Lex Fullarton

[T]axing Greenhouse Gases

An Australian Perspective

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John was a compatriot colonial Scot. Like mine, his ancestors settled in the Gascoyne at the beginning of British settlement in Western Australia. He was a pastoralist, a graduate of the University of Western Australia and had experienced military service. He was particularly proud of his service as Aide-de-Camp with the Australian Governor General, Sir Zelman Cowan.

Our families' lives had touched many times in the past century or so, and we shared a close bond of friendship and understanding. He was my chief critic, sounding-board and editor. I shall greatly miss our weekly lunches. Rest in peace, old friend.

Abbreviations

ABARE	Australian Bureau of Agriculture and Resource Economics
ABS	Australian Bureau of Statistics
AC	alternating current (electricity)
ALP	Australian Labor Party
ANTS	A New Tax System Act 1999 (Commonwealth)
ATO	Australian Taxation Office
AWD	all-wheel drive (vehicle)
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CE Act	Clean Energy Act 2011 (Cth)
CEDA	Committee for Economic Development of Australia
CJ	Chief Justice (of the High Court)
CO2	carbon dioxide
CO2-e	carbon dioxide equivalent (greenhouse gases)
COAG	Council of Australian Governments
CSIRO	Commonwealth Scientific and Industrial Research Organization
Cth	Commonwealth of Australia
DC	direct current (electricity)
ESC	Energy Savings Certificate—NSW
EV	electric vehicle
FCA	Federal Court of Australia
GHG	greenhouse gas(es)
GRN	Australian Green Party
GST	Goods and Services Tax
GWh	Gigawatt hour (1 billion watts or 1000 MWh)
ICE	internal combustion engine
Imp gal	Imperial (British) gallon

ITAA 1936	*Income Tax Assessment Act 1936* (Commonwealth)
ITAA 1997	*Income Tax Assessment Act 1997* (Commonwealth)
J	Justice
kg	kilogram
km	kilometre
kW	kilowatt (unit of power)
kWh	kilowatt hour (1000 watts—the basic unit of sale for electricity)
L	litre
LGC	Large Generation Certificate (see REC)
LP	Liberal Party
m	meter
MiEV	Mitsubishi innovative Electric Vehicle
mpg	miles per gallon
ml	milliliter
MRET	Mandatory Renewable Energy Target
Mt	Megaton
MWh	Megawatt hour (1 million watts or 1000 kWh)
NEM	National Electricity Market
NSW	New South Wales
OECD	Organization for Economic Co-operation and Development
PHEV	plug-in hybrid electric vehicle
pv	photovoltaic
REC	Renewable Energy Credit (see LGC and STC)
REE Act	*Renewable Energy (Electricity) Act 2000* (Cth)
REES	Retailer Energy Efficiency Scheme (South Australian)
RET	Renewable Energy Target
RPS	Renewable portfolio standards
SA	South Australia
STC	Small-scale Technology Certificate
SUV	sports utility vehicle

TWh	Terawatt hours (1 trillion watts or 1000 GWh)
TBL	Triple Bottom Line aka the Sustainability Framework
UK	United Kingdom
US	United States of America
VEEC	Victorian energy efficiency certificate
WA	Western Australia

Preface

This book is based on the concept of sustainable development and the need to consider its "three pillars"—the social, economic and environmental impacts as one interrelated concept—the triple bottom line (TBL). The rationale of the TBL is that no single influence can exist in isolation for an indefinite period of time.

The concept of the TBL considers that an imbalance between the three overarching factors which favors one of the three pillars over the interests of the other two, will adversely affect the others and ultimately itself. It suggests that an enterprise focused solely on profit, at the expense of society and the environment, will not be able to be sustained indefinitely.

The book looks at the impact of modern industry's reliance on fossil-fueled energy sources, and the emission of greenhouse gases caused from burning fossil fuel. In doing so, it briefly examines how the carbon cycle functions. It then focuses on attempts to legislate forms of carbon tax by successive Australian governments in order to address carbon emissions and to mitigate the impact of greenhouse gasses on global warming

Part I begins by defining the general concept of a tax to establish a definition of a carbon tax. It then examines the *Clean Energy Act 2011* (Cth) (CE Act), which is considered to be a carbon tax. It follows with an examination of the Australian *Renewable Energy (Electricity) Act 2000* (Cth) (REE Act).

