

# In Europe 250 watt pedelecs reduce pollution and improve the safety and mobility of young and elderly riders

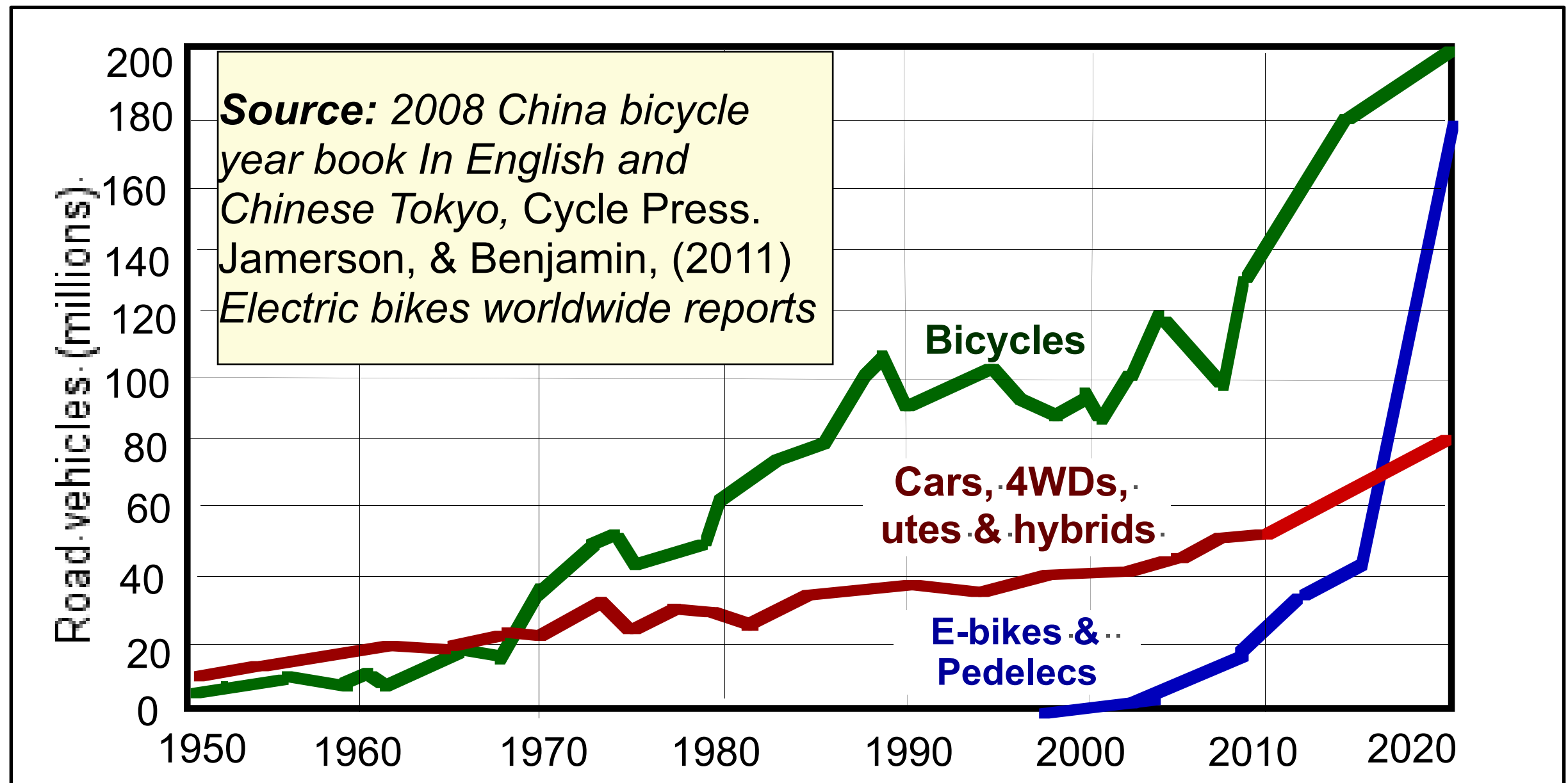
By Alan A. Parker

## Figure 1

- Pedelec: front wheel 26 inch with hub drive 250 Watt motor DC brushless.
- Lithium battery. range 46 Km.
- 6 speed gear.
- Weight 20 kg.

