of the other notable programs. Table 2 provides a typology of assistance programs available across Australia in 2016.

Table 2. A typology of low carbon/energy assistance programs available across Australia in 2016.

Program type	Description
Subsidy/concession	Grants, rebates, advances, and bill paying assistance to low income households
Information and education	Access to information on saving energy, saving money and available government assistance for energy efficiency and other low carbon technology
Regulatory instrument	Instruments and institutions to formulate regulations, conditions, codes and standards and to implement, audit and monitor them
Energy efficiency measures	Retrofitting, behaviour change, and adaptation of new technology to achieve low carbon outcomes
Industry partnership	Partnership agreements with industry to promote activities that produce low carbon outcomes
Voluntary approaches	Negotiated Agreements (Public-private sector) and open access to information to encourage voluntary action for low carbon outcomes
Economic instruments	Making available fiscal/financial incentives, economic instruments, direct investment, collaboratively with any other co-financiers and project proponents to seek ways to secure financing solutions for the clean energy sector.
Policy support	Assistance to government, local government and community welfare agencies for strategic planning, policy and program development in relation to low carbon outcomes
Research, development and deployment	Investment of funds into renewable energy, energy efficiency and low emissions technologies as a catalyst to increase investment in emissions reduction.

For lower income households there are additional energy concessions available through the Commonwealth government as well as some states, territories and energy companies. While some concessions are monetary contributions towards paying electricity and gas bills, there are others such as fee waivers, advance payments from pensions, or pay-as-you-go payment systems from energy providers to ease the pressure from large energy bills. Most often, families, people with life support equipment, single parents, pensioners and lower income households are identified as the main beneficiaries of schemes aimed at reducing the financial burdens of energy bills on these families rather than reducing their carbon footprint.

Reports, however, suggest that persistent energy price increases have forced many lower income households to adopting more stringent energy consumption practices. Such behaviours have had obvious impacts on the physical and social wellbeing of these households [24]. There are government programs that aim at reducing such hardships, though these are more often in the form of financial assistance channelled through public social welfare platform (e.g. Centrelink in Australia) and energy retailers. These assistance programs are seldom directed specifically to means of low carbon living (e.g. for purchasing 'green' power). In Australia, energy is recognised as an essential service for all and retailers have the responsibility of maintaining mandatory customer hardship programs to protect consumers who struggle to pay their utility bills. Energy providers are required by legislation to maintain customer hardship policies and are monitored by the Australian Energy Regulator, a public agency set up within the Australian Competition and Consumer Commission [25, 26].

#### *4.1. Barriers to access and implementation*

A number of challenges to implementing and/or accessing carbon reduction and energy assistance programs were identified by our focus group participants and stakeholder interviewees. These included: complex and varying eligibility criteria, difficulty in accessing assistance; conditionality of assistance; user unfriendly information; limited financial support; changing political cycles; and lack of a partnership approach.

Concessions available in different jurisdictions and from different agencies often can have different eligibility criteria, a lack of consistency in how they are named and in the ways they are distributed in different jurisdictions. For example, a concession aimed at assisting people who have a chronic medical condition to pay their electricity bills is named as Medical Cooling and Heating Electricity Concession Scheme in Queensland, Medical Energy Rebate in NSW, and Medical Cooling Concession in Victoria. Pensioner Concession Card holders or the Department of Veteran Affairs equivalent are given various concessions in different jurisdictions. While most states and territories provide concessions to Health Care Card holders, Queensland has selected not to do so, instead making concessions available to Queensland Government Seniors Card holders; SA recognises Commonwealth Seniors Health Care Card for the same concessions. People living in the Australian Capital Territory can receive concessions if they have Commonwealth concession cards. NSW has chosen to give an additional Family Energy Rebate for the people who receive the Family Tax Benefit. Some jurisdictions (e.g. NSW) predominantly provide assistance through payment vouchers distributed by community welfare agencies. Most impose frequency limits, particularly for bill assistance, such as once every six months, or even as infrequent as once every two years.

Such inconsistencies in how assistance is distributed across the Australian jurisdictions caused frustrations amongst our participants who had moved interstate. This frustration is highlighted by one of our older single participants who moved from Victoria to SA: "Victorians, you just give them your pension number when you ring up – say, I'm ringing you and you're [energy retailer] to set my electricity up today. I just give you my pension number. You write it on, and I get the concession. That's the end of the argument. But over here, you've got to go through all the rigmarole." Another older participant from NSW found inconsistency in the evidence required to apply for a rebate: "my electricity I couldn't get any discounts on – rebates, because I didn't have a pension card. [...] This was a health card from the Veterans' Affairs, full medical, war service. But that didn't apply. They wanted; they kept asking for a Centrelink card, not a veteran's card."

Conditions placed on assistance could include pay-on-time discounts, which could disadvantage people on low incomes, as described by an energy advocate: "a pay on time discount is useless, mostly because they're not going to have the money, you know, to pay up front, direct debit. No one's got the money to do that if you're in that spot." Information provided by energy providers and other agencies was also often seen as not user-friendly, as for this

older single participant in NSW: “I said it’s too bloody complicated. Can you give us a simple English – what’s going on?”

