

SHARING THE BURDEN IN AUSTRALIA

16

Key points

Low-income households spend much higher proportions of their incomes than other households on emissions-intensive products. The effects of the emissions trading scheme will fall heavily on low-income households, so the credibility, stability and efficiency of the scheme require the correction of these regressive effects by other measures.

At least half the proceeds from the sale of all permits could be allocated to households, focusing on the bottom half of the income distribution. The bulk could be passed through the tax and social security systems, with energy efficiency commitments to low-income households in the early years.

To assist in early adjustment of low-income households, a system of 'green credits' should be introduced to help with funding of investments in energy efficiency in housing, household appliances and transport.

It is possible but not certain that regional employment issues could arise in coal regions. They would not emerge in the early years of an emissions trading scheme. Up to \$1 billion in total should be made available for matched funding for investment in reducing emissions in coal power generation, as a form of preemptive structural adjustment assistance.

Climate change and its mitigation can both have significant effects on the distribution of incomes in Australia. Both can lower the income of poor households relative to others if government policy is not well designed to counteract some underlying tendencies. The largest negative distributional effects of mitigation come early, and the main effects of climate change itself after many decades.

The main guarantor of equity during rapid structural change is maintenance of economic growth and full employment within a flexible economy. This helps to ensure that there are ongoing economic opportunities for those displaced by the differential impacts of an emissions trading scheme and climate change. Contemporary Australia is well placed to absorb major structural change, given the current high demand throughout the country for skilled labour and the shortages of unskilled labour in many regions.

While sustaining these favourable circumstances is the hope of all citizens and the focus of policy, these hopes and intentions may not be continuously realised.

Even if labour displaced by the structural change associated with the mitigation regime were quickly employed elsewhere, there would still be important income distribution effects to be considered.

Alongside high employment, the most important guarantor of equity through a period of changing relative prices and structural change is the general social safety net, comprising social security arrangements, and public provision or funding of health and educational facilities. Australia is relatively well endowed in these respects, and will have opportunities to improve income transfer arrangements following the completion of the Henry Tax Review. Adjustments to the social security and taxation systems provide an opportunity for effective responses to the negative income distribution effects of an emissions trading scheme. In due course they would provide an efficient avenue of response to income distribution consequences of reforms in water management arrangements that become part of Australia's adaptation to climate change.

In the short term, the impacts of climate change on household income are not as significant as the likely impacts of the emissions trading scheme. This chapter focuses on the short-run income distribution issues associated with the introduction of an emissions trading scheme.

The emissions trading scheme will be only one of several contributors to rising electricity, gas and transport fuel prices over the next decade. In each case, rising prices from the emissions trading system are likely to be smaller than those from other market developments in the first decade of the scheme.

16.1 Effects of mitigation policy in the short term

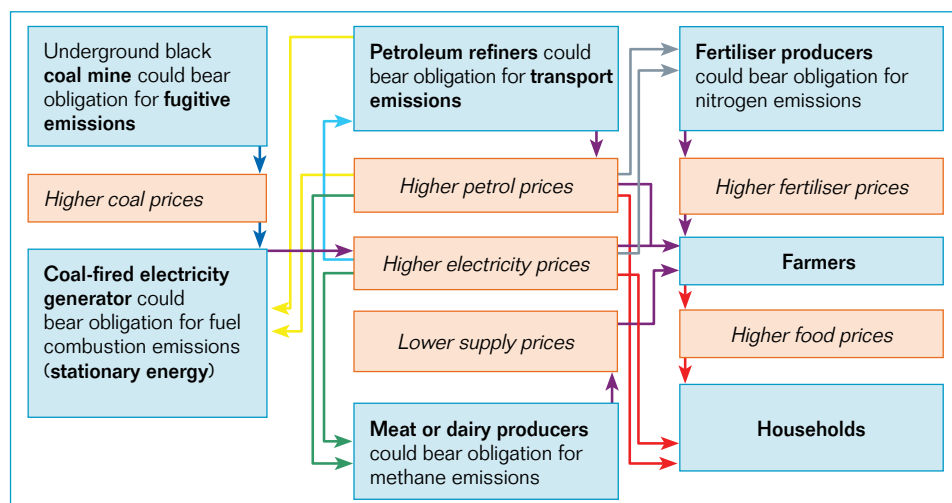
16.1.1 How will an emissions price flow through the economy?

