



A VISION OF SUSTAINABLE TRANSPORT INFRASTRUCTURES IN EUROPE

Tamás Fleischer

Institute for World Economics of the
Hungarian Academy of Sciences

<http://www.vki.hu/~tfleisch/>

tfleisch@vki.hu

FORESCENE

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ON SUSTAINABILITY APPROACH

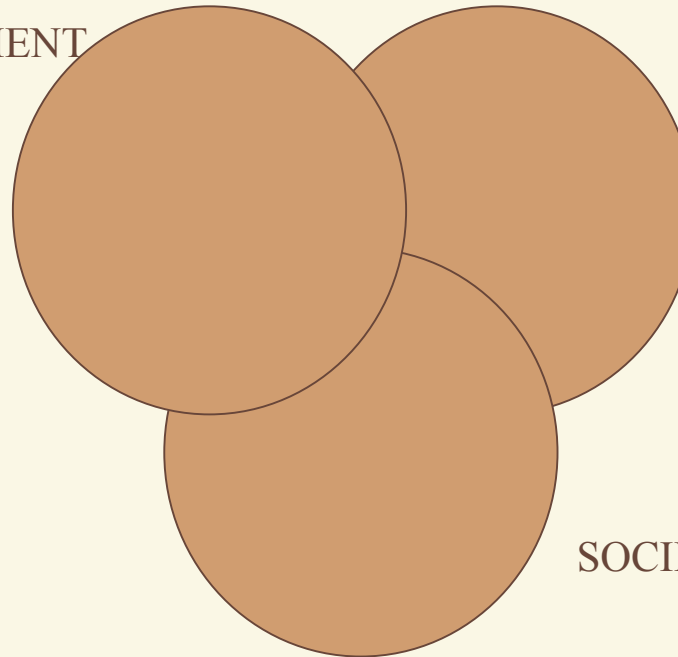
- ☞ UN Bruntland report (Our Common Future 1987)
definition: *„development, that meet the needs of the current generation without compromising the ability of future generations to meet their own needs ”*
- ☞ *Inter-generational solidarity*
- ☞ [Spatial extension – *intra-generational* solidarity / *defence development, that meet the needs of those living here without compromising the ability of those living elsewhere to meet their own needs]*
- ☞ „Infrastructure Networks in Central Europe and the EU Enlargement” <http://www.vki.hu/workingpapers/wp-139.pdf>

ON SUSTAINABILITY APPROACH


The „three potatoes”

ENVIRONMENT

ECONOMY



SOCIETY

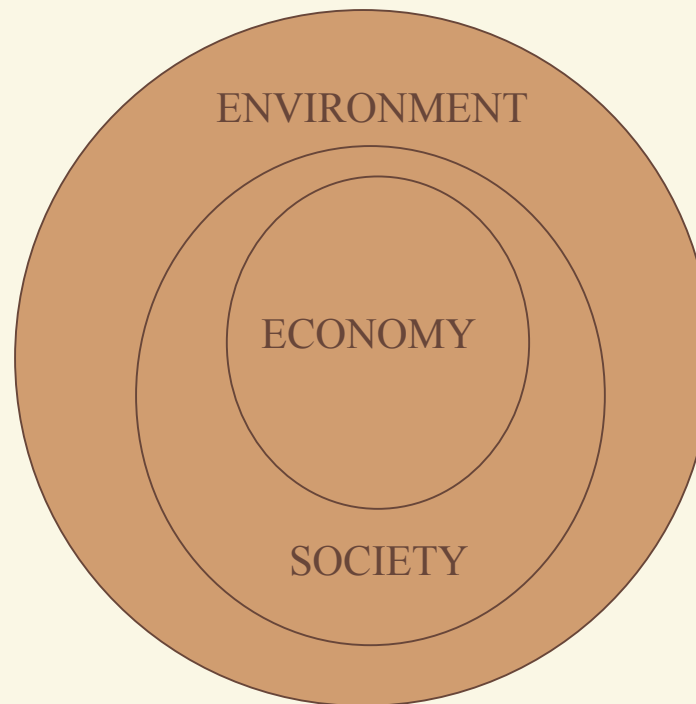
 *Weak sustainability*: the sum of the (environmental, social, economical) capital should not be decreased

ON SUSTAINABILITY APPROACH

☰ The „three potatoes”
in systemic order

☰ *Strong sustainability:*
the environmental
constraints are to be
respected in itself

☰ We can have effect on the ‘economy’ or the ‘society’.
There are *external* and *internal* conditions of the
sustainability of these latter systems.



