

AW Briefing

Discussion Debate Networking

Decarbonising The Automotive Industry

CO₂ regulation – Taking The Long View

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CO₂ regulation – taking the long view

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Regulation = increased cost

What does this mean; what are these costs?

Costs =

- Increased expenditure on R&D and product development:
 - More engineering jobs
 - More IPR generated
- More money transferred to suppliers (car makers outsource 60-80%):
 - More engineering jobs
 - More IPR generated

EU leadership

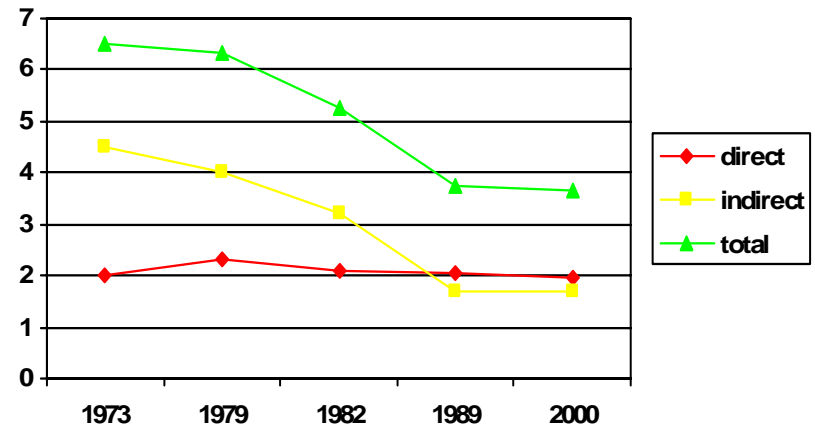
- EU regulatory trajectory increasingly followed by others – e.g. China, India
- If EU leads on CO₂ it can develop IPR for relevant technologies
- Which can then be sold to car manufacturers and suppliers elsewhere

Are these costs?...

...or benefits?

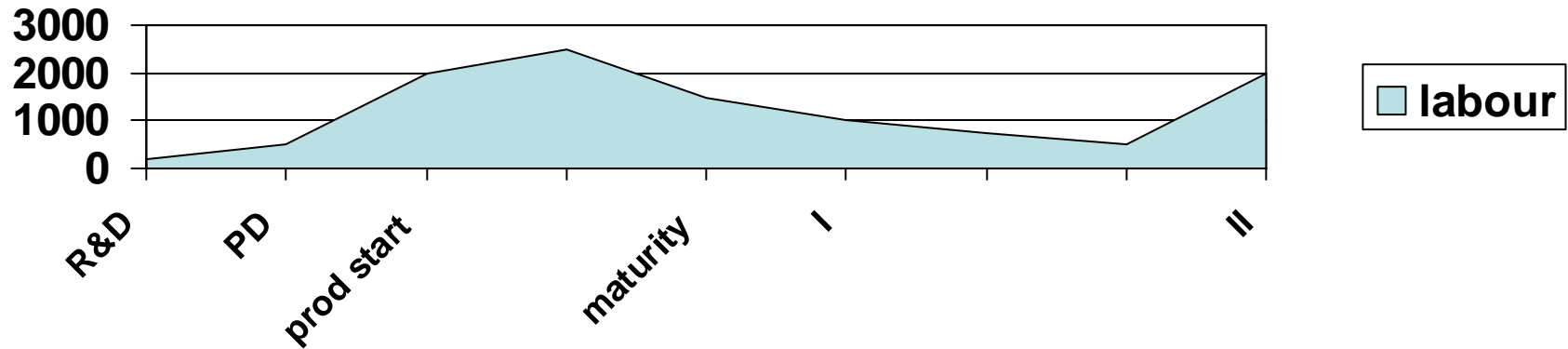
Jobs

- Employment in the car industry has been declining for a long time while markets grew...
- ...the effect of leaner operations, advent of IT, etc. = higher productivity
- Jobs have been created by suppliers: e.g. emissions control = cost to car makers, but jobs for makers of catalytic converters



Graph: employment in motor industry (millions) 1973-2000; source: Andera 2007

Typical labour input over product lifecycle



1. R&D – low level of highly skill labour
2. Product development – higher level of highly skilled labour
3. Production start – high level of semi-skilled labour
4. Maturity I – increasing automation reduces need for labour
5. Maturity II – move to low labour cost locations

Lesson: repeat phases 1 and 2 regularly to:

- Retain value added
- Retain high quality jobs
- Retain competitive advantage

e.g. Johnson Matthey

- Banking and commodities (precious metals)
- Now one of the largest suppliers of catalytic converters:
 - **IPR generated**
 - **Jobs created**
 - **Profits generated**

commodification

Business as usual

- Danger of commodification
- Hence erosion of margins
- Loss of differentiation

Tighter regulation Avoids commodification by:

- Increasing engineering input
- Enhancing added value
- Enhancing differentiation
- Enhancing margins

130 g/km – a challenge?

