



Chapter 2

Getting started: putting theory into practice

To implement Economic Instruments within a sustainable transport framework requires a couple of strategic actions and decisions. The following steps are particularly important:

Steps to
implementation.

- ① Get people together and set economic, environmental and social objective(s)!
- ② Conceptualise a comprehensive road transport strategy!
- ③ Evaluate feasibility of Economic Instruments!
- ④ Choose the appropriate Economic Instrument and its specifications!
- ⑤ Determine institutional requirements for implementation and control!
- ⑥ Determine funding, financing and revenue allocation!
- ⑦ Determine adjustment period and schedule for implementation ("action plan")!
- ⑧ Create and/or raise public awareness and acceptance!

These steps incur many decisions in details which cannot be discussed here in general terms. They will vary between transport modes, countries, cultures and involved social groups. Nevertheless, some basic elements, approaches, decision criteria and experiences may be delineated.

Step ① Get people together and set economic, environmental and social objectives!

The setting of goals is essential but depends on many factors.

In the first step the requirements for sustainability are broken down to the specific needs of the country or local community. Therefore, it is crucial to initiate a discussion process involving representatives of the major groups from decision makers in the administration and the public and those affected by transport and transport measures. Typically a working group consisting of the main stakeholders will be formed, including

- several **public authorities** (including road transport office, legal office, public works office, press/public relations office, treasury/finance office, taxation office, parking office, traffic police, planning boards, environmental offices) and parliamentary representatives,
- **transport market participants** (e.g. industry, private transport users, public transport institutions),
- **NGOs** with interest in environmental and social issues,
- the **press and media**.

In order to avoid conceptual mistakes it is crucial to get all major stakeholders together and involve them in formulation of proposals, design, set-up and implementation of measures from an early stage on. The initial discussion process has to address at least the following key questions:

- Where do we stand? Which policies are in force? What are their advantages and shortcomings?
- What do we want to achieve economically, ecologically and socially? Is there a priority area? Which goals must be accomplished first?
- Which policy objectives shall be set quantitatively and which qualitatively (outcome and activity goals)?
- How can we measure success in the different policy areas? Which indicators shall be used? Are they reliable?
- Are the policy objectives chosen realistic? What is the time-frame to accomplish high-priority and low(er) priority goals?

There are no blue-prints for policy goals.

Examples of specific outcome and activity goals for the transport sector can be found in existing national policies and international agreements and in various studies for sustainable development. These examples may serve as a rough guideline for environmental policy formation. Table 2.1 exemplifies how policy objectives may be formulated and broken further down to required outputs and results (as quan-

Policy objective	Required output and results	Measures and activities
Economic objective: Reduce annual deficit of public transport	through expenditure reduction: - reduce fuel consumption by x % within next year	- training of bus-drivers - inspection & maintenance - ...
	- optimize line network	- franchise bidding* - bus line concessions - ...
	- ...	- ...
	through revenue increase: - increase number of passenger trips by x % within next year	- introduce low tariffs for commuters* - introduce parking fees* - introduce bus-lanes - tax private car use* - restrict private car use - introduce tolls for private cars in (inner) cities* - ...
	- increase state funds according to deficit	- earmark revenue from road pricing for public transport* - earmark revenue from parking fees for public transport* - increase subsidies from general budget - ...
- ...	- ...	
Ecological objective: Reduce emissions of local pollutants (SO ₂ , NO _x , particles)	- reduce SO ₂ / NO _x / particles emissions from private cars by x % until 2004	- promote use of catalytic converters - differentiate fuel tax by pollutants* - grant tax exemptions for "clean cars"* - ...
	- ...	- ...
Social objective: Provide safe means of transport	- reduce number of traffic accidents by y % within the next 8 years	- promote insurance premiums that are differentiated by the specific safety risk of individuals (e.g. differentiated by age, past accidents, etc.)* - introduce inspection and maintenance schemes - ...
	- ...	- ...

Table 2.1:
Examples for policy objectives, results and activities

titatively measurable results of policy measures), and specific measures and activities (as a plan for actions). Note that Economic Instruments (marked with an asterisk in Table 2.1) typically are complemented by other instruments.