EXTERNAL AND INTERNAL CONDITIONS OF SUSTAINABILITY OF A SYSTEM

- External conditions of sustainability: (1) the input should not extend the rate of regeneration of sources; (2) the output should not extend the absorption capacity of nature; (+ *the use of non-renewables running out by the rate of their substitutability with renewables*). (Herman Daly)
- Internal (system-operational) conditions of sustainability: the system have to be sensitive on external conditions, its operation should respect that constrains, and there should exist self-regulating internal subsystems for that kind of operation.
- The fulfilment of the internal conditions of sustainability demand renewing transport expertness

INTERNAL REINFORCING PROCESSES OF UNSUSTAINABLE TRANSPORT

- Existing sectoral subsystems also have reinforcing loops, but it is not the external sustainability constraints that control them.
- The task to change the existing transport system is dual:
 - to analyse processes and decouple feedback loops that stabilise actual unsustainable operation; (sometimes institutional or mental structures),
 - to construct those system operations, that are able to stabilise a sustainable operation.

INTERNAL REINFORCING PROCESSES OF UNSUSTAINABLE TRANSPORT

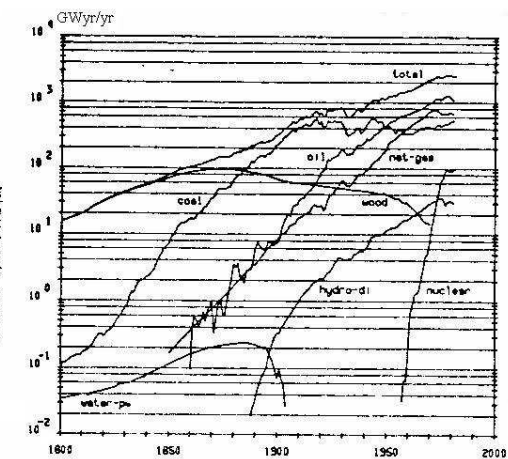
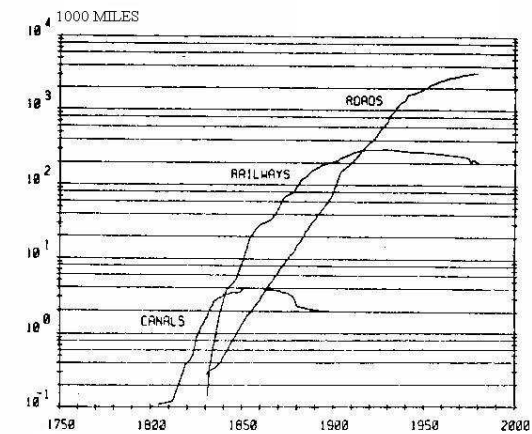
- ☞ The life-cycle of infrastructures is long, and the **structural determination** they create have effects for even longer term
- ☞ *Even the new constructions build the old structure.*
(permanent forced patching-extending activity)
Path dependency. (The past determines the future)
- ☞ Big technical systems: central planning, priority of technical/company interests, „natural monopoly”
- ☞ Transport developers are always open to technologies „faster, stronger, bigger” (TGV, tanker, motorway etc.), but slower in realising, *if the direction has to be changed* because the transport begins to be blocked.

CHARACTERISTIC PERIODS OF TRANSPORT

Shift in the role of different modes.

The new technology time-to-time created a new dominant transport mode

Source: Nebojsa Nakicenovic
IIASA 1988



Nebojsa Nakicenovic
DYNAMICS OF CHANGE
AND LONG WAVES
June 1988
WP-88-074
IIASA
International Institute
for Applied Systems Analysis

CHARACTERISTIC PERIODS OF TRANSPORT

- Pre-industrial period: the construction of canals
- Industrial period: the victory of rails
- Modernity period: the dominance of cars.
- ???

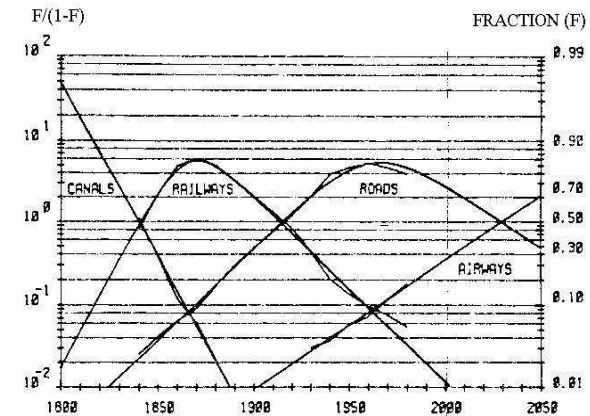


Figure 13 Substitution of Transport Infrastructures, US.

