

Discussion

10-00031 The four major rivers restoration project in South Korea by Jong-Ho Shin and Jae-Yong Chung (February 2011)

Contribution by Nigel Somers

The project is massive and involves significant management and leadership which must be inspiring to the authors and contributors.

Could the authors please confirm the hydropower output, which seems unusually large at 278 GW, which suggests an average installed plant capacity of 18 GW at each of the 16 dams?

I also note that local medium and small contractors have been used for much of the works. Construction of dams in major rivers and of power stations requires experienced contractors to avoid programme delays, cost overruns and good health and safety outcomes. How were these factors considered in the appointment of contractors?

Author's reply

The figure of 278 GW was meant to indicate the annually generated electric energy, and should have been written 278 GWh. The total installed capacity in the 16 dams is about 59 MW. Each dam's capacity is shown in Table 4.

As can be seen in Tables 4 and 5, the generators and turbines are being supplied mainly from Austria and the Czech Republic. Many highly skilled engineers, who have experience of plant construction overseas, such as in the Middle East and Asia, are involved in the project.



The Yeosu dam on the Han River in South Korea will have a 5 MW Austrian-built hydropower plant – the largest capacity being used on the 16 new dams

Table 4. Generator suppliers

Dam	Generator manufacturer, country	Type	Capacity: MW
Han	Ipo	Synchronous generator	3.0
	Yeosu		5.0
	Gangcheon		5.0
Geum	Buyeo	Synchronous generator	2.6
	Geumgang		3.0
	Geumnam		2.2
Yeongsan	Seungchon	Induction generator	0.8
	Jiksan		1.2
Nakdong	Haman	Synchronous generator	5.0
	Hapcheon		5.0
	Dalseong		2.8
	Gangjeong		3.0
	Chilgok		5.0
	Gumi		5.0
	Nakdan		5.0
	Sangju		5.0

Table 5. Turbine suppliers

Dam	Manufacturer, country	Type
Han	Ipo	Pit-type, kaplan
	Yeosu	Bevel gear-type, kaplan
	Gangcheon	Pit-type, kaplan
Buyeo		
Geum		
Geum	Geumgang	Pit-type, kaplan
	Geumnam	
Yeongsan	Seungchon	Mavel, Czech Republic
	Jiksan	Gugler, Austria
Nakdong	Haman	Andritz, Austria
	Hapcheon	Mavel, Czech Republic
	Dalseong	Andritz, Austria
	Gangjeong	Mavel, Czech Republic
	Chilgok	Andritz, Austria
	Gumi	Gugler, Austria
	Nakdan	Mavel, Czech Republic
	Sangju	Andritz, Austria

10-00015 **A1 Wetherby upgrade: lowering the impact of highway engineering**

by Wayne Metcalfe (November 2010)

Contribution by Barry Walton

How did the cost, in just six paragraphs and 2.5 years, rise from £43 million to £71 million?

Author's reply

The two numbers are not comparable. The £43 million figure is the construction target cost, the £71 million figure is the overall scheme cost. The scheme was actually delivered within 10% of the original agreed target cost and within the final agreed target cost.



The NEC-procured A1 Wetherby upgrade was delivered within 10% of the original agreed target cost of £43 million

09-00047 **The history of British motorways and lessons for the future**

by John Wootton (August 2010)

Contribution by David Bond

It is concerning that this paper accepts so uncritically the notion that because road transport has dominated the transport scene since the 1950s, it must therefore continue to do so 'into the distant future'. The paper fails to acknowledge the mounting social, economic and environmental pressures arrayed against further growth in road transport, which are now major determinants of transport policy themselves. The very fact that road transport has become so dominant is now under question as to its basic desirability. Many would challenge the assertion that this trend should continue and would argue instead that we have a responsibility to reduce our excessive dependence on this single, resource-hungry mode of transport.

The English-speaking countries are unique in the extent to which they have fostered this unhealthy dependence. Other developed-world countries have generally been far less hasty to throw all their eggs into the 'roads basket' and now offer us a better blueprint for the future than further attempts to out-build congestion. 'True-cost charging', which the author advocates, would greatly help in countering some major market-distortions which have favoured road transport in the past.

Author's reply

I suspect that both the contributor and I have similar concerns about the social, economic, environmental and safety impacts of increasing road travel, though we seem to advocate different solutions. The concerns are not new, the problems were foreseen and expounded by Sir Colin Buchanan in *Traffic in towns* (Buchanan, 1963) and in 1967 even I wrote, 'the freedom offered by the motor car is counteracted by growing congestion, parking deficiencies and rising numbers of accidents. Side effects are also evident: decreasing patronage of public transport and a changing environment.' (Wootton and Pick, 1967).

My concern is that the 1998 government white paper (DETR, 1998) and subsequent 10-year plan (DfT, 2000), which are essentially still the present government's policies, do not produce a viable solution to solving the perceived social, economic and environmental problems. The patterns of movement and where people live and work are so dispersed that the emphasis on widening choice through improved public transport and cycling, largely promoted by self-interested parties, provide at best a marginal solution on long time-scales.

Britain has a road-based economy which will continue for the foreseeable future and the question is how do we shape and control road use to ameliorate the problems arising from high levels of use. In my paper, I advocated a more direct and positive approach and proposed that motorists should pay directly for their use of roads. Space did not allow a full discussion of other solutions. For example, why do we prefer to subsidise an unviable bus route when it would be better, both socially and environmentally, to ensure that a village post office is not closed? Such questions and answers do not form part of present transport policy.