Although the cost of reducing emissions or purchasing permits will rest with certain parties, such as electricity generators, the cost will be passed down the demand chain. Pass-through will be quick and complete in some industries and incomplete in others, depending on the nature of the competitive environment, and especially competition from imports. It is likely to be complete for petroleum products, and substantial but possibly less than complete for electricity.

With a price on emissions, production costs will increase, with the cost of electricity, natural gas, petrol, diesel, chemicals, fertiliser and other inputs all increasing. These costs will be reflected in higher-priced goods, from cement and steel to paper and plastic. This will have an impact on the input costs for a range of industries, including construction and retail. Through the supply chain, those disposing of waste will also pay more, and transport costs will be higher. The pass-through of permit prices to users of goods and services whose production requires permits will be constrained by international competition, where there is opportunity

for export and import, until there is comparable international pricing of emissions. The way this price flows through the economy is illustrated in Figure 16.1.

Figure 16.1 How will an emissions price flow through the economy?



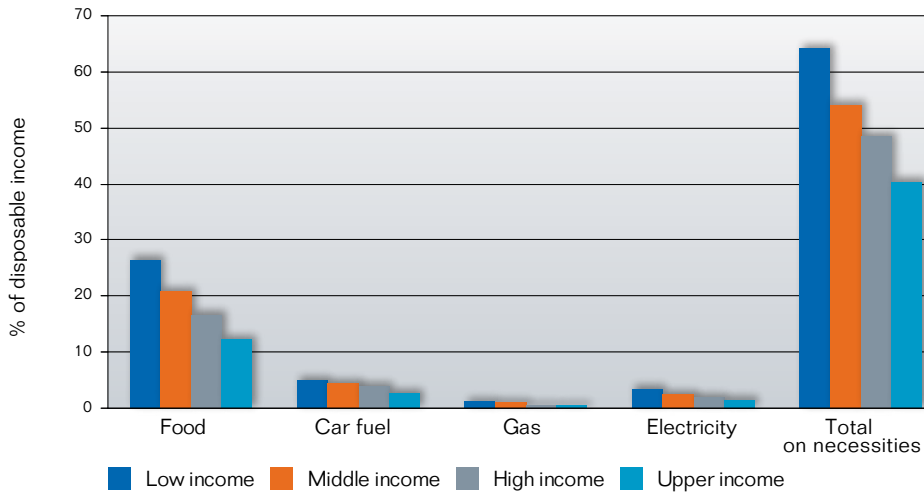
16.1.2 Effects on Australian households

Consumers will pay more for a range of goods and services as businesses pass on the emissions price. A major part, if not all, of the costs faced by electricity generators will be passed down the chain from electricity generators, distributors and retailers and finally to households through higher prices for electricity. Lower-emissions sources of electricity will receive an unrequited benefit from the high electricity prices that emerge from the high permit prices paid by emissions-intensive competitors. Petrol and food prices will rise as a result of the emissions trading scheme's coverage of emissions from transport, energy and eventually fertiliser and livestock.

These higher prices will require households to spend a greater proportion of their incomes to obtain the same goods and services purchased before the introduction of an emissions price. This will reduce households' real incomes and purchasing power. Under the arrangements proposed for the emissions trading scheme in this Review, the Commonwealth Government would receive large amounts of revenue from the competitive sale of permits, and this could be passed back to households to offset a major part of (and, for a proportion of households, the whole of) the reduction of real purchasing power. Moreover, over the time prices are projected to increase, average incomes are also expected to increase. Thus, the extent to which expenditure as a share of income changes over time will depend on the increases of prices relative to incomes and on the extent and nature of the return of permit sales revenue to households.

Low-income households spend a greater proportion of their income on basic necessities than households with higher incomes, and will therefore be disproportionately affected (Figure 16.2).

Figure 16.2 Expenditure on basic goods as a share of disposable income



Note: Income deciles used to group households into low, middle, higher and upper income households are based on total current weekly household income from all sources divided by the (modified OECD) equivalising factor, and weighted using sample weights. The lower and upper percentiles for low, middle, high and upper income households are 10 and 29, 30 and 49, 50 and 69, and 70 and 100, respectively. Reported are the mean shares of household expenditure on necessities expressed as a percentage of disposable income.