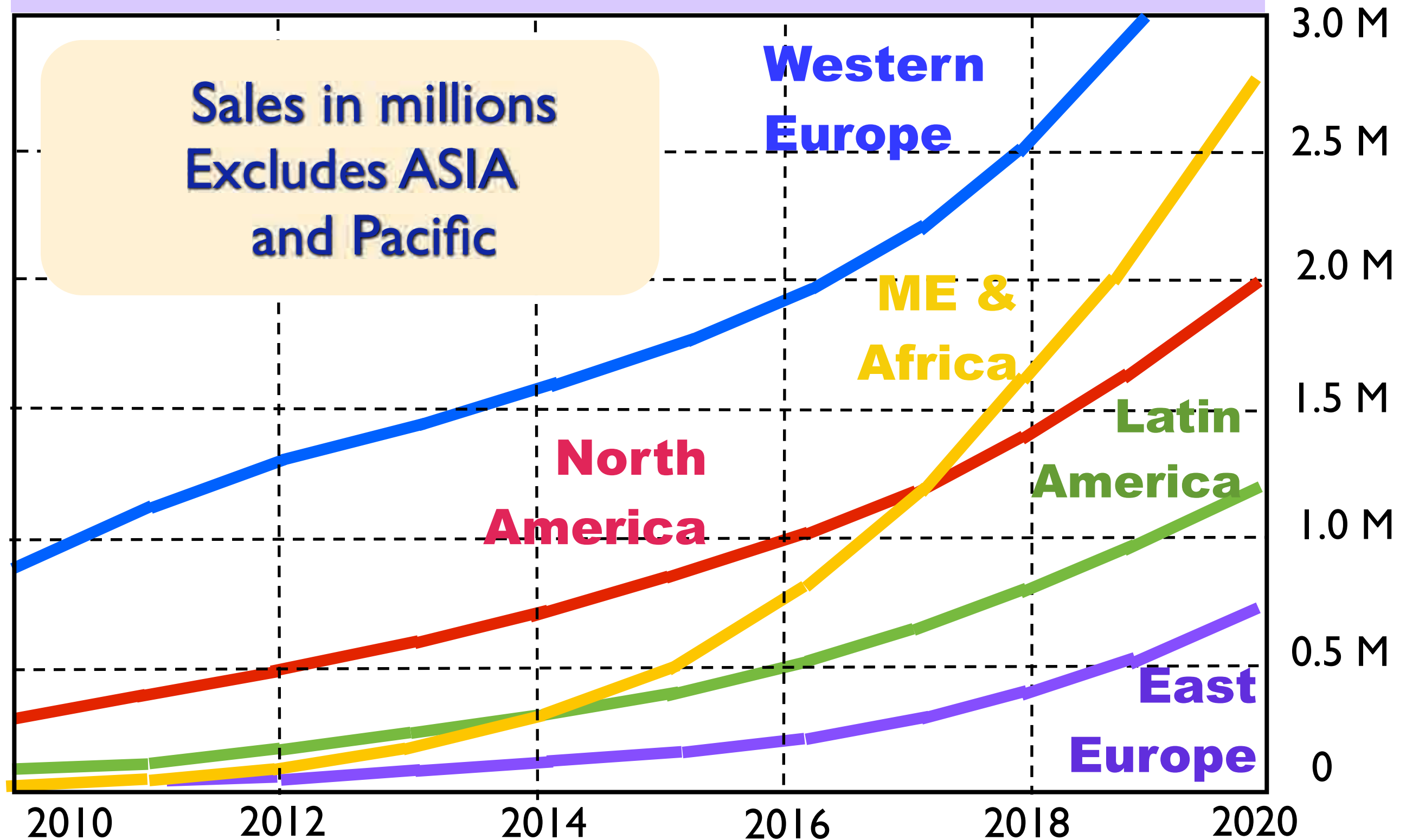


Figure 2 . World production: millions road of vehicles 1950 to 2020  
Bicycles, E-bikes & Pedelecs: cars, 4WDs, utes, hybrids.



**China's 100 million pedelec/E-bike fleet** and 450 million bicycle fleet are already constraining the growth of transport CO2 emissions, oil imports and pollution in their cities. The world fleet of E-Bikes, pedelecs is growing fast, compared to the possible growth of motor vehicles production

# Sales of electric two wheelers by regions, E-bicycles, E-scooters, E-motorcycles



**Table 1 The Top Ten EU Asian Suppliers  
of 9 million bicycles in 2010**

<b>COUNTRY</b>		<b>COUNTRY</b>	
Taiwan	3,358,674	Philippines	503,109
Thailand	1,218,472	China	461,082
Sri Lanka	1,201,138	Tunisia	411,980
Indonesia	550,432	Cambodia	368.040
Bangladesh	503,582	Malaysia	259,213