A recent advertisement by European Federation for Transport & Environment highlights the apparent lack of technological progress

1948: 7.5 litres/100km



2008: 7.5 litres/100km



60 years of progress?

MEPs – It's time to shift fuel efficiency up a gear.

**Vote for 120g CO₂/km by 2012
and 80g CO₂/km by 2020.**

www.forlesspollutingcars.com

1948 Volkswagen Beetle (Type 1), 7.5 litres / 100km 'Average running', source: Volkswagen Type 1 'Instruction Book', pp. 5, 1948; 2008 Volkswagen New Beetle 1.6 Petrol, 7.5 litres / 100km (EU combined), source: www.volkswagen.de



130 g/km is not rocket science; available today:

Manufacturer	Models	CO2 (g/km)
BMW	MINI d, 316	
Citroen & Peugeot (PSA)	C1, C2, C3, C4, 1007, 107, 207, 206, 307	109-129
Fiat	Panda, Grande Punto	114-122
Ford	Fiesta, Focus, Focus C-Max	114-129
Honda	Jazz, Civic Hybrid	109-129
Hyundai-Kia	Amica, Picanto, Rio, Cerato	121-129
Mazda	2, 3	124-128
Mercedes-Benz, Smart	A-class, For2, For4, Roadster	90-128
Mitsubishi	Colt	126
Renault & Nissan	Clio, Modus, Megane, Micra	115-126
Opel-Vauxhall	Corsa	124
Toyota-Daihatsu	Aygo, Yaris, Prius, Charade, Sirion	104-127
Volkswagen, Skoda	Polo, Fabia	124-127
Volvo	C30 1.6d, S40 1.6d	129

The problem of averages



130 g/km is not rocket science; < 80 g/km might be – for today's car industry at least

The most fuel efficient vehicles you can buy today (around 80-90 g/km) are very small ... and far from any average today's customers would find acceptable



Technically 130g/km is possible, but it may create a split in the market...

130 g cars

- Current 130g cars
- Current 150g cars with reprogrammed engine management software
- Current 180g cars with improved powertrain

All at low or zero cost over today

Larger cars

- In order to contribute to the average of 130g these will have to become
 - much lighter – use of **esoteric materials**
 - Much more energy efficient – **alternative fuels & powertrain** (e.g. IC-electric hybrid)

At considerably higher cost compared with today

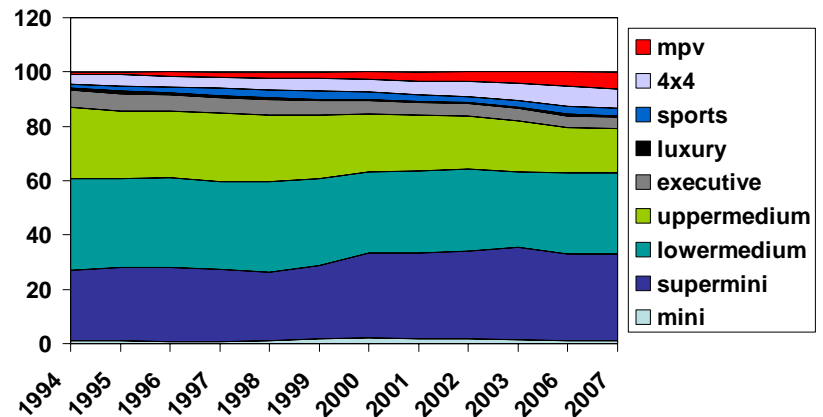
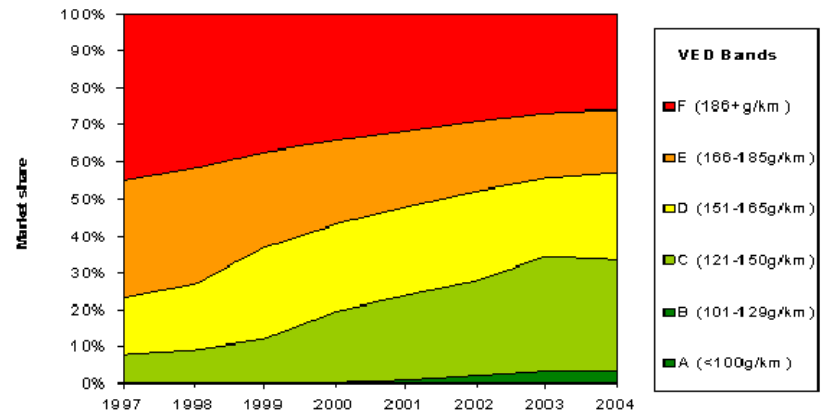