Source: Unique expenditure codes from the Household Expenditure Survey 2003–04 (ABS 2006) grouped as 'necessities' by the Melbourne Institute of Applied Economic and Social Research.

These findings suggest that the effects of a carbon pricing regime, such as an emissions trading scheme, will fall disproportionately on households on low and modest incomes. This effect will be exacerbated, in absolute terms and relative to higher income households, by the financial constraints faced by lower income households in switching to less emissions-dependent lifestyles—such as energy efficient appliances, household retrofits and vehicle type and fuel use.

The modelling presented in earlier chapters of this report finds that average real household income rises significantly during the 21st century, even with the higher carbon price that would accompany more ambitious levels of mitigation. Thorough distributional analysis, supplemented by empirical research informed by fieldwork, will be imperative in designing policies that most appropriately redress these otherwise regressive impacts.

There is likely to be spatial variability of effects, although modelling does not disaggregate income effects finely enough to illustrate this. Electricity prices already differ among regions and, due to variability in emissions intensity, an emissions trading scheme will affect residential electricity prices more in some regions than in others (DCC 2008). Some analysis suggests the difference in effects will be significant, with New South Wales and Victorian households experiencing electricity price rises almost double those experienced by households in the Northern Territory (Australian Conservation Foundation, ACOSS & Choice 2008: 10).

More broadly, the impacts will differ between people living in and outside capital cities and, within cities, between inner and outer suburbs. Higher product prices will be influenced by higher transport costs, disadvantaging rural or outer suburban dwellers.

More significantly, however, because of their dependence on private transport and their need to drive longer distances to access services—such as shopping, medical care, and schooling—rural and outer suburban dwellers will be particularly vulnerable to the rising fuel prices brought on by an emissions trading scheme. Low-income households are often over-represented in the urban fringe, where there is limited access to public transport (Randolph & Holloway 2005; Baum et al. 2005).

Remote Indigenous communities in northern and central Australia are likely to be particularly affected, given their reliance on diesel fuel for power supply as well as transport.

The impact of rising fuel prices, combined with low incomes and limited access to public transport, means that for some households, reducing their use of private transport will be a primary means of reducing exposure to costs. Reduced mobility has negative flow-on effects, such as feelings of isolation and social exclusion (Currie et al. (eds) 2007; Dodson et al. 2006). This makes expanded access to public transport, and the introduction of more energy- and emissions-efficient private vehicle choices, important equity issues.

The longer-term burden for households will depend on the extent to which they can reduce their exposure to emissions prices. Key questions are:

- What low-emissions substitutes are available?
- Are there any constraints on the uptake of those substitutes?

Ability of low-income households to respond to higher energy prices

Reducing energy use by using energy more efficiently would reduce households' exposure to higher prices. Chapter 17 discusses information and agency barriers that inhibit the best use of known technologies to use energy more efficiently. These barriers and underlying economic considerations cause demand by the household sector for energy—particularly electricity—to be inelastic in the short term (IPART 2003; Kamal & Stern 2001; Owen 2007). The National Institute of Economic and Industry Research (2007) estimates residential demand elasticity in Australia's National Electricity Market to be 0.25.

However, over the longer term there is likely to be greater price elasticity of demand for energy, as consumer preferences change, price increases are considered to be permanent, and assets are turned over for more energy-efficient appliances and houses.

Two factors may constrain this response in low-income households. First, low-income households are less able to fund the use of energy-efficient technologies. While such technologies might be cost effective over the longer term as lower energy bills recoup the initial outlays, people on low incomes may not be able to meet the capital cost of low-emissions technologies.

Second, due to principal-agent problems, households paying rent for housing, including those living in public or community housing, have limited incentive to pay for the capital costs of energy-saving insulation, space heating, hot-water systems

and cooking appliances. Around 29 per cent of Australian households rent their homes, with a disproportionate number of these being low-income households (ABS 2007).

Ability of low-income households to respond to higher transport fuel prices

Demand for private transport has a low price elasticity where there are limited substitutes.

As fuel prices rise, responses will be determined by the proximity of public transport services. Where substitutes are available, there will be a switch in demand away from private transport and fuel. However, for many households public transport is not available. As noted above, this is particularly the case in outer suburban and regional areas, which tend to have a higher concentration of low-income households (Wulff & Evans 1999; Baum et al. 2005; Dodson & Sipe 2007). In these locations, private transport must continue to some extent, and people will be forced to pay a higher price for it.