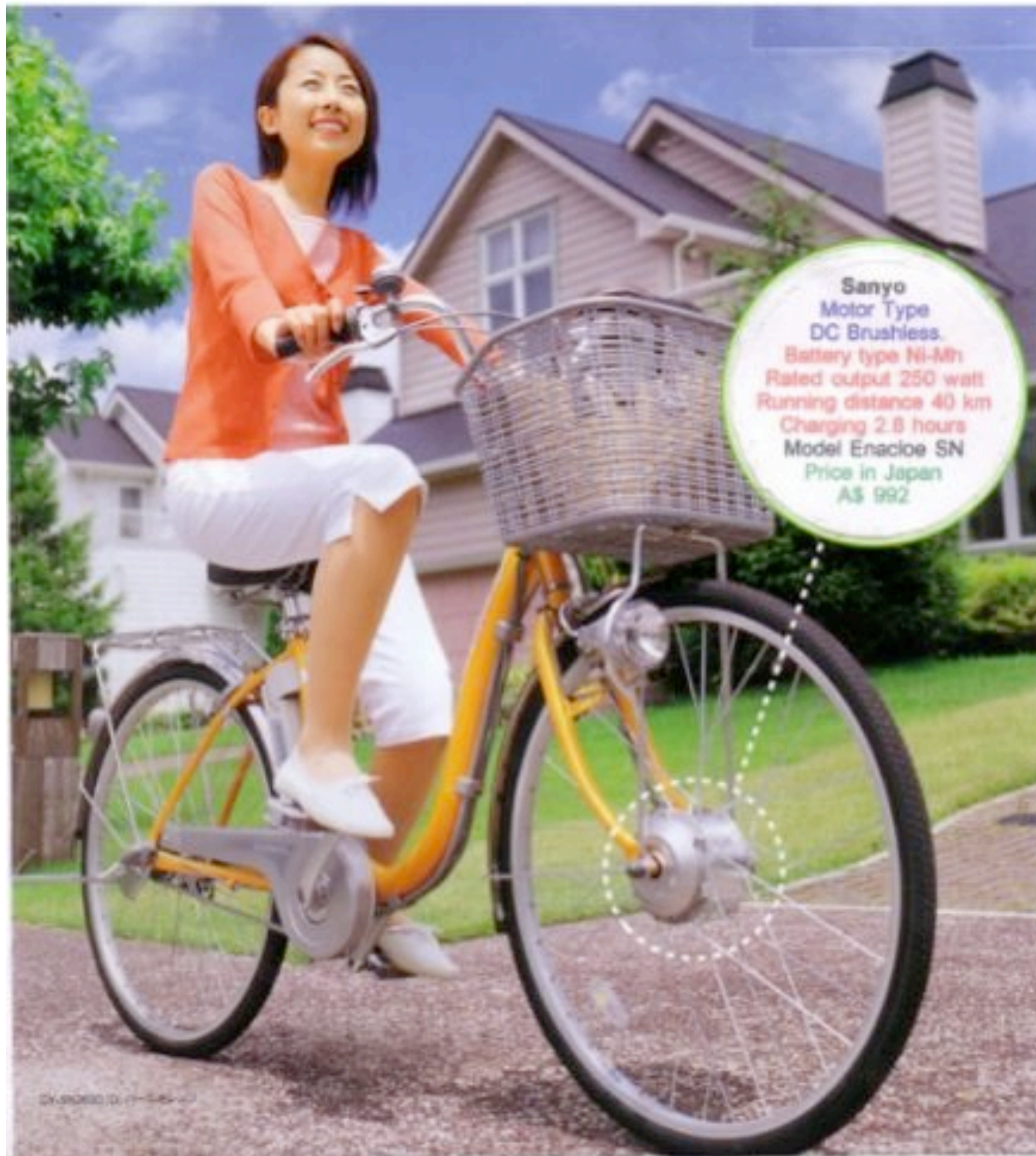
**Source.** Bike Europe News. 25-2-2011



# Pedelec: the PAS prototype 1990







Sanyo  
Motor Type  
DC Brushless  
Battery type Ni-Mh  
Rated output 250 watt  
Running distance 40 km  
Charging 2.8 hours  
Model Enacloe SN  
Price in Japan  
A\$ 992

**2005**  
Japanese  
lady rides a  
Pedelec with a  
Ni-Mh battery  
2006 model.  
250 watt  
power output





Lady rides  
up a steep  
hill in a  
suburb of  
Tokyo

2009  
model  
of 250 watt  
pedelec  
with Ion-  
lithium  
batteries





# PAS Pedelec

Latest models  
weighs 18 Kg

The child carrier  
designed to be  
stable and safe  
comes complete  
with lights and 3  
speed integrated  
gears



# E-Bicycles sold in Japan 1993-2005

2 Million Pedelecs produced: women bought 70%

- ★ Older people bought 66%, mostly women over 50 and men over 60
- ★ Women under 40 bought 9.4%; some use child carriers or E-Tricycles when shopping
- ★ Fortyish Business men bought 7.6%: they value time and want to avoid the hassle of car parking in congested CBDS



★ The **250 watt pedelec** was invented, tested and made in Japan in 1990 and mass produced in Europe, China and Japan since 2006.

★ Given Australia's sunny climate, the widespread use of Pedelecs with batteries charged by small solar cell arrays at home and work is practical.

★ The 250 watt pedelec is the safest E-bike on the world market in 2011. The best pedelecs are not made in Australia and cannot be imported.

★ Australians can buy the best cars but not the best pedelecs because they are illegal in all states.



**Table 2 . Road deaths and death rates selected EU countries. Source IRTAD 2011**

COUNTRY	Number of deaths			Country : road death rates				
	number road users			Per 100,000 persons			billions of vehicle Kms 2009	10,000 registered vehicles 2009
	Total deaths 2010	Total ped's 2009	Total cyclists 2009	total deaths 2010	0–14 years 2009	65+ years 2009		
Australia	1492	196	31	6.23	5.0	7.6	6.7	0.95
Denmark	250	52	25	4.54	4.0	7.0	8.2	1.1
France	3848	496	162	6.1	4.0	7.5	7.8	NA
Germany	3738	591	462	4.7	3.0	7.0	6.0	0.8
Netherlands	691	63	136	3.7	5.5	7.5	5.5	0.7
Sweden	323	44	20	3.4	1.9	6.5	4.4	0.7
Switzerland	343	88	21	4.5	5.2	6.5	5.7	0.7
New Zealand	358	31	8	8.3	3.5	10.0	9.6	1.2
Japan	5541	2012	933	4.3	2.5	10.0	7.74	0.64
United Kingdom	1846	524	104	3.0	3.4	4.2	4.6	0.7
United State	32,118	4052	630	10.5	7.5	13.5	7.0	1.5