The contributor hints at one of the several myths that are written into current folklore, namely that new roads generate traffic. Building new major roads is, at most, of third-order importance in generating traffic. The primary causes of traffic growth are the growth in population, the number of vehicles and the use people make of them. The paper by Wootton and Pick (1967) researched these causes and the results of that paper continue to be the foundation on which the Department for Transport's current models for forecasting traffic growth are based.

Looking to the future, demographics indicate that traffic will continue to grow though I expect it to slow and for car ownership to be levelling out in the 2030s, providing there is not a surge in population growth. We will have a road-based economy for a long time to come.

Contribution by Michael Scott

Regrettably, the history of road construction in the UK in the twentieth century is little to be proud of. The very laudable 1909 Road Fund was not ring-fenced and has been continuously plundered to such an extent that the UK arterial road system is more third-world than first. The proposed basic motorway network has never been achieved and, worse still, it appears it never will be achieved.

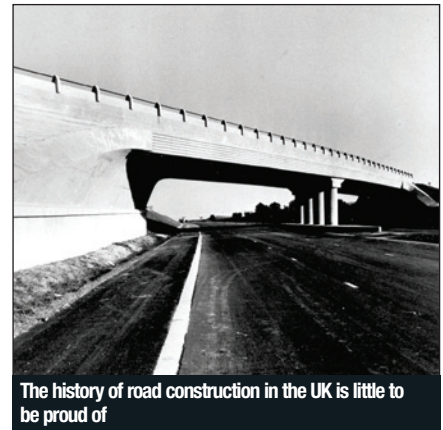


Britain should reduce its excessive and unhealthy dependence on road transport

The design and construction of the first motorway sections to be built demonstrated a lamentable lack of skills and knowledge in the construction and performance of the materials needed for strong highway pavements and shoulders. Not until 1979 in Northern Ireland were shoulders constructed to carriageway standards. Similar shortcomings followed in applying drainage methods. There seems a historic civil service reluctance to learn from others at top levels and to implement the best proven international standards rather than create lower quality home-grown ones.

Grade-separated arterial roads are safe and efficient, carrying a continuous flow of traffic up to their capacity, whereas at-grade facilities are constrained by side friction and unsafe intersections to less than 50% of their grade-separated capacity. Even arterials such as the A1 are constrained to less than half their potential capacities, yet to its shame government seems happy that congestion burns excess fuel and provides more tax revenue than efficient safe roads would.

It seems so many gross fundamental errors have been made in the UK regarding transport, possibly because those responsible are reluctant to admit the errors of the past. They need to restart with a clean sheet to provide a true national highway network such has been done on continental Europe and is now being done by China, India and other developing countries. Yet the UK gives aid to the third world for infrastructure improvement but fails to do the same for its own taxpayers, who must just make do and muddle along.



The history of road construction in the UK is little to be proud of

Author's reply

The contributor highlights an important issue: the funds are simply not available for the changes that need urgently to be made. Indeed, the current debate about the High Speed 2 railway illustrates the problem: while funds are unavailable there will be no High Speed 2, no third London Airport or improvements to UK road networks.

Interestingly, UK road transport paid over £35 billion in vehicle and fuel duty (excluding VAT) to the Treasury in 2005, while the Treasury paid out £3.3 billion for national roads, £4.9 billion for local roads, £2.4 billion in bus subsidies and £6.3 billion in rail subsidies. In addition, neither bus nor rail services paid full fuel duty. It may also surprise readers to know that UK motorists are the only group of people who pay more in taxes than the cost of the annual carbon dioxide emissions (£6.4 billion based on US\$85 per tonne of carbon dioxide) they produce.

As advocated in the original paper, a vision is needed for the UK's future road network that is applied rigorously, consistently and funded over a long time. The political vision needs to be broader than just roads, but equally long-term and consistent.

At present, however, all one can see is a transport policy that is out of kilter with real-world behaviour, offering solutions that will only marginally ameliorate the disbenefits of traffic growth. But where do the funds come from? The current tax paid by motorists can clearly pay for a better transport system and, perhaps like the contributor, I would prefer to see a large part of it hypothecated, in some way, to financing a long-term future vision. This should enable a direct relationship between provision and service to be put in place across all modes.

Otherwise, we seem set to go round in circles with little improvement to transport infrastructure and provision for the foreseeable future.

References

Buchanan C (1963) *Traffic in Towns*. Her Majesty's Stationery Office, London.

DETR (Department for Environment, Transport and the Regions) (1998) *A New Deal for Transport: Better for Everyone – The Government's White Paper on Transport*. The Stationery Office, London.

DfT (Department for Transport) (2000) *Transport Ten Year Plan 2000*. The Stationery Office, London.

Wootton HJ and Pick GW (1967) A model for trips generated by households. *Journal of Transport Economics and Policy* 1(2): 137–153.

09-00016 Eurocodes in Britain: the questions that still need answering

by Alasdair Beal (February 2010)

Contribution by Wolfgang Hazivar

I found this paper very interesting and in a certain way comforting – it describes the situation concerning the application of Eurocodes in Austria perfectly. Indeed, the language problem for us is even worse because translations of the English original versions into German are often very bad and sometimes completely incomprehensible. This results from computerised translations or translating by professional interpreters without support from geotechnical engineers. More than once the Austrian Standards Institute (ASI) had to refer to the English version to understand what was meant in the German text. I have circulated the paper at a recent ASI seminar to help raise awareness of the problems.

Author's reply

The language problems in the German editions sound serious – translation would probably have been easier if the English Eurocodes had been written in standard UK English.



Eurocode language problem in Austria is even worse than in the UK

Full versions of these and other discussions can be read in the supplementary data to the online versions of the relevant papers and articles at www.civilengineering-ice.com.