The emissions trading scheme will raise community interest in and pressure for extension and upgrading of public transport infrastructure and services. In the best of circumstances, change in services can be expected to be slow. Noticeable improvements in public transport for many communities are likely to occur over decades rather than years. This transition is discussed in Chapter 21.

For many people on relatively low incomes in the established outer suburbs of large cities and in rural areas, there is no likely public transport substitute for the private motor vehicle. For them, an early transition to low-emissions motor vehicles with reasonable capital and operating costs is the only reliable offset to rising petroleum and fossil fuel prices. Exploration of opportunities for the rapid deployment of cost-effective low-emissions vehicles, with the electric or hydrogen-fuelled car the ultimate solution, has a strong rationale in equity as well as economic efficiency.

16.1.3 Effects of an emissions price on industry

Industries most likely to be affected by an emissions price are those:

- with a high emissions intensity
- with access to few or no substitutes to reduce their emissions intensity or exposure to increased costs under the emissions trading scheme (access by firms to substitutes may be constrained by lack of information, capital, and physical location)
- with limited capacity to pass through the emissions price (firms trading in the domestic sector will generally be able to pass through costs, while firms producing traded goods and services—with overseas competitors not subject to a commensurate emissions price—may not).

Households' reliance on emissions-intensive industry

Some emissions-intensive industries will be placed under considerable pressure by the introduction of the emissions trading scheme. At some point, their viability may depend on their capacity to adjust to use of low-emissions technologies. Their capacity to make these adjustments can determine the fate of regions that are heavily reliant on emissions-intensive industries. If adjustment is not possible, affected workers may need to pursue alternative employment. A community's capacity to manage such change may depend on the extent of its reliance on the affected industry (the number of people it employs in the local community), the availability of alternative employment, and whether workers are able to take up other vocations (Box 16.1).

Box 16.1 Labour mobility

The capacity of the labour market to adjust to changes in the demand for labour and accommodate changes in the job preferences of workers is influenced, in part, by the extent and ease of labour mobility or turnover.

Mobility has several elements. It can involve a change of job between firms in the same industry, a movement between firms in different industries, or a change in occupational type. It may also involve a change in location. Where industries and/or regions are subject to general decline, the potential for interindustry and locational mobility is important for accommodating adjustment (Productivity Commission 1998).

Workers in declining industries who have skills and experience that are valued in other activities (and ideally, can find employment in those activities in their local area) are likely to be much less disadvantaged by structural change than workers with a narrower range of re-employment opportunities, or those who must move to another location to find work.

Impacts may be concentrated in particular regions or towns that rely heavily on the affected industries. They are likely to be felt more in rural and provincial communities, where there are fewer alternatives than in cities. The two industries likely to be most affected—coal-fired electricity production and agriculture—are discussed below.

Australia's coal-based regions

The success of Australia's emissions trading scheme will be inextricably intertwined with the future of the coal industry. The coal industry underpins Australia's domestic electricity supply sector, and is by far our biggest export commodity. The domestic coal-fired generation sector, the domestic and export mining sectors and, most importantly, the communities who live and work in centres of coal mining and coal-fired power generation, all have a vital stake in the long-term viability of the industry.

The prospects for the coal regions depend on the resolution of several powerful cross-currents. In the immediate future, the high price of black coal—metallurgical

and thermal—on the Asian and world markets will underwrite prosperity and expansion for regions producing this commodity. High export prices for black coal (and for gas, now potentially exportable from the east coast) have been improving the competitive position and profitability of power generation based on brown coal in the Latrobe Valley of Victoria. These tendencies are likely to be more powerful than an emissions price in the prosperity of black and brown coal regions, at least through to the conclusion of the Kyoto period at the end of 2012.

As discussed at length in Chapter 20, developments after that depend on, among much else, the success of technological change in reducing emissions in coal-based electricity generation, and on whether there is a global mitigation agreement. Within 550 mitigation (and for a while probably 450 as well), existing coal-based generators would remain competitive, with higher electricity prices balancing some modest contraction of volume. Effective investment to reduce emissions using known technologies could greatly improve the competitive position of Victorian generators (brown coal) in particular. The early retirement of one of the older and economically and environmentally less efficient generators would greatly improve the commercial prospects of others—for a while maintaining old volumes at higher prices.