Industry often blames the customer.

But (s)he can only choose
from what is available.

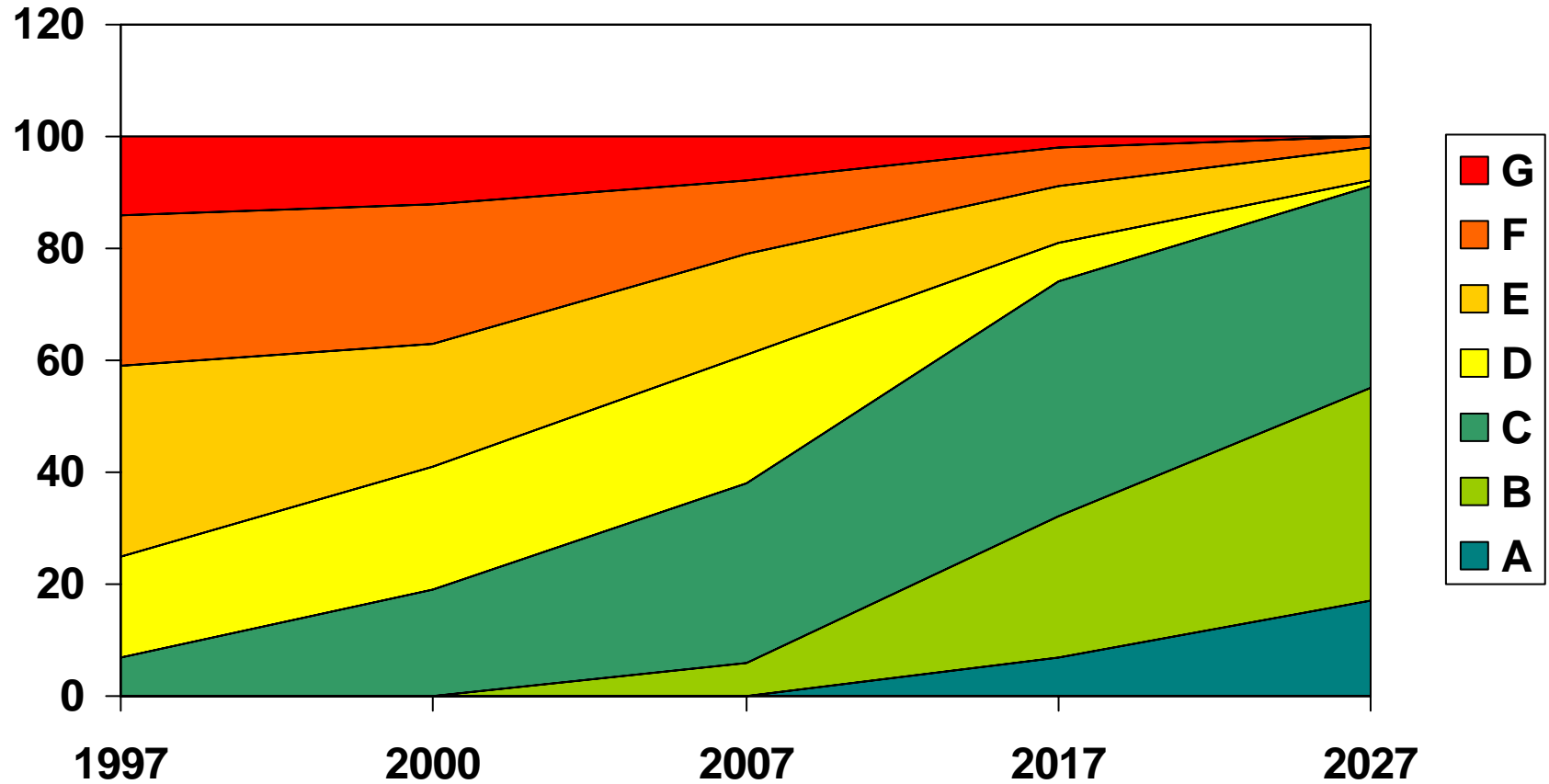
Incentives can work – e.g. UK

- CO₂-based road tax (VED) regime
- CO₂-based company car taxation system
- Incentives for alternative fuel vehicles
- Fuel price escalator (dropped 2000)