Step 2 Conceptualise a comprehensive road transport strategy!

Experience shows that transport policy is most effective when measures are not taken isolated, but as part of a comprehensive transport policy mix. In order to avoid conflicts between goals set in Step 1 measures must complement each other. Although there is no "blue-print" for ideal policy packages, some general guidance can be drawn from recent experience.

Based on a large number of studies the OECD has developed six "policy packages" that aim at providing a sound transport management in the areas "management of the need or desire to travel", "management of the travellers' choice of transport mode", and "management of users' use of the transport network" (see OECD 2001, pp. 154-158). Table 2.2 outlines the strategy package elements.

As a first step towards a concept of a sustainable road transport policy it is important to analyse the existing policies and conditions, and to identify those Economic Instruments already in use. Therefore, it is important to know and identify the special conditions in a country or community. For example, many "master plans" already include requirements for parking areas and zoning. Also, climate and topography play a significant role: a mild climate and gentle topography might provide incentives for a larger share of non-motorised transport. Regions with serious urban sprawl might also be wise to revise their land-use policy prior to introducing Economic Instruments.

Further information about comprehensive transport strategies can hardly be given in a general sense. Comprehensive strategies must be designed in a country- or city-specific way. There are, however, some examples in OECD 2001 for comprehensive transport strategies, and in UN ESCAP 1999 for road safety. It might also be helpful to seek advice from case studies with a similar policy background, e.g. as they are presented in chapters 3 and 4 of this book. Also see ICLEI 2000 for helpful orientations how to pursue the process of setting up the agenda for the introduction of Economic Instruments.

Economic Instruments are most effective as part of a comprehensive policy strategy package.

It is important to know where we stand.

Policy direction	Strategy package	Package elements
Combining initiatives aimed at managing travellers' choice of modes	# 3: Introduce green transport plans	<ul style="list-style-type: none"> - Start by promoting voluntary transport plans to private and public companies. - Improve alternatives to single-occupancy vehicle transport in terms of quality, reliability, price, etc. - Add financial incentives for the use of alternatives financed by parking pricing. - Create local and regional transport management authorities. - Make free parking at the work place subject to taxation; thereby motivating employers to consider transport alternatives. - Offer transport allowances which benefit ridesharing and public transport. - Require all major work sites to have green transport plans.
	# 4: Implement traffic reduction measures in city centres along with logistics innovations for freight transport	<ul style="list-style-type: none"> - Implement parking management in city centres. - Improve public transport to/from/in the centre connected to Park&Ride stations in the suburbs. - Promote show-rooms (where merchandise can be viewed) combined with lower prices if the good is collected from centres located at/close to Park&Ride stations. - Institute freight transport regulations in the city centre. - Improve co-operation between freight distributors, and increase use of technology to increase freight capacity.

Table 2.2:
OECD Strategy Packages
 Source: OECD 2001, pp. 155-158
 [continued]

Table 2.2:
**OECD Strategy
 Packages**
 Source: OECD 2001,
 pp. 155-158
 [continued]

Policy direction	Strategy package	Package elements
<p>Combining initiatives aimed at managing the user's use of the network</p>	<p># 5: Institute road user charges in co-ordination with intelligent traffic management systems</p>	<ul style="list-style-type: none"> - Introduce a system of variable road user charges. Charges may vary dependent on factors such as the time of the day, the congestion level, and the type of roadway chosen for the given trip. Charges should be lowest in off-peak periods and on the highway network; thereby reducing traffic on arterial congested roads. - Use variable message signs to display dynamic traffic information regarding delays and queues, and estimated travel time. Use of a variety of media to convey information to travellers such as via Internet, cable television, highway advisory radio, a traveller advisory telephone system, and traveller information kiosks located in key areas such as transit centres, shopping areas and major employment sites. - Make dynamic traffic information and route planning available on the Internet. - Implement ramp metering on highways.
	<p># 6: Promote virtual mobility and a more flexible labour market</p>	<ul style="list-style-type: none"> - Define a national or regional telecommunication strategy promoting telecommuting. - Promote the use of teleconferences instead of meetings whenever possible. - Promote flexible working hours for the labour market such as staggered hours and the possibility to work part-time at home before coming into office. - Revise tax regulations on IT-equipment and telecommuting if feasible.