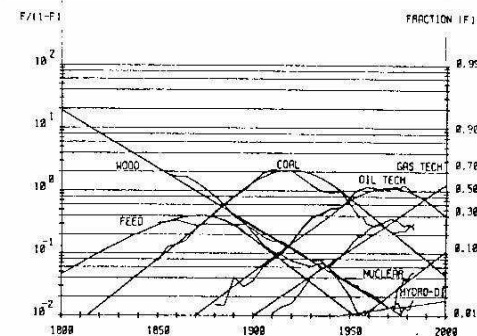


Figure 25 Primary Energy Substitution (with Feed), US.

CHARACTERISTIC PERIODS OF TRANSPORT

- ☞ Pre-industrial period: the construction of canals
- ☞ Industrial period: the victory of rails
- ☞ Modernity period: the dominance of cars
- ☞ ???.
- ☞ **Post-modernity period: „everything goes”**
- ☞ **There is no dominant transport mode**
- ☞ *Integrations, co-operations, alliances*
- ☞ *THIS IS THE BASIS OF THE VISION.*

LESSONS FROM THE LITERATURE OF SUSTAINABLE TRANSPORT

- Technologies promoting *integration* instead of the technologies promoting modal dominance.
- Growing importance of *technologies promoting the software* (organisation, regulation) solutions relative to technologies used for hardware (road, vehicle) development
- User and service side rationality* instead of the dominance of the technological and company interests
(‘put the user into the heart of the transport policy’ – *Time to decide* 2001)
- Demand side approach* instead of the priority of the supply side focus
- Growing importance of *accessibility* from among the two key categories of accessibility and mobility

DETERMINING STRATEGIC FOCUS

☞ Co-operations, strategic alliances, integrations

☞ *Within the transport:*

co-operation of different transport modes (*intermodality*), co-operation of *trunk and local* transport, regional *transport alliances*

☞ *Better embedding of transport:*

integration of policies (transport with urban policy, regional policy etc.), social embedding of decision processes, enforcing user's interests, involvement of evaluations into development processes

(end)

DETERMINING STRATEGIC FOCUS

- ☞ Steps objecting to moderate the quantity of the transport
- ☞ Steps for decreasing the quantity of the motorised traffic
- ☞ Change in the territorial distribution of the transport
- ☞ Change in the temporal distribution of the transport
- ☞ Change in the modal structure of the transport
- ☞ *Decreasing the pollution emission / resource use of the transport*
- ☞ Steps helping the social embedding of the transport
- ☞ Respect, maintenance, completing, renewing the existing objects.

DETERMINING STRATEGIC FOCUS

Integrations	Policy	Spatial	Modal	Financial	Social	Evaluations
Strategies						
Moderating quantity						
Decreasing motorised traffic						
Changing spatial distribution						
Changing temporal distribution						
Changing modal structure						
Decreasing pollution						
Social embedding						
Respect of existing objects						

WHAT NEXT?

- ❏ **First step is the debate and development of objectives and conclusions at this general level**
- ❏ [Based on revised objectives the quite *eclectic* (=inconsistent, contradictory) objectives of the existing national transport policy must be filtered and controlled]
- ❏ Strategic focuses of sustainable transport must offer a consistent frame for determining the objectives of the transport policy (+‘indicators’)
- ❏ Within that frames it is necessary to start elaborating a (sustainable) transport policy.



A VISION OF SUSTAINABLE TRANSPORT INFRASTRUCTURES IN EUROPE

- ☞ Sustainability approach: strong vs weak sustainability
- ☞ External and internal conditions of sustainability
- ☞ *Backcasting as a basic method for meeting the requirements*
- ☞ Large networks, structural determination, path dependency
- ☞ Characteristic transport periods: rule of dominant modes
- ☞ Shift from supply side to demand side management
- ☞ Using ITC in software (organisation, regulation) solutions
- ☞ Shift from sectoral technologies towards service requirements of local, regional, and magistral connections
- ☞ Integration of modes, of policies, of areas, of levels, of decision-makers, of planners/evaluators etc.

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THANKS FOR YOUR KIND ATTENTION !

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