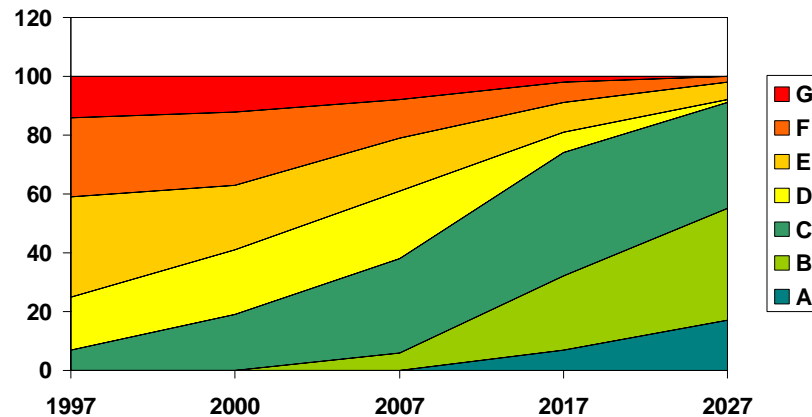


So how would this pan out under the forthcoming CO2 regime?

VED band split forecast to 2027



Rationale



- Vehicles currently in Bands D and E can mostly be adapted to meet requirements for band C, hence these segments will be squeezed
- Band G will disappear, but F will survive to accommodate the few remaining ‘gas guzzlers’, together with the smaller bands D and E.
- New product will be developed for bands A and B. Band A will see new plug-in-hybrids and very light-weight IC vehicles

10 g/km 'by other measures'

- Other technical vehicle measures should be part of the 130g/km effort.
- Low rolling resistance tyres and low friction lubricants could become the mandated standard
- Biofuels, hydrogen, etc.:
 - No or low incentive for flex-fuel vehicles
 - Lower fuel duty for biofuels and H₂ certified as sustainable
 - =>Incentivise fuels not vehicles (better guarantee that lower carbon fuels will actually be used)

Are the changes needed too radical?

- For car makers - *yes*
- For consumers - *possibly*
- For government - *yes*
- For NGOs – *no*
(it is not their money)

Reasons/excuses:

Cost

Car makers lobbying

Jobs

Society's innate conservatism

FoE survey shows consumer support

(source: www.foeeurope.org/cars/Poll/Results_by_country.pdf)

Question	Yes (%)	No (%)
Fuel prices affect my household finances	72	22
Fuel consumption is now most important buying factor after price	64	36
Measures to make car manufacturers reduce fuel consumption by 25% should be introduced urgently (and most say they are prepared to pay 6-20+% more for these cars)	87	11

Industry's choices are limited:

Environmental regulation is Inevitable; it reflects social concerns and priorities

Compliant

- Try and fight regulation
- Respond to regulation once introduced

Strategic:

- Try and shape regulation
- Lead solutions and shape markets to your competitive advantage

e.g.:The US market – who makes money?

Environmentally strategic

Toyota

Honda

Environmentally reactive

GM

Ford

The future - Unpredictable?

the future does not just happen; we make the future today



Paul Nieuwenhuis 2008

An opportunity to move towards a more sustainable car industry

- Radically change the product
- Radically change the business model
- Reward people as much for meeting environmental and social as financial targets



If we are guided by sustainability

- **Our vehicles could be:**
 - Lighter
 - More fuel efficient
 - More fun to drive
- **Our car makers could be:**
 - More profitable
 - Less material dependent
 - More sustainable
- **Although:**
 - Car use may be more restricted
 - And we may not be able to replace them as often
 - Car makers would make fewer cars and sell mobility services tailored to customer needs and wants
 - Existing players unable or unwilling to adapt will disappear

(Picture courtesy of Velonova, NL)



The End – Thank You For Your Attention