Step ③

Evaluate the feasibility of Economic Instruments!

The third step towards the use of Economic Instruments is the evaluation of their feasibility in the given transport policy context. Table 1.5 has already given some general idea when Economic Instruments should or should not be implemented. For practical purposes, however, further criteria have to be considered. Therefore, the following questions have to be answered:

- **Appropriateness.** Are Economic Instruments appropriate to achieve the goals derived from Step 1? Do goals require immediate action, e.g. to eliminate environmental risks (then Economic Instruments should not be used)?
- **Technical feasibility.** Is there a working price mechanism available? What kind of equipment and technical knowledge is required?
- **Financial feasibility.** What does it cost to implement Economic Instruments and to operate systems based on Economic Instruments (e.g. costs from technical equipment such as road toll booths, maintenance costs and staff, etc.)? Are there cheap technical alternatives? Can other Economic Instruments or non-Economic Instruments achieve the same results at lower costs?
- **Institutional Feasibility.** Are there sufficient institutional capacities to pursue set-up, implementation, enforcement, management and control of Economic Instruments?
- **Public acceptance.** Is there strong public resistance to Economic Instruments? Is public resistance stronger than against other measures?

For most developed countries, the specific literature favours Economic Instruments as in these countries sufficient institutional capacities for any kind of policy option can be assumed. These countries typically have much experience with Economic Instruments (see Table 2.3). Shifting transport policy approaches from regulatory instruments to Economic Instruments may thus be institutionally easy.

Many developing countries, however, have little experience with Economic Instruments in road transport policy. But that does not make a general case against Economic Instruments. All countries have tax authorities and, hence, some institutional experience with economic measures. This experience can and should be used as a basis for the introduction of Economic Instruments.

Are Economic Instruments adequate in the specific national or local context?

There is institutional experience with Economic Instruments in developed ...

... and developing countries.

According to the impact of road transport on people's lives, priority should be given to immediate needs and dangers, e.g. through road safety measures. These typically do not include Economic Instruments. But Economic Instruments play a central role in medium- to long-term development of transport demand and supply. Here they should be effectively implemented in order to achieve sustainable transport development through the use of market-based incentives. From a policy maker's point of view, the urgency of action is based on the following priorities:

1. **Immediate action** in case of direct health risks and dangers through legislation, standards and regulation;
2. **Medium- to long-term action** to implement incentive measures aiming at changes of transport demand through Economic Instruments;
3. **Long-term action** to influence long-term development paths by measures such as city planning or road network development planning.



	Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Japan	Luxembourg	Mexico	Netherlands	New Zealand	Norway	Poland	Portugal	Spain	Sweden	Switzerland	Turkey	United Kingdom	United States	
Motor Fuels																												
- Leaded/unleaded differential	+	+	+			+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	
- Gasoline (quality differential)							+																	+				
- Diesel (quality differential)						+	+				+					+			+	+				+				
- Carbon/energy tax		+				+	+		+								+		+					+				
- Sulphur tax																				+				+				
- other excise taxes (excl. VAT)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Vehicle Registration																												
- Sales/excise/registration tax differential		+	+	+		+	+			+	+	+	+	+		+	+		+		+		+	+	+	+	+	
- Road/registration tax differential		+	+	+	+	+			+	+	+	+	+			+	+		+				+	+	+	+	+	
Direct Tax Provisions																												
- Free company car part of taxable income							+		+																			
- employer-paid commuting expenses part of taxable income	+		+			+	+		+													+	+	+			+	+
- Free parking part of taxable income	+																											+
- Commuting expenses deductible from taxable income if public transport is used																												+

Table 2.3:
Examples of
Economic
Instruments in
environmental
transport policy in
OECD countries
Sources: OECD 1997,
pp. 20-22

Step ④

Choose the appropriate Economic Instrument and its specifications!

