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Article

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Economic and Environmental Studies (E&ES)

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Opole University

Suggested Citation: Platje, Joost (2012) : Why transport systems never will be sustainable, Economic and Environmental Studies (E&ES), ISSN 2081-8319, Opole University, Faculty of Economics, Opole, Vol. 12, Iss. 3, pp. 281-287

This Version is available at:

<https://hdl.handle.net/10419/93194>

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Why transport systems never will be sustainable¹

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Abstract: In this paper, it will be argued that, when current developments in transport systems will continue, they never will become sustainable. An important reason is the priority of economic growth and the support of positive externalities related to properly functioning transport systems, while there is a tendency to neglect negative externalities as they often have no direct measurable impact and may reduce short term economic growth.

Keywords: sustainable transport, transport systems, positive externalities, negative externalities, economic growth

1. Introduction

Transport is fundamental for the functioning of a society. Without transport systems, markets are unable to develop (Smith, 1998 (1776)). While production and consumption will be reduced to almost zero without transport, also the creation of a nation is rather impossible (Rydzkowski and Wojewódzka-Król, 2000). While transport systems are elementary for socio-economic development, the negative external effects in the form of pollution, congestion, excessive resource use, limited energy resources, etc. are well-known problems undermining their sustainability. While the issue of sustainable transport has become an important element of policy (OECD, 1996), the aim of this article is to provide arguments for the hypothesis that under current conditions transport systems will never become, or at most are unlikely to become, sustainable. It is tried to achieve this aim by first discussing transport systems and sustainable

¹ This article was first published in the conference proceedings of the First International Conference on Sustainable Business and Transitions for Sustainable Development (Platje, 2012).

transport, while afterwards providing arguments for the priority of economic growth resulting in neglect of environmental sustainability issues.

2. Transport systems and sustainable transport

As was mentioned, transport is crucial for the socio-economic development of an area. Without a properly developed transport system, cities are unlikely to be able to compete with other cities in the globalizing economy (Castells, 1996). However, the pressure of competition and aim of continuous economic growth is likely require increased mobility, which currently is related to continuous development and expansion of these systems. Without radical innovation and technological development it is unlikely that such development will be sustainable. Increased mobility, without a change in the use of transport mode (which still mainly is the car), puts huge pressure on the environment, the availability of energy resources, the availability of raw materials which are used for transport infrastructure as well as producing means of transport (see International Energy Agency, 2008; OECD, 1996; Platje and Paradowska, 2011).

Generally speaking, a transport system can be interpreted as “a collection of objects (e.g., transport network and infrastructure, transport investment, transport processes in all modes of transport) and the relation between these objects as well as its attributes, using transport policy for the co-ordination of transport systems (Tomala, 1966, 73).” A challenge in supporting their sustainability is that they are complex, are characterized by processes which are not only interdependent but also featured by incomplete and asymmetric information, while the self-regulating power is constrained creating the need for government intervention (Mendyk, 2002: 114).

The notion of sustainable transport systems is derived from the general definition of sustainable development. Such development embraces a good life for current and future generations (WCED, 1987). Fundamental for the survival for any society are access to natural resources and properly functioning ecosystems. This not only concerns its importance for access to food and water, without which any life would be impossible. Without energy hardly any economic processes can take place (see Rao, 2000), while transport systems would collapse

(Platje, 2012). Transport and transport systems are supposed to be sustainable when (OECD, 1996):

- a. human health is not threatened,
- b. ecosystems remain intact,
- c. renewable resources can be regenerated,
- d. innovation leads to non-renewable resources being at the right time substituted by renewable resources,
- e. all citizens now and in the future can use transport systems in order to satisfy their short- and long-term life plans.

The earlier mentioned negative effects are related to so-called negative externalities, where the private cost of use of transport systems are smaller than the social costs. The essential point is that individuals do not take negative externalities into consideration when making their transport decisions (see Begg et al., 1994), which is an argument for intervention by different levels of governments in order to make transport systems more sustainable. Which level of government should intervene, depends on the type of the problem and the area on which the system has its economic and social impact (local, regional, national, transnational, global).

Government policy is not only hampered by the fact that the impact of many negative externalities (pollution, noise, resource depletion, climate change, etc.) is long-term, indirect and difficult to measure (Platje, 2011). The mentioned social and economic importance of transport systems are so-called positive external effects, where the social benefits of such a system exceed the sum of all private benefits of the individual users (Fiedor et al., 2002). For example, better functioning transport systems do increase access to markets for consumers and companies wanting to buy something. On the other hand, they reduce barriers to entry for companies, leading to increased competition which, according to standard economic theory (see Begg et al., 1994), other things equal, causes prices to be lower and quality of goods and services to increase. Thus, on the one hand, governments should support the development of transport systems in order to stimulate positive externalities, while on the other hand reducing the negative externalities in order to make them more sustainable.