Effective mitigation would open up some new opportunities for investment and employment in the Victorian coal fields.

In the end, the future of coal depends on successful carbon capture and storage, through geosequestration or biosequestration. Global mitigation commitments would make this important for coal exports as well as domestic markets. Successful partial sequestration (say 90 per cent capture), perhaps based at first on retrofitting old facilities, would provide expansion opportunities for several decades. After that, coal's future, export and domestic, will depend on commercial success of near-complete capture.

Any large negative impacts in the coal regions are many years away. With effective application of known technologies to reduce emissions in the immediate future, and commercially successful carbon capture and storage after that, the future prospects are for continued expansion.

This view of the future of the coal regions has clear implications for structural adjustment assistance to coal communities. Support for transformation to lower emissions and then near-zero emissions use of coal is the main priority in the years immediately ahead. Only if that fails will it be necessary to plan support for coal regions that are disadvantaged by major reductions in local employment.

Targeted transitional assistance for the coal regions is discussed in section 16.2.4.

Australia's agricultural regions

From the commencement of an emissions trading scheme, costs of agricultural inputs—electricity, liquid fuel and fertiliser—will rise. This will particularly affect parts of the sector where energy costs and energy-dependent costs are a large proportion of total costs. In the event of coverage of agriculture in the scheme, those parts of

the sector with high direct emissions—for example, methane emissions from sheep and cattle—will incur costs.

Over time, as the emissions price increases, a range of new low-emissions commodity options—such as biosequestration and bioenergy—will become increasingly cost effective. Most landowners will have the option to continue with traditional forms of farming that remain profitable, or switch to lower-emissions forms of production. Low-emissions substitutes are already technically feasible for the agriculture sector, and will be economically feasible with a sufficient carbon price.

16.2 A framework for government intervention

16.2.1 Why income distribution effects warrant government intervention

The price imposed by an emissions trading scheme is not intended to result in large, arbitrary transfers of wealth, especially regressive changes in income distribution. There is a clear role for government in ensuring distributive efficiency and addressing the social welfare implications of climate change mitigation policy on those people who are most affected by an emissions price and least able to respond (see Box 16.2).

Box 16.2 Distributive efficiency and social welfare implications of an emissions trading scheme

Economic efficiency is of the utmost importance in designing an emissions trading scheme but distributive efficiency is also an important consideration. Distributive efficiency occurs when goods are distributed to those who gain the most utility from them (Lerner 1944).

It is accepted that income has diminishing marginal utility—that is, an extra dollar has more utility to the poor than to the rich. Income distribution is a key dimension of welfare. The introduction of an emissions price without consideration and assistance to low-income households will reduce social welfare.

The initial transfer of wealth as a result of the emissions trading scheme will have impacts on the distribution of income—some of them inequitable. The way in which the wealth transfer is handled in the longer term—that is, the use of permit auction revenue—will determine whether or not that income distribution is corrected. Therefore, in responding to the impacts of the emissions trading scheme, equity must be considered.

The first lines of defence during rapid structural change are maintenance of economic growth and full employment within a flexible economy, and the maintenance of the general social safety net. Contemporary Australia is well placed to absorb major structural change, and it is important to the success of adaptation to climate change that this continues to be the case. The main focus of this section is the effects not covered by these two defences: regressive income effects and the concentrated employment effects in some regions.

To address these effects, the Review proposes a package of measures limited to three key elements where the rationale for assistance is strongest:

- general assistance to most households through efficiency-raising improvements to the social security and tax systems
- targeted assistance to address the regressive income effects of an emissions trading scheme on low-income households and facilitate a more efficient transition
- targeted assistance for regions grossly affected by the loss of livelihood as a result of the implementation of an emissions trading scheme.

Each of these elements has a strong but different underlying policy rationale, which should guide the timing of implementation and policy design details.

16.2.2 General assistance: social security and tax systems

Many market imperfections and policy-related distortions affect the adjustment process across the economy rather than having effects that are specific to particular industries or regions.

An emissions trading scheme will affect a broad range of goods and services throughout the economy—including, food, fuel, and housing—with a flow-on effect across almost all aspects of daily living. These higher-priced necessities will particularly affect low-income households (see section 16.1.2). The degree of impact across low-income groups will depend on the structure of each individual's consumption bundle, which will itself depend on a range of factors.