What are the most appropriate Economic Instruments?

When choosing an Economic Instrument the following issues have to be considered:

- **Type of instrument.** Which type of instrument shall be implemented? Which kind of incentive/disincentive structure shall be created? What is the object of regulation (emissions, fuels, vehicles, city entry, road use, technology, etc.)?
- **Specifications.**
 - Which burden/subsidy shall be levied/granted? Shall there be differentiated rates, and what kind of differentiation?
 - Who has to pay, or: who is eligible for subsidies?
 - How shall revenues be raised (time of payment(s), charging mechanism, etc.)?
- **Introduction.** What is the time-frame for phase-in procedures and the timing of strategies?

Before using Economic Instruments, the goals should be clear. They should be used to set economic incentives (or disincentives).

Other issues, including the characteristics of important Economic Instruments and case studies from different countries, will be dealt with below. In general however, any transport framework based on Economic Instruments should have the following key characteristics (UN ESCAP 2000: pp. 185-186):

- **Comprehensibility and transparency.** Any instruments' pricing structure should be understood by users whose behaviour it is meant to influence; no undue transaction costs to identify the appropriate information should exist;
- **Stability and foreseeable development.** Measures should not fluctuate or be altered arbitrarily or in unpredictable ways, phase-in and/or phase-out periods should be carefully designed and well communicated;
- **Measurability, cost effectiveness and objectivity.** The data required to calculate charges etc. should be objectively measurable, cost-effective to collect and unambiguous to apply (e.g. for billing purposes);

- **Cost-reflectivity.** The costs imposed by the pricing scheme should reflect the real costs of transport (i.e. ideally both internal and external costs) in order to meet the objective of economic efficiency;
- **Political and institutional support.** Strong political commitment is often crucial for the implementation of Economic Instruments, and to set up institutions for their enforcement.

Without these characteristics it is unlikely that an Economic Instrument will be accepted by the public or achieve its goals.

For further information about the options and limitations of Economic Instruments and their use, see the subsequent chapters and UN ESCAP 2001.



Step 5 Determine institutional requirements for implementation and control!

Which institutions are needed in order to effectively implement the chosen Economic Instrument?

As Step 5 several crucial institutional decisions have to be taken:

- **Lead agency for programme set-up.** The lead agency is responsible for a successful planning, implementation and management of the project. Potential lead agencies include state agencies, local and regional agencies, new public entities, and private companies. The selection depends on various factors, including jurisdictional power needed for implementation, level(s) of government involved, public participation, the possibility that new authorities might better administer new programmes, experience and the capacities of existing bodies.
- **Operation authorities.** Which kind of institutional body is necessary for the management and operation of Economic Instruments as part of a sustainable transport strategy? How many different state and private authorities are involved? In Singapore, for instance, implementation and management of urban transport has been successfully institutionalised by merging four different authorities from public administration and transport. In many developing and developed countries, however, a major obstacle to a comprehensive transport strategy is the division of powers among many different institutions and a lack of coordination between these authorities.
- **Involved jurisdictional bodies.** The third institutional issue corresponds to a clear understanding of which level of government has the jurisdictional authority and the administrative power to initiate the set-up of Economic Instruments. Basically, there are two models: the **centralist approach** (where all powers are located in a central government) and the **federal model** with power allocated according to the principle of subsidiarity. In this model state-level (federal level) authorities are responsible for national policy goals, and community-specific goals are pursued most effectively and directly on local level (e.g. urban congestion issues); however, specific legal framework provisions that guarantee the required local autonomy are necessary preconditions for local policy-making.¹

In order to have a sound institutional arrangement, it is essential that transport management authorities possess several key-conditions (cf. Cracknell 2000), i.e.

- well-defined responsibilities and accompanying powers;
- embedding in an institutional framework that recognises and legalises the formal role and responsibilities of transport management institutions;
- de-politicised management in order to avoid changes in staff and programmes when political situations change;
- interest in operational efficiency, e.g. through contracting out of transport management functions and commercialisation;
- appropriate funding, e.g. through economic measures in transport policy as discussed below.