While it is very unlikely societies will resign from the aim of socio-economic development, which is related to increased production and mobility (increased use of transport), it is unlikely that innovation and technological development as well as a change in the mode of

transport (increasing use of public transport, multimodal transport, less use of cars by individuals) will be quick enough in order to prevent the system from collapsing. One only has to think of radical innovation in the car industry (see Platje, 2008). As the design of a new car requires billions of dollars, it is unlikely the car producers will introduce a new model in the short run. Furthermore, a car may consist of 10 to 15 thousand different parts, which are produced by different companies. When using a new type of material, this will require product innovation and change in management and production processes in a long logistic chain. The high transaction costs of achieving this, in combination with vested interests of, e.g., oil producers and large producers in the logistic chain, make short term success unlikely.

3. Growth – a never ending positive feedback loop?

Transport policy for increasing the sustainability of transport systems should support the positive externalities as much as possible, while eliminating the negative externalities threatening the existence of the system. The author (Platje, 2011) argues that socio-economic sustainability (supported by positive externalities of transport systems) featured by economic growth, employment, etc. are the basis for environmental sustainability (threatened by the negative externalities of the development and use of transport systems). Most people and societies are unwilling to resign from income and wealth, while for different reasons focusing on their increase. The moment that the reduction of negative externalities causes costs while the effects are long-term, uncertain, indirect and difficult to measure, opposition by different stakeholders is likely to increase. Only a pure win-win situation, where elimination of such externalities goes in pair with economic gain, creates a high probability of success.

There are many arguments supporting the statement that growth of wealth and income receive priority, while environmental issues are less important on the policy agenda. For example:

- Human beings are at the center of sustainable development (UNCED, 1992), which may easily lead to sacrifice of environmental quality in the short run (compare Pearce, 1991: 1; World Bank, 2002: 13).

- Policy makers focus on measurable issues (Hutchinson, 1964: 155), while people rather obtain satisfaction from direct consumption. Environment is likely to suffer, as mentioned, due to the long-term, uncertain, difficult to measure and indirect utility it provides. Furthermore, flora and fauna may disturb people, such as in case mosquitos, wasps, elephants and wolves appearing in their living area (Platje, 2011).
- Using a positive discount rate, which is common in economic analysis, means that the current value of environmental resources in the far future is zero (Boulding, 1966).
- Strong economic interest groups may prevent environmental issues from appearing on the policy agenda. Furthermore, the environment is a weak stakeholder needing indirect representation (Platje, 2011).
- Environmental policy which may threaten international competitiveness is easily abandoned (see Keijzers, 2003).
- Due to the effect of investment cycles on employment, economic growth is needed to keep full employment (Stiglitz, 2010).
- The level of production and its growth are important for the international political, military and economic position of a country. Poor countries want to catch up with the rich countries, while the rich countries need growth in order to defend their position (see Mankiw, 1992:77).
- People tend to be jealous and want to have more than others (Veblen, 1899). When income and consumption increase, people may need a larger increase in income and consumption to remain happy (see Galbraith, 1958), which is related to the decreasing marginal utility of extra income and wealth (see Begg et al., 1994).

Besides these arguments, it may be the prevalence of the so-called techno-centric paradigm (Gladwin et al., 1995) that makes it unlikely that the described situation will change. This paradigm (or worldview) relies upon the idea that economic growth can solve any social problem, and provides resources for technological development and innovation, which will solve all appearing environmental problems. Furthermore, it is supposed that ecosystems are in good conditions and that any damage can be quickly restored or is not that threatening at all. It supposes that human beings are intelligent and co-operative enough to develop new solutions,

while a properly functioning market supports the application of these solutions. Whether this will be really the case, is questionable.

4. Concluding remarks

In this article it was argued that sustainability of transport systems is unlikely due to the expansive nature of human beings and society. The increase in production is supported by the general believe that this expansion of production and technological development will solve any appearing problem, while this may be extremely difficult in reality. The implication of this that when innovation and technological development is not fast enough, worldviews remain unchanged and economic expansion is not constrained, problems in the functioning and negative effects of transport systems are likely to increase, which ultimately may lead to a collapse of such systems. For sure, after such a crisis the system is likely to be reconstructed, but the question is at what cost and how fast.

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Dlaczego systemy transportowe nigdy nie będą zrównoważone

Streszczenie

W niniejszym artykule stwierdzono, że jeśli bieżące trendy rozwojowe systemów transportowych będą kontynuowane, systemy te nigdy nie staną się zrównoważone. Istotne znaczenie ma tutaj priorytet wzrostu gospodarczego oraz korzyści wynikające z pozytywnych efektów zewnętrznych generowanych przez prawidłowo funkcjonujące systemy transportowe. Jednocześnie zauważalna jest tendencja do lekceważenia negatywnych efektów zewnętrznych, ponieważ ich implikacje są trudno mierzalne w bezpośredni sposób, a mogą one szkodzić wzrostowi gospodarczemu w krótkim terminie.

Słowa kluczowe: zrównoważony transport, systemy transportowe, pozytywne efekty zewnętrzne, wzrost gospodarczy