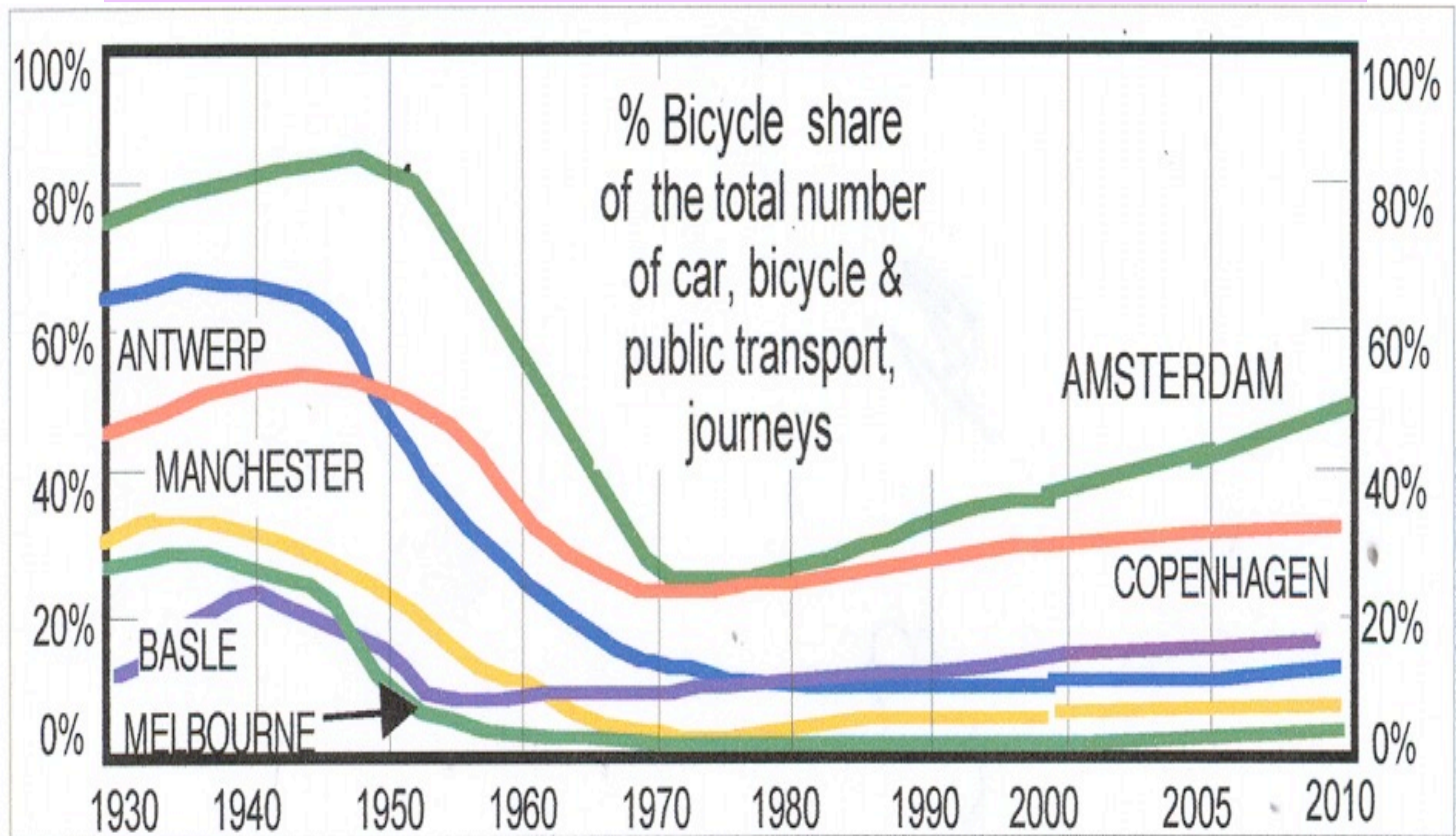


# Table 3 Number of road deaths 2009 to 2010 the Netherlands.

Road traffic	No of Deaths 2009	No of Deaths 2010	Change 2009 -2010
All types of traffic	720	640	-%11
All cyclists	185	162	-12%
0 to 15 year old	18	9	-50%
65 years and older	104	93	-11%