Further information: The selection of a lead agency has been carefully studied in the U.S. (U.S. Environmental Protection Agency 1997, chapter 4). Institutional issues also play an outstanding role in Cracknell 2000 (urban transport) and OECD 2001 (general transport).

¹ The structure of this book follows the federalist model. In most countries, local authorities have some, albeit often very limited, decision power. This allows for individual policies in cities and regions. Therefore, chapter 3 refers to central/federal authorities, and chapter 4 to local decision makers. If, however, political decision-making in a specific country follows the centralist model, then the measures discussed in chapter 4 may just as well be applied by the central government.

Step 6 Determine revenue allocation!

How should revenues be used?

A highly controversial issue is the allocation of revenues from economic instruments such as taxes and charges. Revenue allocation, however, is a crucial factor for public acceptance of transport measures. For instance, revenues from Economic Instruments can have a positive equity impact if they stem from relatively rich transport users and are used for poverty reduction. Basically, there are five options for revenue allocation:

- **Addition to the general budget.** In this case Economic Instruments serve as an additional source of revenues. This approach is consistent with the general rule of taxation that all taxes should enter into the general budgetary process and should then be distributed at the discretion of political decision-makers. The main purpose of Economic Instruments in the transport sector is then to increase transport costs and thus remove price distortions. This contributes to the internalisation of transport costs and thus to sustainable transport.
- **Earmarking for transport sector investment.** The earmarking of revenues constitutes the basis for a self-financing of the transport sector. Revenues from the transport sector are dedicated to specific expenditure items in the transport sector such as road maintenance and rehabilitation works, the upgrading of existing roads or the construction of new roads (e.g. via so-called road funds), cross-subsidies of certain sub-sectors or specific transport modes (e.g. in order to promote environmentally friendly modes).

A number of surveys indicate that earmarking of revenues for transport sector investment increases public acceptance of Economic Instruments (Vougioukas 1999). In this case revenues serve as a basis to make alternative transport modes more attractive. Charges on individual car use make that mode of transport less attractive (push factor), whereas comfortable and reliable public transport at reasonable prices offers a promising alternative (pull factor). This approach is therefore often referred to as "push-and-pull" strategy.

In the past, earmarking of transport revenues was opposed by many international agencies like the World Bank and the IMF as it was seen as reducing the flexibility of governments in managing macro policy and flexibly setting national priorities. Today, however, it is recognised that earmarking, e.g. in the form of "Road Funds", can compensate for political or administrative myopia and

help to secure steady financial flows to finance infrastructure investment and maintenance. In the U.S.A., for instance, all fuel taxes are dedicated or earmarked for specific trust funds. Road funds are also implemented or under discussion in many developing and transformation countries. For example, many Eastern European countries, including Bulgaria, Hungary, Latvia, Lithuania, Poland, Romania and Slovenia, have Road Funds or earmarked schemes to allocate revenue from transportation charges to finance road maintenance, public transport and road safety measures (cf. Berger 2000). Chapter 3 provides a case study about the Mexican Environmental Trust Fund.

In any case, whenever an ear-marked system is postulated for reasons of financial continuity or public acceptance, the consequence is that an appropriate institutional setting has to be established. This should secure an efficient implementation of long-term investment plans. In some cases the setting-up of specific public administrations, state-owned enterprises or private enterprises may be useful.

- **Revenue-neutral redistribution.** In order to lower the overall tax burden on society as a whole, additional revenues from Economic Instruments in transport policy can be rebated. In this case, however, it should not be given to the original tax-payers of the Economic Instrument – this would eliminate the incentives set by the Economic Instruments. Rather, lump sum (i.e. equal per-capita redistribution) or redistribution-oriented rebate schemes should be used. Possible approaches could, for example, be transportation subsidies to the poor, or to the rural population.
- **“Double dividend schemes”.** Revenues can also be used to alleviate distortions from other government activities, for example to reduce distortions from income taxation, to support retirement funding schemes, etc. In this respect Economic Instruments have additional benefits in another, unrelated area (the so-called “second dividend”). First experiences with this type of revenue allocation stem from industrialised countries only. Germany, for instance, uses revenues from its eco-tax component in fuel taxation to reduce social insurance expenditure.

