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THE ECONOMIC SIGNIFICANCE OF CYCLING

Costs & benefits calculations: Bicycle policy is worthwhile globally

Key Facts

Several analyses into costs and benefits show that using a bicycle as an urban means of transport is higher than the corresponding cost of cycling policy projects. A cycle track and cycle park place programme for the Dutch city of Amsterdam shows a cost-benefit value of 1:1.5 a programme for Morogoro (Tanzania) 1:5, the cycle track masterplan of Bogotà 1:7, and an important road rebuilding project in the Indian city of Delhi even at 1:20.

Contents

According to an investigation in the Netherlands financed by the city of Amsterdam cycle traffic compared with other forms of transport produced 8 definite advantages: (1) fewer investment and running costs, (2) better accessibility and with it shorter journey times, unnecessary tail-backs and less road space needed, (3) better quality of life and a boost to the urban economy, (4) improved environment by less air pollution and noise, (5) more exercise and therefore fewer heart and vascular diseases, diabetes and high blood pressure and in future less time off work and fewer doctor’s fees. (6) fewer injuries from accidents, (7) more job prospects because in poorer countries for example, using a bicycle makes new jobs more available for the rural population, (8) and using a bicycle leads to reduced travel costs and improves individual mobility everywhere.

Within the transport system world-wide bicycles are distributed quite differently. Whereas only every 66th inhabitant in Indonesia has a bicycle, statistically speaking, the inhabitants of the Netherlands, Denmark and Germany are almost fully supplied with bicycles (Table 1). Whilst bicycles in India or the Philippines cost on average a quarter of one’s annual income, the Japanese can buy 168 bicycles with their annual income (Table 2).

The economic advantages of cycling were calculated and carried out in case studies in four quite different cities. Amsterdam in the Netherlands was examined as representing a wealthy city, Bogotà in Columbia as a city with a medium income level and the two poor cities, Delhi in India and Morogoro in Tanzania (cf. Table 3).The building of further cycle parks and the completion

of the cycle track network was planned for the Amsterdam region whose 1.5 million inhabitants already cycle to 27% of all their destinations. The setting up of 250,000 additional cycle parks costing *f* 375 million (170 million Euros) will reduce the cyclist's average time looking for a park by 4 minutes. Cycle traffic thereby increases by 10%. Completion of the network of cycle tracks on main roads as well as the redevelopment of cross roads and junctions for a total of 68 million Euros will speed up cycle traffic by 3 km/h and will lead to a 3% growth in cycle traffic. The increases occur at any time, for example up to a half from cars and public transport. The annual use of both these forms of transport amounts to 17 million Euros because the resultant costs of motor-traffic are decreased: by 3 million Euros for health costs, 0.6 million Euros for air pollution, 0.8 million Euros for noise, 2.6 million Euros for safety, 3.4 million Euros for protection form theft ands 7 million Euros for travelling time (at 4 Euros per hour): costs & use ratio - over a 20 year period - amounts to 1:1.5.

The main problem with Bogotà, Capital of Columbia with 6 million inhabitants are tail-backs. Up to now Bogotà has a proportion of cycle traffic of only 0.6%, bus-traffic is 56% (22% on foot, 15% by car). Bogotà is flat, the distances are short and permanent bicycle use is high. The planned construction between 1999-2009 of a 300 km long cycle track network will cost $ 178 million (167 million Euros) which will bring about 843,000 additional daily journeys by bicycle. Because of the improved road safety aspect its use is expected to increase 7-fold.

In Morogoro, Tanzania with a population of 200,000 the only available 20 km of tarmac roads are very unsafe because people drive on them at high speeds. 65% of all journeys are done on foot, 20% on bicycles, 11% in minibuses and 4% jointly on mopeds and in cars. When the planned extra 15 km of roads are asphalted and the cycle traffic in the traffic planning "is forgotten" then cycle use in the next few years might be halved because of the increasing danger. A $1,260 million (1180 million Euros) programme to provide 35 km of roads with cycle tracks and other necessities could help raise the proportion of cycle traffic from 20 % to 25 %, because of the reduced costs of cycle traffic with 5-fold greater use.