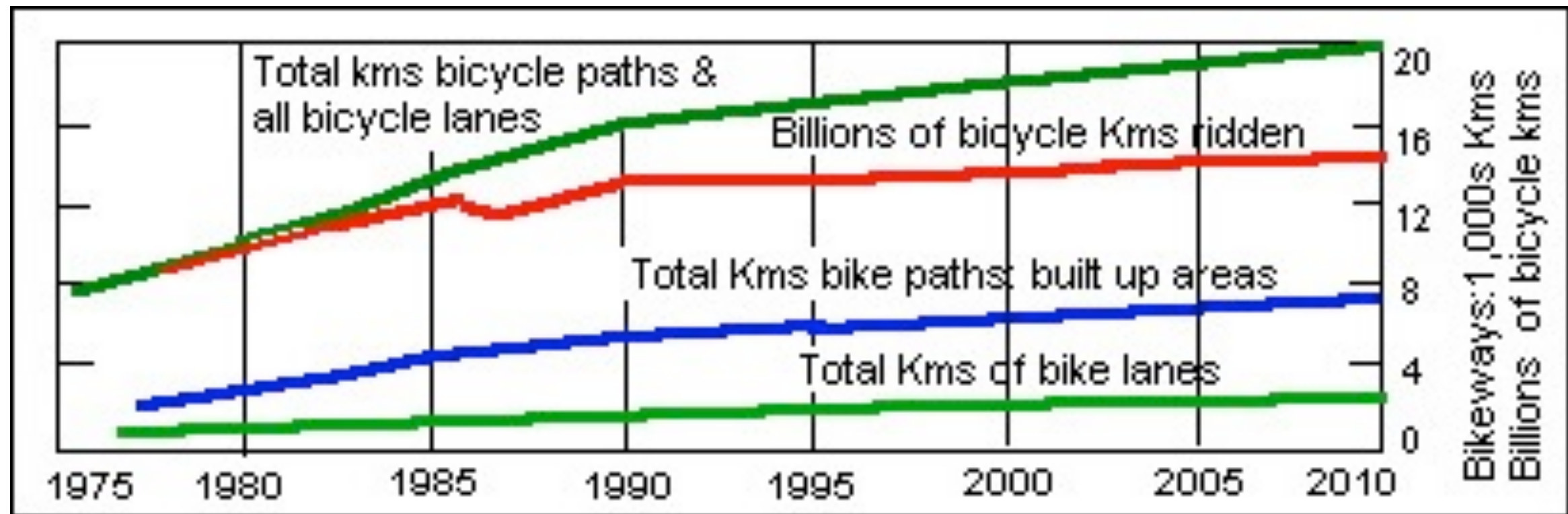


**Figure 3. Selected EU major cities with % of bicycle trips 1930 to 2010.**





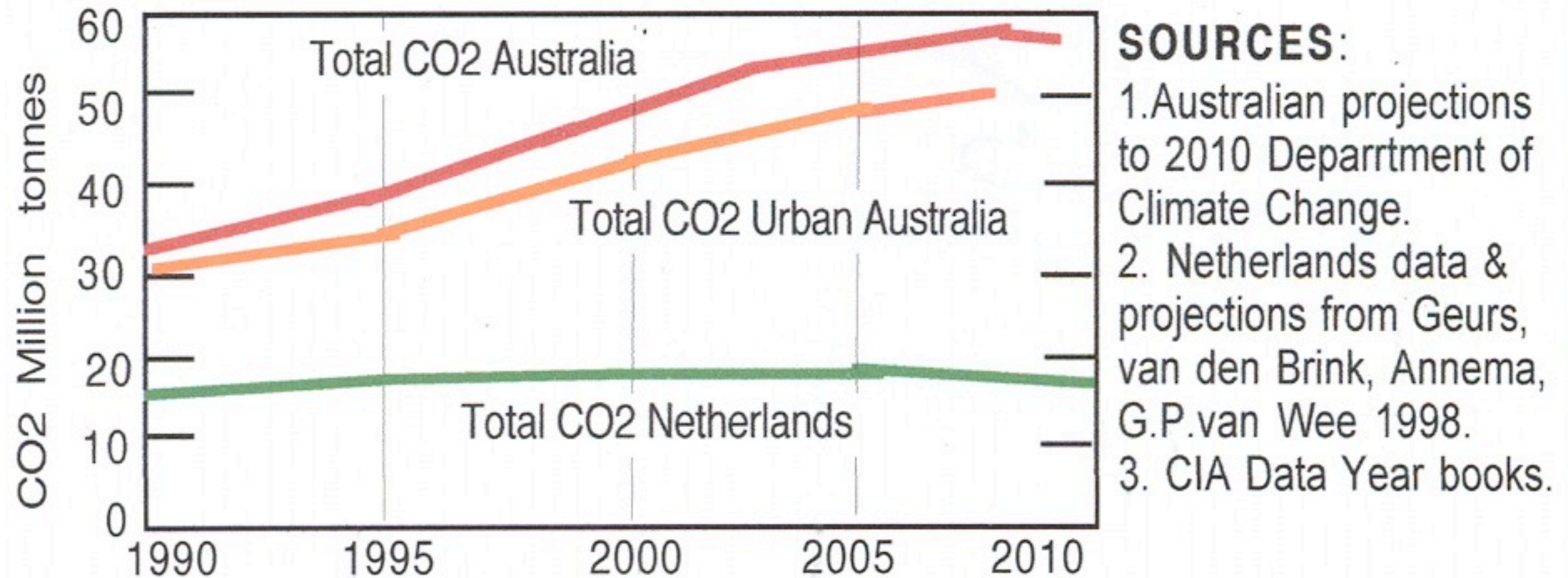
**Figure 4. Bikeways in The Netherlands and bicycle kms ridden.**



The results of Dutch Bicycle planning, are shown above. Note the low proportion of bikelanes compared to bicycle paths. The emphasis in Australia has been on bike lanes on main road with speed limits that are far too high. In the Netherlands the speed limit on main roads with bike lanes is 50 km per/hour. They also make better use of residential streets with 30 km per/hour speed limit.



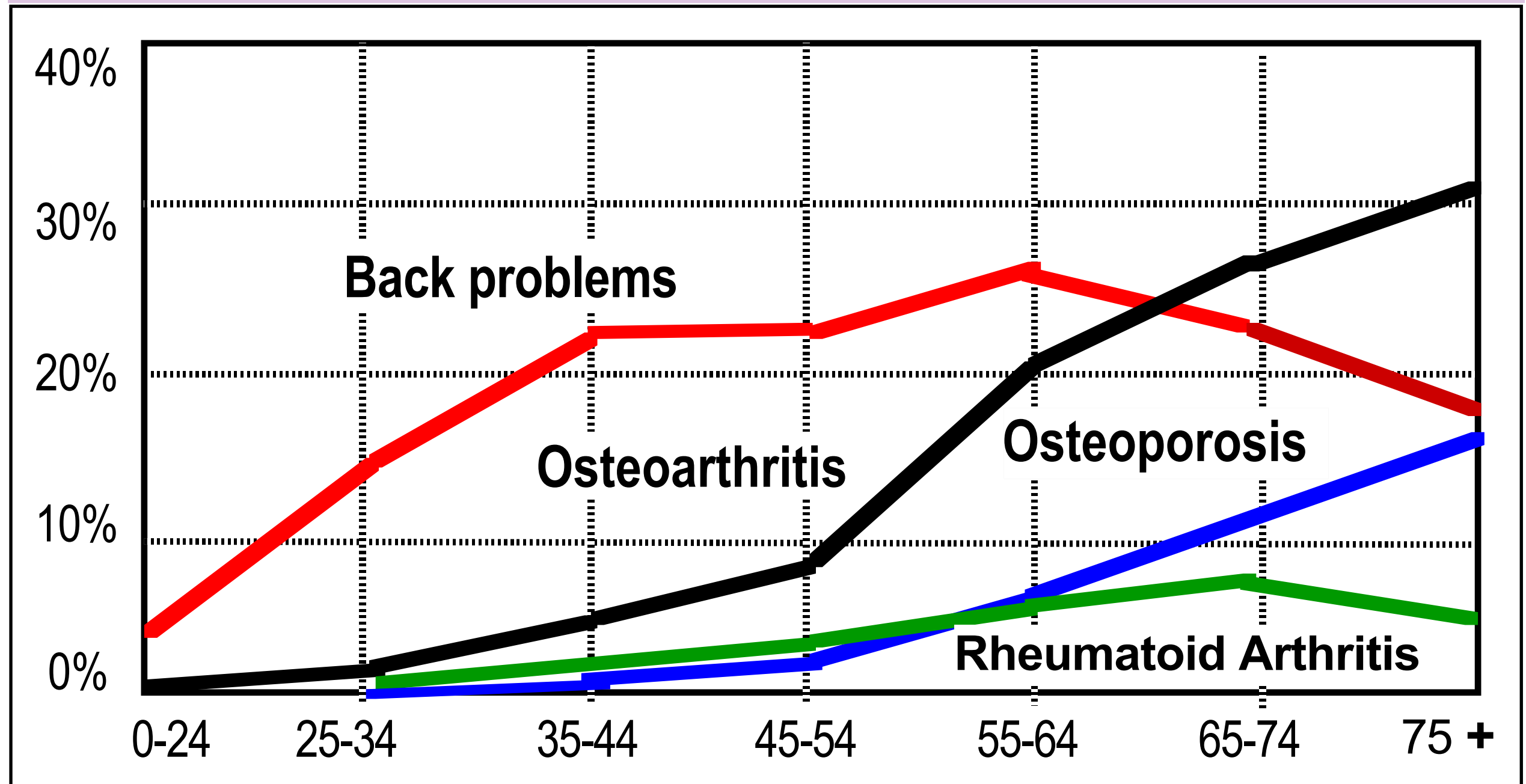
**Figure 5. CO2 emissions Australian & Dutch passenger cars**



- ★ One 250 watt Dutch pedelec avoids on average 900 car km's per year and 80 litres of petrol.
- ★ The average medium size Australian car would use 150 to 200 kWh and emit around 3 tonnes of CO<sub>2</sub>.