The examination compares the REE Act to the CE Act to ascertain if the REE Act functions as a tax on greenhouse gas emissions and therefore is also a carbon tax. The comparison examines both pieces of legislation to establish the view that the REE Act is not a quota-based system, which limits the volume of greenhouse gas emissions (a "cap and trade" system), but rather it is a carbon tax system, which

imposes an impost on greenhouse gas emissions, but does not restrict, or cap, the volume of emissions.

It concludes that tax revenue, sourced from an excise on fossil-fuel generated electricity, is specifically directed by government to a particular purpose—the revenue is hypothecated to support the burgeoning renewable energy industry in Australia. It finds that the REE Act taxing system functions by the creation of renewable energy certificates (RECs) by the operators of registered renewable energy generation installations. The RECs are intended to be surrendered as "tax tokens" or coupons by the suppliers of fossil-fuel generated electricity.

Part II further develops the concept of trading RECs in accordance with Australia's measures to reduce greenhouse gas emissions to combat climate change—the Australian Renewable Energy Target (RET). Under that system, legislated by the REE Act, RECs are traded by renewable energy generators to fossil-fuel based electricity generators, known as liable parties.

The market is available to any party registered to trade on a government supervised electronic market place—the Australian rec-registry. They can be, and often are, traded as a form of commodity speculation prior to surrender. However, they are ultimately purchased by suppliers of fossil-fuel generated electricity to be surrendered to government agencies.

Surrendering RECs is the only means by which the suppliers of fossil-fuel generated electricity can meet their commitments under the provisions of the REE Act. A fiscal penalty is applied for any shortfall or non-compliance in the number of RECs surrendered and no payment is made by government agencies for the surrendered RECs.

A REC, purchased at a variable market value dependent on the economic forces of supply and demand, becomes a token or coupon for the payment of tax. The supply of RECs is dependent on the

volume of electricity generated by registered renewable energy generation installations. The demand for RECs is created by the level of the renewable energy target (RET) as set annually by the Parliament of Australia.

As operators of renewable energy generation installations are the only parties which can create RECs, and suppliers of fossil-fuel generated electricity are obliged to purchase RECs to meet their tax commitments, the transfer of RECs subsidizes Australia's burgeoning renewable energy industry.

Part III considers another taxation system to illustrate how taxes can impact the transition from fossil fuels to renewable energy sources. To demonstrate the role that taxation systems can play in bringing about that transition, Part III examines the impact on road tax revenue of changes in motor vehicle technology.

As the drive trains of motor vehicles are transformed from internal combustion engines to electric motors, their energy sources may transition significantly from taxable fossil fuel to non-taxable renewable energy. Revenue from motor vehicle fuel excises levied on petroleum products and allocated to the construction and maintenance of Australia's roadways will decrease accordingly. Therefore, in order to continue to fund the road transport infrastructure, governments will be obliged to change their focus regarding how road tax revenue is raised.

Part III looks at the current number of electric vehicles (EVs) on Australian roads and attempts to predict the future uptake of EVs by road users up to the year 2035. It examines the likely impact of reduced road tax revenue from motor vehicle fuel excises on future contributions by the Australian government for the construction and maintenance of Australian roadways.

To do that, it examines data published by the Australian Bureau of Statistics (ABS) and statistics from the Australian Taxation Office (ATO). It also refers to sales data provided by motor vehicle

manufacturers. It then compares the results of those examinations with data from a case study of a plug-in hybrid electric vehicle (PHEV), owned and operated by a solar project in rural Western Australia.

It concludes that future revenue from fuel excises may decrease as a consequence of the introduction of EVs. However, as there has not been an official link between road tax revenue and road construction and maintenance expenditures since 1959, a reduction in road tax revenue will not necessarily affect funding for the construction and maintenance of Australian roadways.

Finally, it concludes that taxation systems can play a significant role in reducing greenhouse gas emissions and combating climate change.