



## ENVIRONMENTAL BENEFITS OF CYCLING

RESEARCH FROM THE CYCLING PROMOTION FUND

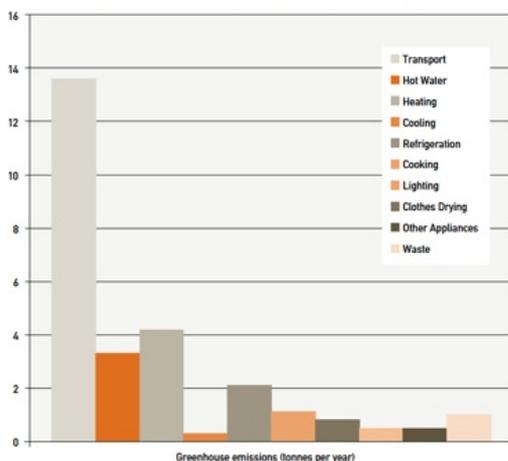


Principal Authors Sue Edwards and Paul Magarey

### GREENHOUSE POLLUTION

About half of the greenhouse gas emissions produced by an average Australian household each year are from transport. <sup>(1)</sup>

Figure 1: Greenhouse emissions per household application



Cycling is one way a household can significantly reduce its contribution to the pollution that causes climate change.

Cars produce an average <sup>(2)</sup> of 0.3 kg of CO<sub>2</sub> per km travelled. <sup>(3)</sup> A cyclist emits negligible greenhouse or other pollution. <sup>(4)</sup> So for each kilometre you ride your bike instead of driving, you are saving approximately 0.3 kg of CO<sub>2</sub>. This is equivalent to the energy from running a 60 watt incandescent light globe for close to 5 hours. <sup>(5)</sup>

Using bicycles to replace short car trips and city driving gives the greatest savings in emissions. Stop-start driving and short trips (where engines do not properly warm-up), result in fuel being burnt less efficiently and a higher level of emissions. <sup>(6,7)</sup>

In our capital cities, most trips involve stop-start driving or short trips: 53% of trips in Melbourne are less than 5 km, <sup>(8)</sup> with similar figures in Sydney, <sup>(9)</sup> Brisbane <sup>(10)</sup> and Perth. <sup>(11,12)</sup>

Table 1 – Proportion of car trips below 3 and 5 km in three Australia cities

City	Car trips less than 3 km	5 km
Brisbane	29%	45%
Melbourne	37%	53%
Perth	32%	48%
Sydney	25%	42%

Many of these trips could easily be ridden by bicycle.

### AIR POLLUTION

Passenger cars are our cities' biggest producers of carbon

### EMBODIED ENERGY

'Embodied energy' is all the energy that goes into the manufacture and delivery of a product. This includes energy for mining, refining and transport of materials and manufacture of the goods. At each stage the energy used produces greenhouse and other pollution.

A typical \$30,000 car embodies 475 gigajoules of energy, or 41 tonnes of CO<sub>2</sub> equivalents and over one million litres of water. In contrast, a typical \$500 bike would embody just 8.8 gigajoules of energy, 0.75 tonnes of CO<sub>2</sub> equivalents and 19,000 litres of water. <sup>(19)</sup>

The 'chain of impact' includes the energy required for the infrastructure and services associated with car and bicycle use such as the energy used to build roads, paths, car parks etc. It also includes a share of the materials and energy used for emergency services and hospital wards (that service the victims of both traffic accidents and illnesses related to pollution), and the energy and materials for repairs, maintenance, spray painting, and providing new car parts. German research shows that each car produces 26.5 tonnes of rubbish. <sup>(18)</sup>

The bicycle is much smaller, has slower speeds and lower maintenance and infrastructure needs than the car. Car-free city centres, or a shift to more bicycle centred urban design can make great savings in our transport systems' chain of impact. For example, up to 10 bikes can fit into one car parking space. <sup>(20,21)</sup> Energy use and greenhouse emissions associated with the provision of infrastructure and services for bicycles are considerably less than the requirements for cars.

### NOISE POLLUTION

A 1989/90 study found that, based on OECD criteria, 9% of the Australian population was exposed to excessively high levels of noise, of 68 decibels or more, <sup>(22)</sup> while a 1993 study in NSW identified that 73% of individuals exposed to environmental noise were affected by road noise alone. <sup>(23)</sup> The main noise arising from cycling is the ringing of bells.

### URBAN DESIGN AND AMENITY

A city designed for much higher levels of cycling would be a cleaner, less polluting, more pleasant and liveable environment in which to live. In regions with high vehicle ownership rates 10-20% of urban land is typically devoted to roads and parking space. In commercial centres, this figure can be greater than 50%. <sup>(24)</sup> High density cities can devote less of their space to roads. Urban sprawl has resulted in car dependent suburbs, and increased greenhouse emissions and air pollution. Less than 7% of Australian urban trips are made by public transport, bicycle or walking. <sup>(25)</sup> High increases in fuel prices have had negative economic impacts, especially on residents of outer suburbs who tend to rely more on cars.

### REFERENCES

References and further information available at: [www.cyclingpromotion.com.au](http://www.cyclingpromotion.com.au)

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monoxide, oxides of nitrogen, sulphur oxides, ozone-forming substances, hydrocarbons and fine particulates. The interiors of new cars give off formaldehyde and other defects, brain and the lungs and

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from motor vehicles causes between 900 and 2,000 early environment by restricting plant photosynthesis, damaging leaves and adversely affecting the yield of some crops. (16,17)