## Figure 6. Musculoskeletal common condition



The proportion of ailments helped using 2 and 3 wheeled pedelegs . Other ailments helped are MS, lung heart and muscle conditions, obesity, alcoholism and chronic fatigue syndrome.





**Figure 7.** With a step-through frame this pedelec is easy to mount for people with painful leg Joints, hips and backs. SOURCE : ETRA (2008)



## ROVER assist FDB 166

### Specification

Frame type	Fold up
Tyre size	16 inches
Assistance range	24 km
Assist cuts out at	24 km/h
Motor type DC	24 Volt
Rated output	235 watt
Battery type	Lithium Ion
Battery capacity	63.9(Wh)
Charging time	2 hours
Auxilliary battery	A\$126
Running distance	32 km
Weight total	18.5 kg
Gearing	6-speed
Date sold	2005
Price	A\$ 1400

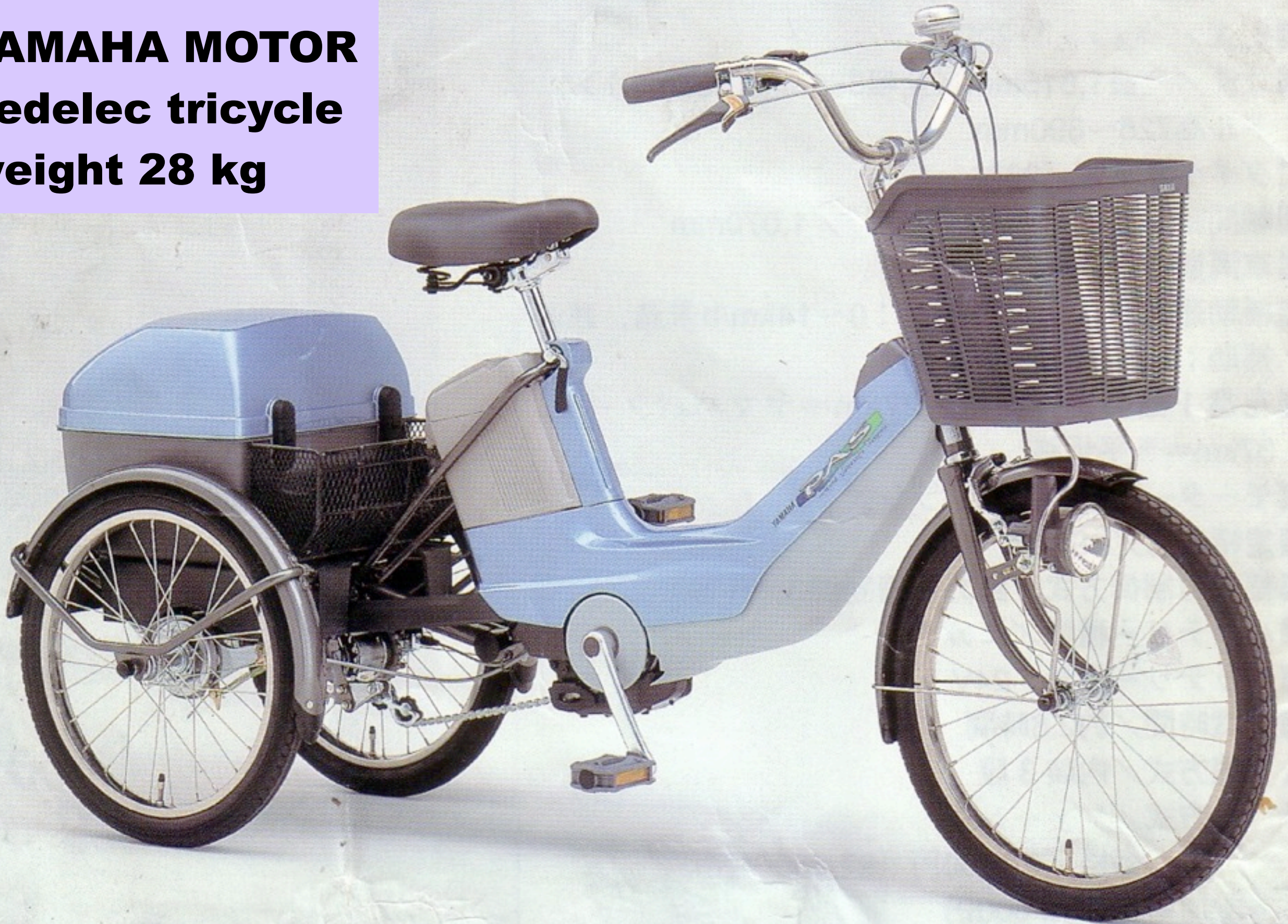
Battery

Fold up





**JAMAHA MOTOR**  
**Pedelec tricycle**  
**weight 28 kg**





Health & road  
safety experts  
need to work  
together.

To encourage the use  
of pedelecs as the  
“In-between travel,  
option” between the  
car and 3 and 4  
wheeled footpath  
scooters.