While governments do provide funding to community service providers to assist low income people with paying energy bills in an emergency, these are often limited both in number, and in how many times a recipient can be supported per annum. As one service provider explained: “The e-vouchers, if it’s a bill, I only get very limited amount of money so once it’s run out I have to turn people away. The cards, we get allocated some but we also purchase them with some of our [Emergency Relief] money because most of the people we deal with it would be the cards that they were requiring.” A seniors’ advocacy organisation also noted: “We were very keen to do work in the space but without resourcing we’re very limited in what we can do.” Another advocacy group found funding to be inadequate for their energy advocate worker to persistently fulfil their role: “I’m funded currently for three days a week although it sometimes ends up five or six days a week for a while and then I have to take the odd day off because the money doesn’t actually extend that far.”

Changing political cycles could also impact adversely on support available to lower income people to reduce carbon consumption. Unfortunately, in Australia the issues of global warming and shifting from fossil fuel dependence to renewable energy sources has become politically contested. As one seniors’ advocacy group representative noted: “I think the State Government’s still being reasonably active but most of the resources came from the Commonwealth and that almost dried up completely with the change of government.” A collaborative approach via partnerships between Commonwealth, State and the non-profit sector was suggested as a potential solution: “I think in the absence of resources, collaborative effort is often the substitute that we use.” For some advocacy groups, getting local councils and state agencies collaborating for Commonwealth funded projects had proved more challenging than anticipated: “it took a while for them to realise it actually would be of benefit and to see the benefits. Yeah, so they were pretty standoffish to start with and then very enthusiastic at the end.”

## 5. Summary and conclusion

This paper presents recent evidence from an Australian research project that highlights the barriers lower income households faced in reducing their carbon consumption and transitioning to low carbon living, and the myriad of assistance programs recently available to lower income households in helping them make this transition.

As identified in Australian and international literature [3, 4, 7, 8], lower income households in Australia faced a mix of economic limitations and behavioural barriers in transitioning to low carbon living. These included the ability to afford newer, ‘greener’ technology that is more energy efficient, the ability to purchase electricity generators using renewable resources (e.g. photovoltaic panels), and the ability to keep up with increasing energy prices more generally. Many of our participants had also identified non-financial factors, such as their tenure and pride, as significant barriers to their transition to low carbon living. This is despite their general support for the concept of low carbon living.

A wide range of assistance programs is currently implemented across all Australian states and territories in assisting the general public in transitioning to low carbon living. These programs ranged from financial subsidies, information and education programs, regulatory instruments, industry partnerships and policy support to name a few. From our interviews with stakeholders and focus group discussions with lower income households, however, the distribution of these assistance programs varied greatly from jurisdiction to jurisdiction. There is also a lack of consistency in terms of how similar types of assistance are named, their eligibility criteria, and processes of gaining access. Like lower income households themselves, non-profit organisations also faced resource limitations in delivering assistance programs.

Most participants recalled that they most commonly accessed programs designed to assist their bill payments. As Ritschard et al. [7] and Chester and Morris [8] recognised, however, longer-lasting but more difficult to achieve changes result from behavioural changes. To achieve this, accessible and appropriate information must be made available to individuals to help them make that change. Both stakeholders and lower income households alike noted that information and education packages were generally available online, and this proved a significant barrier to most lower income households, with many either having very limited access to the Internet or, especially of our older participants, have low computer literacy and therefore limited ability to search for such information. As a result, many continued to suffer in silence, by implementing compensating behaviours such as limiting their heating

and cooling, and compromising on food and even medication, significantly impacting on their physical and mental wellbeing.

Information drives change, and it must be distributed in ways that is easily accessed and absorbed. Concerning lower income households specifically, and particularly in a contemporary context where households concurrently face multiple and complex challenges (budget constraints, family care arrangements, work pressures, and a retracting social welfare system to name a few), many of these contemporary families are time-poor. A pamphlet with a litany of technical jargons about the number of cubic metres of greenhouse gas a budget-constrained family could potentially save from the environment may be a far less attractive selling point than eye-catching infographics about the subsidies to their family budget and any ancillary benefits to the environment, or story-telling approaches for indigenous communities. Some agencies, such as the NSW Office of Environment and Heritage [27], have begun to introduce infographic-based information leaflets. Others, such as Council on the Ageing Tasmania in conjunction with the Tasmanian Government, produced user-friendly giveaways such as shopping list notepads with helpful tips (Fig.1) that not only helped in lowering household expenditure but also contributed to carbon reduction. The challenge, then, is providing such information in outlets such as charitable organisations where lower income households can take hard copies of, rather than relying on the internet as the sole delivery mechanism.



Fig.1. COTA Tasmania Inclusive Ageing Strategy shopping list notepad, with helpful environmentally friendly tips.

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