This diversity of effects and differences in consumer preferences means that it is difficult for government to determine household trade-offs between these goods. This argues against assistance measures that are prescriptive or directive in their nature, and suggests that households can be most efficiently assisted through the taxation and social security system, particularly by the reduction of distortionary taxes.

Reductions in taxation rates, such as the lowering of marginal effective tax rates at the lower end of the income range, have the dual benefit of increasing household disposable income as well as stimulating labour supply and increasing the efficiency of the taxation system.

Increases in social security payments and/or amendments to social security tapers can address equity issues for households and individuals out of the labour force or in retirement, while also increasing labour supply and the efficiency of the welfare system.

Direct financial support through the taxation and social security systems will have a more important role as impacts become greater. Adjustments through the taxation and social security systems would need to be permanent.

If the emissions permits are auctioned, as recommended in Chapter 14, the sales revenue will provide an important source of funding for assistance. It is proposed that half of the permit sales revenue be allocated to payments to households, focusing on the lower half of the income distribution.

Changes to the tax and social security systems to assist low-income households following the introduction of an emissions trading scheme should be integrated with the Henry Tax Review.

16.2.3 Targeted assistance for low-income households

While there are benefits in providing assistance through general measures, there are some equity issues that cannot be addressed with broad improvements to the social welfare or tax systems. In particular, general financial support may fail to assist households without sufficient capital or information to make the change to energy-efficient technologies; rental households or those living in public or community housing with limited incentive to access substitutes; and households for whom public transport is not available. In these cases, government may need to provide more targeted assistance for these households to make the transition to a lower-emissions future.

In designing such assistance, it is important that the emissions price signal, designed to encourage a shift toward a lower emissions economy, not be blunted or eroded. Instead, in addition to addressing equity concerns, such measures should be tailored to improve the efficiency of the adjustment process by addressing market-based impediments to adjustment (Productivity Commission 2001). This provides a strong rationale to use a proportion of permit revenue to fund this assistance.

To assist low-income households with the upfront capital and information for the purchase and installation of energy-efficient services, products and appliances, the Review proposes that the federal government, with assistance from the state and territory governments, establish a system of 'green credits'. This system would combine an upfront once-off grant for households in the bottom quarter of the income distribution with third-party audits where requested.

Households could choose to use the grants of \$1000 per person in the household to assist in the purchase of a list of approved items. To address information barriers, the list would identify products that would improve energy efficiency in housing or transport.

Alternatively, households could elect to have a third-party audit. Auditors would identify energy efficiency opportunities in these households, and provide a wider range of options for these households to use their credits, including household appliances. The Review considers the audits could be provided most efficiently by the private sector, at a cost of around \$150 per household. Governments could provide additional funding for low-income households that are particularly vulnerable

to rising energy prices for a more detailed audit, as they have significantly higher exposure to high energy prices and greater opportunities for energy efficiency savings—savings that would easily exceed the cost of the audit.

Should households prefer not to select an eligible technology from the list provided, the grant would be made available in cash after a period of five years.

The total cost of the system would amount to approximately one-quarter of the permit revenue allocated to assisting households in the lower half of the income distribution for the first five years of the emissions trading scheme. The grants should be provided by the federal government, with state and territory governments providing administration of the scheme.

The early years of the emissions trading scheme—indeed, in the period leading up to it—would be the appropriate time for implementation of the green credits system to reduce the impacts on low-income households when the emissions trading scheme is introduced. Given an emissions trading scheme start date of 2010, the scheme should begin in 2009 and run for five years to 2013, with the value of the system rolling into the general assistance following this.

To assist low-income renters in public housing, the government should invest in increasing the energy efficiency of its public housing stock. For example, in Victoria, the Energy and Water Taskforce program retrofits public housing estates and low-income housing with energy efficiency improvements, resulting in notable decreases in gas and electricity consumption (Sustainability Victoria 2008).

To assist outer suburban households, improving access to public transport will also be important in adjustment to a low-emissions future. Rolling out additional public transport services will take time, and may not be viable or cost effective in some locations. Therefore, in the shorter term the assistance in the green credits system for low-emissions, energy-efficient private transport will be the main form of assistance for these households.