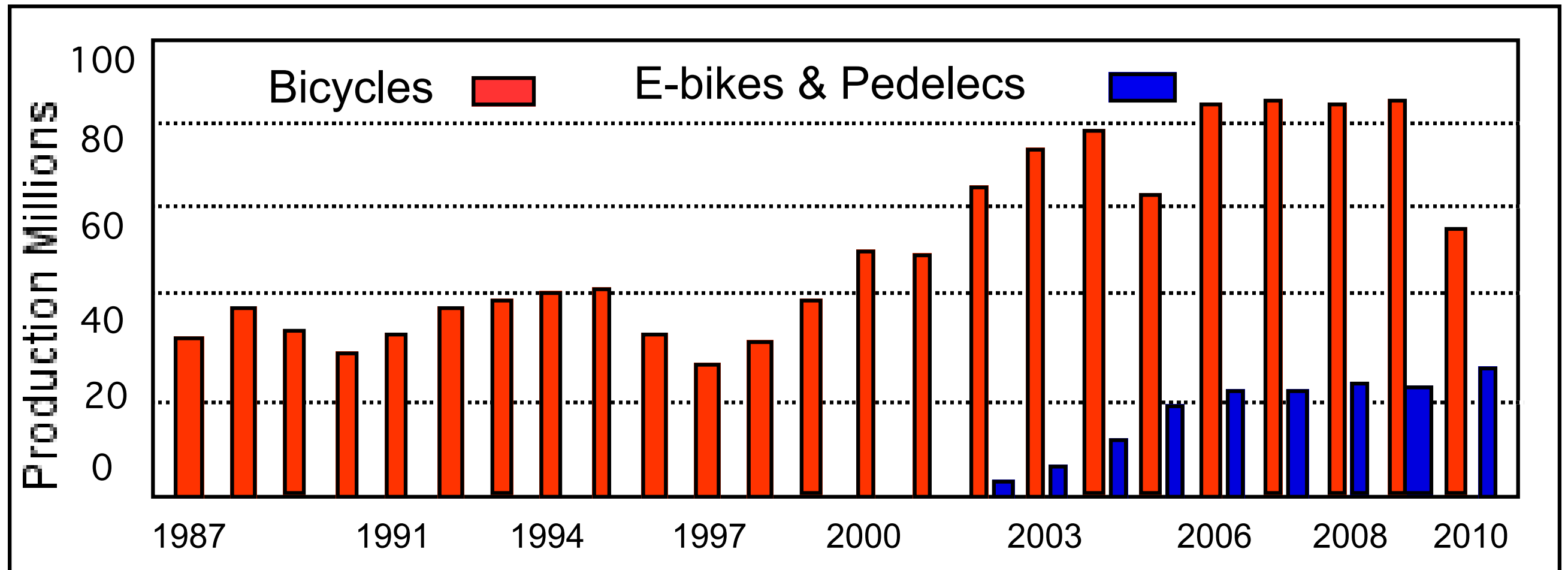


■ Comfort Orthopedic

**Expanded Plant In Mainland China;  
Production of Manual & Electric  
Wheelchairs Boosted**

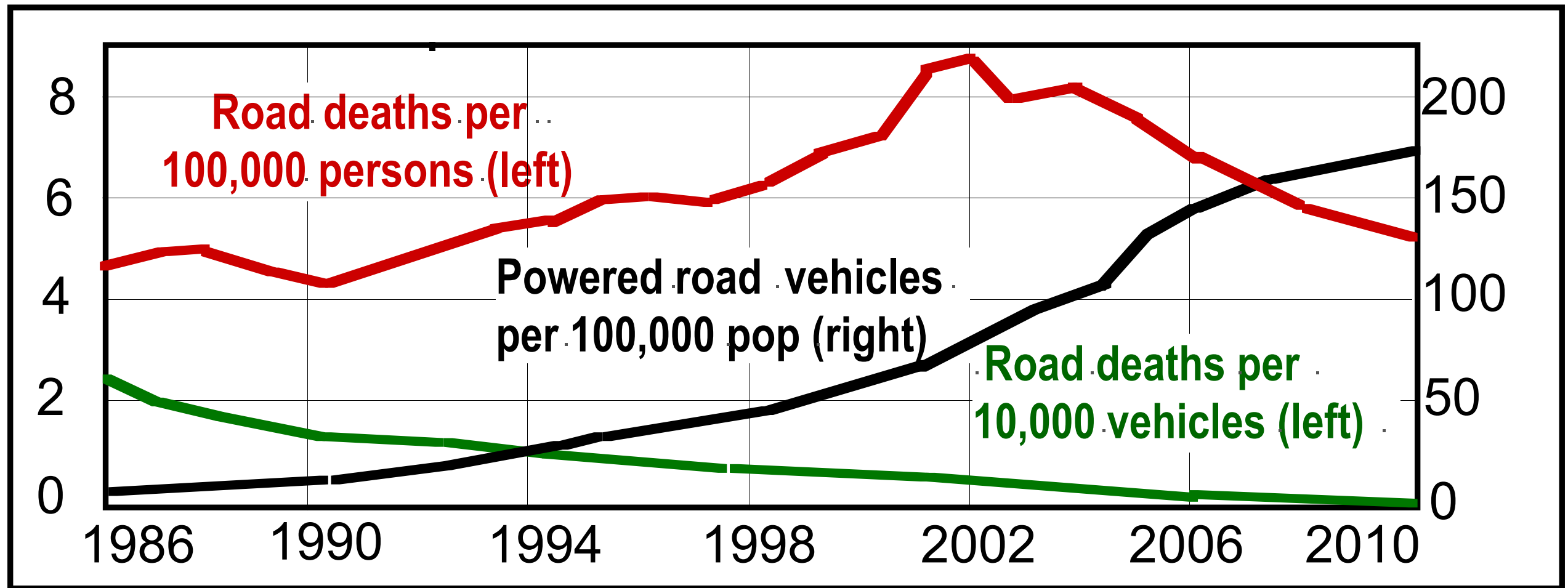


# Figure 8. China growth of bikes and E bike sales



- ★ Greater use of pedelecs is now planned by improving urban bicycle and PT infrastructure and integrating with high speed rail lines.
- ★ Reduce the total road death rate from 6.2 in 2008. by constraining the demand CO2 imports of oil and cars.

Figure 9. China road death rates and growth in road vehicle.



**Source.** Ministry of Public Security for all road traffic accidents and deaths within 7 days of an accident.

China, is trying to reduce the road deaths of cyclists, electric bicyclists and pedestrians. Road death rate per 100,000 population was 9.4 in 2002, but has now dropped to 6.2 in 2009.