A related but more specific form of revenue allocation concerns the question of the funding of specific transport projects via Economic Instruments. Basic options for the financing of such projects include state funding (with either national, regional or local funding), or private funding. The latter can, for instance, be implemented through BOO/BOT models (build, own, operate / build, own, transfer) where

If infrastructure investment is to be financed by the private sector, Economic Instruments are crucial for cost recovery.

the private sector invests in infrastructure and is allowed to recover investment costs by collecting tolls for a certain period of time. Examples can be found for each of these models. The specific merits and shortcomings of each model cannot be discussed here in detail. This requires careful study of the efficiency of public versus private provision, and of the given jurisdictional and institutional background. However, in a world of limited state budgets, private funding is becoming increasingly attractive for policy makers throughout the world. In particular, toll schemes, as discussed in Chapter 3, are becoming more and more widely used to finance expensive but economically advantageous transport projects such as highways, bridges, tunnels etc.

Further information about revenue allocation is provided in the subsequent chapters for a number of case studies. Additionally see the documentation of the ECMT/OECD Workshop on "Implementing Strategies to Improve Public Transport for Sustainable Urban Travel," Athens, Greece, June 3-4, 1999.

Step ⑦ Determine adjustment period and schedule for implementation!

The remainder of decisions relates to the specifications of the instruments proposed, and the plan of action for their implementation. This includes phase-in/out times and procedures, target groups, etc. There is no general rule of how to proceed in these steps.

How should economic instruments be implemented and improved?

Usually, before phasing in Economic Instruments, there is an extensive testing phase to determine and evaluate how a specific transport market reacts to the introduction of Economic Instruments. As a general approach, the introduction of Economic Instruments follows a multi-stage approach:

1. **Political plan of action, discussion and design** of Economic Instruments;
2. **Trial period** with selected testing areas, and evaluation of results;
3. **Redesign of Economic Instruments** according to evaluation results, and plan of action for actual phase-in procedures;
4. **Phase-in with modest rates and speed**, long adjustment periods, step-wise increases of rates;
5. **Evaluation of first results after some years**, cut-off point or redesign if necessary;
6. **Full implementation of measures**, and coordination of Economic Instruments with other measures;
7. **Control and readjustment of measures** for the time of use of Economic Instruments.

Step 8 Raise public awareness and acceptance!

Successful implementation of Economic Instruments ultimately depends on political support and public acceptance. Any (additional) levy on private car or motorcycle ownership or use will be opposed if it is "sold" to the public merely as an additional charge instead of a contribution to improve the (city) environment, economy or social equity. Hence, public acceptance should be raised, for instance, by

- **earmarking revenues** (as discussed above), for instance to pursue a push-and-pull-strategy rather than mere push measures,
- **considering equity issues** in the design of Economic Instruments (for instance with higher taxes on private cars than on motorbikes, cf. U.S. Environmental Protection Agency 1997, ch. 5-6),
- **public awareness and acceptance campaigns** explaining the goals of Economic Instrument schemes to the public,

The "Car Free Day" in Surabaya (Indonesia) is the result of a successful GTZ public awareness campaign.



- **raising political support from government officials**, e.g. through emphasising positive equity impacts and revenue creation potentials of Economic Instruments,
- **involving the public and major stakeholders** in the discussion and (re)design process of sustainable road transport policy (as required in Step 1),
- **establishing a foreseeable implementation time-schedule** with step-wise introduction of Economic Instruments instead of sudden changes or "big bang strategies" (ECMT 2000).

Additionally, public awareness and acceptance can be raised when there are possibilities to set a (good) example. A recent OECD report states (OECD 2001, p. 73): "Despite their potential to significantly influence travel demand, economic measures remain hindered by real or perceived concerns about political fall-out and negative public reaction to pricing schemes. ... Strong political leadership, supportive coalitions, and a well-informed public are necessary elements to bringing pricing schemes to fruition."