16.2.4 Targeted assistance for coal-generation regions

Many impacts of an emissions trading scheme are specific to certain sectors, industries or regions, but few of these warrant government assistance. A flexible labour market, with sufficient employment opportunities and a strong social safety net, will preclude the need to provide targeted assistance for all sector-specific impacts.

An emissions price may seriously affect some business and asset owners, and shareholders, through its effect on industry. Claims by these groups for special consideration on equity grounds should be assessed by government alongside the equity claims of others. It is unlikely that effects on these groups would result in inequitable outcomes, relative to effects the emissions trading scheme will have on other groups in the community.

Additional assistance measures that target particular sectors, industries or regions therefore are only likely to be appropriate where there are wider income distribution considerations, notably regional income effects. Inadequate arguments for special compensation are discussed in Box 16.3.

Box 16.3 Inadequate arguments for government assistance

A number of false arguments are sometimes advanced to justify compensation for the impacts on an emissions trading scheme on the most affected industries:

- There will be a large and rapid decline in the value of emissions-intensive assets, and their future profitability will decline. These negative impacts will be disproportionate compared to the rest of the economy; compensation could offset these disproportionate income effects.
- An ‘unanticipated’ regulatory change, such as an emissions trading scheme, could undermine investor confidence; compensation would increase investor confidence about market operation in the face of future change.
- Adverse affects on the investment climate could jeopardise or delay required investment; compensation would reassure current and future investors and help facilitate necessary investment.

The Review considers that these arguments are inadequate to justify government intervention, for a number of reasons. First, most domestically traded industries will be able to pass on the costs of the emissions trading scheme, and thus will not require assistance to recover costs or avoid potential losses.

Second, the emissions trading scheme does not represent a sovereign risk issue, but a policy risk. Individuals and firms win or lose from market-based changes every day; this is part of the normal operation of markets. Governments do not provide guarantees that regulation will remain unchanged or that asset values will be immune from policy changes (Productivity Commission 2001), and industry is generally cognisant of the risk. Industry has been aware of a carbon price for some time; the fact that the industry has been citing uncertainty on climate change policy as a deterrent to new investment would suggest that it has been recognised for many years.

Third, though impacts of emissions trading are likely to be significant, policy changes that adversely affect asset values, without compensation, are not unusual. Government does not, as a matter of course, compensate asset owners when environmental or social externalities are internalised (for example, compensation was not provided to the tobacco or asbestos industries).

Finally, even if some existing investors are deterred from future investment, it is expected that a clearly communicated and credible policy response to climate change will provide significant investment opportunities and that these will be attractive to an adequate range of both new and existing investors.

For a case to be made for public support on those grounds, it must be shown also that such measures can cost-effectively improve the efficiency of the adjustment process. Special transitional assistance is only valid under exceptional circumstances where there are clear market barriers to an efficient transition.

The Review recognises that market imperfections and policy-related distortions can make transitional unemployment and production losses associated with policy-induced changes larger and more sustained than they might otherwise be (Productivity Commission 1998).

Assistance for adversely affected coal regions

In considering the various impacts of an emissions trading scheme on different sectors, industries and regions, there is one geographic area the Review identified where such targeted transitional assistance may turn out to be warranted—the brown coal region of the Latrobe Valley. It will be a number of years before it is clear whether there is likely to be a regional problem.

The Latrobe Valley satisfies the dual criteria in that:

- Brown coal electricity generation is one of the most emissions-intensive industries in Australia, and the expected consequences may be severe, depending on the range of factors affecting future competitiveness (see section 16.1.3), and concentrated in the region.
- There would be limited opportunities for the employment of people who may be made redundant in the event of industry decline.

Other areas that may be considered comparable, such as the black coal mining, exporting and power-generating regions of the Hunter Valley would seem to face less severe adverse impacts due to the ongoing strength of exports and other employment options; this may change in the event of a successful international mitigation agreement. Regions with emissions-intensive agriculture may be severely affected by the emissions price but have the options to diversify towards less emissions-intensive production or to seek alternative employment for their labour force.