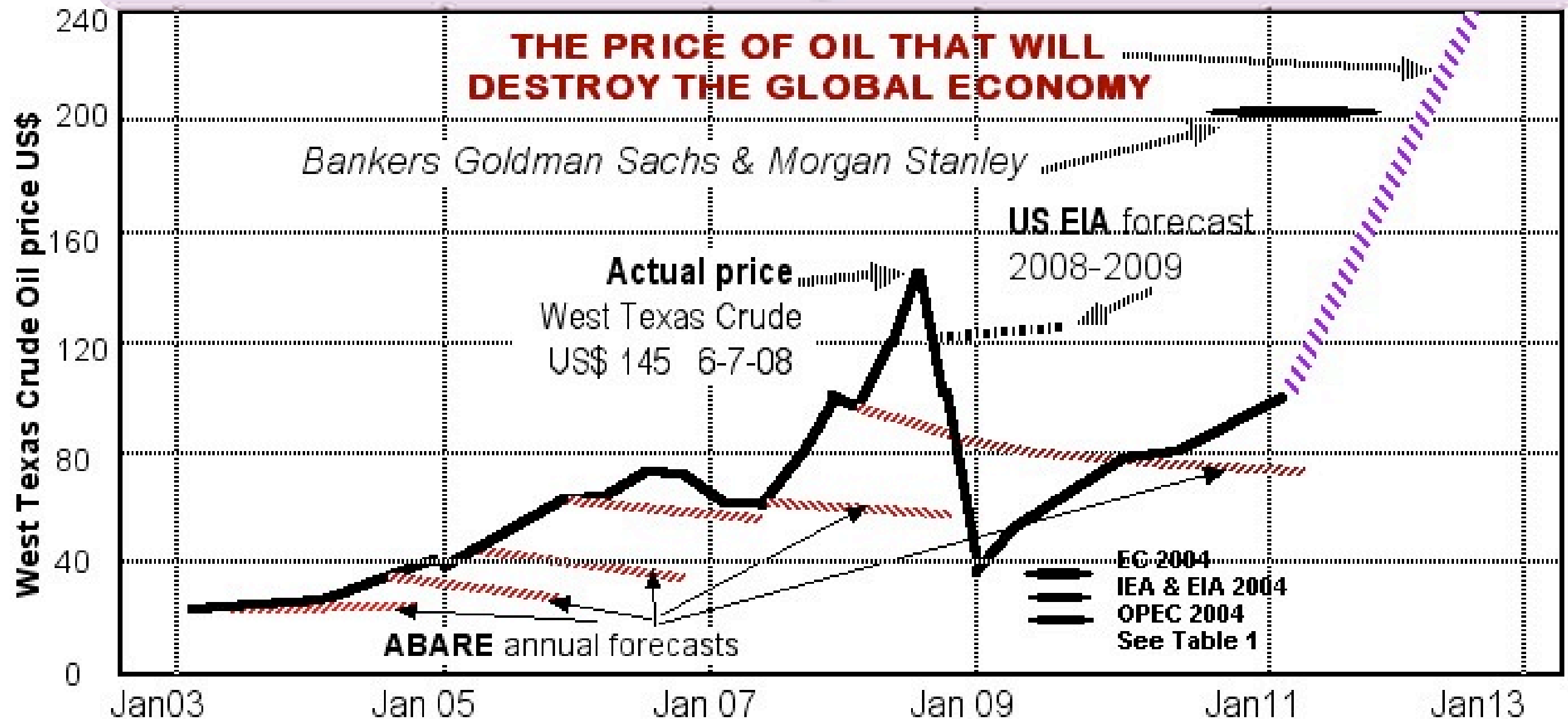
## Table 4. Rail station catchment area data.

Rail & bus station access	Walking	City bicycle	Racing bike	Pedelec or E-Bike
Effort advantage	1	3.1	3.8	1
Speed Km/hr	6.1	20.	25	24
Distance km	0.8	2.5	3.2	7
Catchment area square km's	1.3	12.4	20	40

★ Within a street grid layout that which exists in much of greater Melbourne. Table 4 shows the walking and bicycling distance for the same physical effort of 75 watts for 7.5 minutes. Indeed, pedelec riding, will double or triple the bicycling distance to rail stations.

★ Melbourne has sprawled into the hilly suburbs and 250 watts pedelecs would enable the elderly and young people to cycle more than they do and makes easier to access outer urban stations

**Figure 10. ABARE's recent oil price forecasts the IEA, US EIA and OPEC failure to model a global recession .**



- ★ In Australia ABARE has faith in oil reserve estimates derived from nationalized oil industries of dictatorial regimes. No details about how much oil is extracted from each reservoir, and no external audits.
- ★ Meanwhile, US, EU Japan, China and India reduce oil consumption.



# Conclusion and recommendations

★ This paper proposes that government enables 250 watt pedelecs to be imported to reduce CO2 emissions, air pollution. Enhance the mobility of the young, elderly and disabled, by adopting the new EU safety regulations and dumping States' regulations that are obsolete.

★ China, Japan and EU countries are leading the way by introducing pedelecs, energy efficient hybrid cars, and faster rail transport. Indeed all are trying to risk manage 4 serious problems they share with Australia: global warming, oil depletion, population growth, congested cities and all need solutions.

★ Fatih Birol of the International Energy Agency has called for action on the use fossil fuel based production of electricity, oil supplies peaking and dangerous increase of global warming. In Australia road congestion is growing worse.

★ China, Japan and the EU can mass produce safe pedelecs to EU safety standards. Australians young and old should be able buy them

# Recommendations

- ★ **Scrap state 200 watt electric bicycle regulations that restrict consumer choice and adopt the new China/EU Pedelec regulations, by early 2012. A small but significant step towards a sustainable transport system.**
- ★ **Ensure that all new & existing transport infrastructure projects include the mobility needs of elderly people.**
- ★ **These recommendations should form part of a revision to the National Australian Cycling Strategy**
- ★ **The Australian Bicycle Council should be funded and staffed to coordinate action on these recommendations and have two yearly reviews of progress being made.**