In the Indian capital Delhi, with a population of 13 million including numerous destitute immigrants, there are 320 bicycles per 1,000 households and about 25 % is cycle and rickshaw traffic on all journeys (without footpaths). An examination was made to equip the Vikas Mark main road (which is 9 km long and 45 m wide and which up to now is used in a disorderly fashion by all road users) with cycle-tracks and a bus lane costing 236 million rupees (6.5 million Euros). Because of the orderly and safe handling of traffic the costs and benefits alone amount to 1:20. 60% of the calculated use is ear-

marked for time saving, 31% for energy saving, 7% for a drop in exhaust emissions and 2% for road safety.

Publication — *"The Economic Significance of Cycling"* (in English), Appendix "The results of four cost-benefit calculations: Amsterdam, Bogotà, Delhi, Morogoro" compiled by Jeroen Buis and RoelofWittink, The Hague 2000.

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Source: Buis/Wittink: The Economic Significance of Cycling,

Table 1: Bicycle ownership and bicycle density in 24 countries in descending order and numbers of bicycles

Country	**Owner-ship (x1000)**	**Head of population per1 bicycle**	Country	Ownership *(x1000)	Head of population per 1 bicycle	**Country**	**Owner-ship (x1000)**	**Head of population per 1 bicycle**
China	450 000	2.6	France	20 000	2.8	Belgium	5 200	1.9
America	100 000	2.6	Brazil	40 000	3.5	Romania	5 000	4.5
Japan	72 540	1.7	NL	16 000	1.0	Denmark	4500	1.1
Germany	62 000	1.3	Canada	10 150	2.7	Switzerland	3 800	1.8
India	30 800	24.4	Spain	6 950	5.7	Hungary	3 500	3.1
Indonesia	2 300	66.5	Sweden	6 000	1.4	Austria	3 300	2.3
Italy	23 000	2.5	South Korea	6 500	6.8	Finland	3 250	1.5
England	20 000	2.8	Mexico	6 000	13.2	Norway	3 000	1.4

Références du tableau 1 :

1 De fiets in micro en macroeconomisch perspectief geplaast [les déplacements à vélos dans un contexte micro- et macro-économique] Studie verricht ten behoeve van het Ice project Kosten en Baten van Fietsverkeer, J. Fanoy, Goudappel Coffeng 2000

2 EIM, Brancheschets detailhandel in tweewielers [statistiques du commerce de détail des deux roues] EIM 1999

3 The bicycle in Africa: luxury or necessity? [le vélo en Afrique, luxe ou nécessité ?] Velo-city conférence Nottingham, 1993. John Howe and Ron Dennis, IHE, Delft, 1993

4 Hauptgewinn zukunft: neue Arbeitsplätze durch umweltverträglichem Verkehr, [Une chance pour l'avenir : de nouveaux emplois créés par le développement durable dans le secteur des transports], Cames et al. Ökoinstitut, Freiburg, 1998

5 Making Bikes Work for South Africa [promouvoir les déplacements à bicyclette en Afrique du Sud]. Paul S. White in sustainable transport, winter, 1998, ITDP New York

Table 2 : Purchase price and average annual cost of fuel and maintenance (operational costs) of vehicles in relation to income per capita in 1992 (in US $)

		Bicycle		Rickshaw		Motorbike		Car		Income per head
City	Country	Price	Oper.	Price	Oper.	Price	Oper.	Price	Oper.	
Phnom Penh	Cambodia	40	3	60	5	1690	174	25100	600	200
Kanpur	India	53	15	128	85	1200	349	6400	1000	200
Surabaya	Indonesia	138	20	150	30	1480	183	24600	820	610
Manila	Philippines	176	16	255	31	1760	147	31300	1130	740
Chiang Mai	Thailand	178	16	790	32	1520	239	19800	1280	1580
George Town	Malaysia	180	20	-	42	2000	380	16000	2230	2490
Tokyo	Japan	160	23	-	-	1800	400	12000	2600	26920

Table 3: Statistics relating to the four investigated cities

	Amsterdam	Bogota	Delhi	Morogoro
Inhabitants	800000	6 000 000	13 200 000	200 000
Length/diameter of urban area	1 5 km	50 km	30 km	< 10 km
income per capita per a.	19 000	6600	300	275
trips per person per day	3.7	2.5	1.8 (est.)	1.7
share bicycle trips	28%	0.5%	7%* (1994)	20%
Share walking	26%	22%	32%	65%
Share public transport	15%	56%	42%	11%
Share motorised two wheelers	1%	0.5%	12%	-
Share car + taxi	30%	19%	5%	4%
other	1%	2%	2%	-
share of short trips	60% < 5 km	52% < 7 km	57% < 5 km	74% < 5 km

*including rikshaw