Once appropriate recipients have been identified, government must then consider the most appropriate form for targeted assistance. In doing so it should adhere to three principles:

- **Assistance should be non-distorting**—It is important that the form of assistance provided does not distort the incentives to move away from emissions-intensive practices.
- **Assistance should benefit households and communities**—The form in which any transitional assistance is provided needs to ensure that the benefits of that assistance accrue to households and communities in the form of ongoing employment in, and the continued economic viability of, the region concerned.
- **Assistance should be transitional**—It should move industry toward a low-emissions future, not provide compensation for loss or in order to continue the status quo. The long-term viability of the domestic coal industry as an employer and source of income in regional Australia hinges on the successful transition

to low-emissions technologies that will allow the industry to keep operating. This is, in turn, ultimately dependent on whether a near-zero emissions future is feasible. If it is not, then Australia needs to know as soon as possible, so that all who depend on the coal industry can begin the process of adjustment, and so that adequate and timely investments can be made in other industries.

If the coal industry in Australia is to have a long-term future in a low-emissions economy, it will have to be transformed to near-zero emissions. A rising permit price will provide increasingly strong incentives for investment in low-emissions technology. Innovation in the sector will also benefit from the early research funding and investment in demonstration and commercialisation from the matched funding scheme suggested in Chapter 18.

In addition, the Review proposes a specific one-off allocation of additional funding, in the order of \$1 billion, to facilitate structural adjustment in the industry. It is suggested that this be made available preemptively, so as to reduce the probability that other regional support measures may be required in future. This 'targeted transitional assistance' would match industry funding on an equal basis, and would be available to support investment in reducing emissions in coal-based generation in existing and new plant through the adoption of emissions-reducing technologies. For example, funding could be provided to retrofit a facility with low-emissions technologies to support drying of brown coal and restructuring of boilers to use the product, or to improve use of materials and logistics. For these structural adjustment purposes, it would not be necessary for the technology to be new.

Such investments will maintain the short-term viability of communities such as those in the Latrobe Valley during the early period when the necessary new technologies such as carbon capture and storage are being developed. If the expectation in the industry is that carbon capture and storage is likely to allow the sector to continue competing in the low-carbon economy, this targeted transitional assistance will help generators to operate more efficiently in the interim, thereby allowing a less volatile transition.

If a time comes when the industry considers that neither carbon capture and storage nor any other technology is likely to allow continued profitable operation in the long term, firms will not invest their own capital in low-emissions technology, and they will not make demands on matching funds. Governments will then need to provide measures such as the retraining of workers for new employment (as with textile and steel workers in the 1980s after reductions in protection); and provide grants to communities to support improvements in infrastructure that would be helpful in attracting alternative industries to affected regions. Any remaining funds in the targeted transitional commitment should be directed towards such programs.

16.3 Long-term impacts and structural change

Over the next decade, the distributional implications for Australian households that flow from the impacts of climate change are mild compared to the likely effects of an emissions trading scheme as described in section 16.1. Over the longer term, the magnitude and scope of climate change impacts, and consequent impacts on household incomes, will be determined by the ambition and effectiveness of the global mitigation agreement.

If an effective global mitigation agreement is not reached, climate change will have significant income distribution effects. The possible impacts of climate change on Australia beyond 2030 will be varied and extensive, and will be unevenly spread across the country. Climate change impacts will mostly be gradual but could also involve shocks, either in the form of severe weather events, a rapid decline of productivity in certain areas, or other sudden socio-economic or environmental shifts. Some communities in severely affected regions will experience disadvantage from structural change.

The redistribution of income will initially be the result of direct climate impacts such as increases in temperature or declining precipitation. These impacts will result in an increase in the scarcity of some resources, such as water and land, a decline in the productivity of some industries, and an overall decline in domestic or international competitiveness. The clearest example of this is the impact on households and communities that rely on agriculture for income and employment.

Storm surges, bushfires and other severe weather events may have severe effects on economic and social life in some regions. They will, at a minimum, raise the price of insurance in affected areas. In the most extreme cases, some regions will be rendered less habitable, to the point that there will be a need for communities and industries to relocate.

A significant proportion of the income distribution effects of climate change and climate change policy will come from changes in the industrial make-up of the economy over the longer term. Regional communities and industries are likely to be more vulnerable to these impacts than urban centres, due to their reliance on agriculture and other natural resource-based industries, and low levels of infrastructure stock. Regional communities, in particular farming regions, have already been subject to structural change to a much greater extent than metropolitan centres in recent history (Productivity Commission 1998).

These are issues for policy in the longer-term future.

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