Integrated transport and land use strategies to achieve sustainable transport: the experience of the TRANSPLUS project

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Abstract - **The paper discusses the contribution that integrated land use and transport planning can give to the goal of a more sustainable urban transport across Europe. It presents the basic concepts of mobility and accessibility planning, and the potential benefits and challenges that integration of transport and land use poses to policy makers and experts. These are the core subject of the Land Use and Transport Research (LUTR) cluster of projects, funded under the European Commission's City of Tomorrow and Cultural Heritage key action. The paper will focus in particular on the experience matured in one of the LUTR projects – TRANSPLUS: Transport Planning, Land Use and Sustainability - and on the ways to identify successful policies and the potential successful transfer between contexts. Deliverables of the TRANSPLUS project are available on request from the project site www.transplus-net.com**

1. Why integration of transport and land use planning is relevant to obtain clean, efficient and safe urban transport ?

Transport is a major source of both local and global (CO_2) emissions. Most efforts to lower emissions from the transport sector have been aimed at pollutants with local effects, and have implied technical measures (e.g. the imposition of vehicles or fuel standards) or traffic limitation measures, often dictated by urgent pollution problems.

Unfortunately, the technical measures usually taken to lower these local pollutants do not reduce motor vehicles' contribution to the three most important pollutants in terms of global climate change, i.e. carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Moreover, the measures to combat pollution are often short term, and they do not tackle the drivers of transport demand and the growing transport intensity which contribute to saturate the transport system, creating problems of congestion as well as pollution.

A framework for analysing CO_2 emissions from passenger transport is to consider total emissions the product of three factors: i) the emissions per unit of fuel; ii) units of fuel per passenger distance; and iii) passenger distance travelled. Focusing on emissions per unit of fuel means lowering the carbon intensity of fuel or using measures aimed at the engine or fuel type (e.g. encouraging electric vehicles). The second factor, lowering units of fuel per passenger distance, involves transport policies aimed at congestion, vehicle load, fuel efficiency, and the modal split. Examples of policy instruments to reduce directly or indirectly congestion – and the related pollution impacts – are no-car zones, increased parking fees, congestion toll pricing, computerised traffic lights, dedicated road lanes, staggered work hours, car pooling incentives etc. After switching to zero-emissions vehicles, the third factor above provides the most unambiguous – but often controversial – way to reduce CO_2 transport emissions, i.e. to reduce individual motorised transport.

At this stage, programs to discourage private transport and increase public transport should be clearly linked. Private transport can be reduced primarily in two ways: by increasing its costs (or prohibiting it) and by lowering the need. The cost can be increased for instance with fuel taxes, parking fees, and road pricing. Similarly, driving could be banned or reduced by establishing no-car zones or no-car days. Finally, the need to drive can be reduced through land management programs designed to bring jobs and other commercial activities closer to residence and by making public transport and/or non-motorised transport (walking & cycling) more attractive and efficient.

The latter is the policy field more specifically targeted by the Land Use and Transport Research (LUTR) cluster of projects. This currently includes 13 projects whose common aim is to develop strategic approaches and methodologies in urban planning that promote more sustainable urban transport and development. The range of policies and methodologies considered in the cluster is wide, focusing on: solutions to improve the quality of cities for pedestrians (PROMPT); decision-making guidelines that cities can use in order to generate optimal land use and transport strategies to meet the challenge of sustainability in their particular circumstances (PROSPECTS); methods for improving the environmental and living conditions on and along the arterial streets (ARTISTS); methodologies to assess the impact of freight urban transport (CITY FREIGHT); guidelines for planning sustainable urban settlements and including participatory approaches (ECOCITY); a software suite for the integrated assessment of impacts of urban policies on the quality of the environment, citizens health and preservation of monuments (ISHTAR); tools and comprehensive assessment methodologies to assess integrated land use and transport strategies in European cities (PROPOLIS and SUTRA); the study of urban sprawl phenomena, consequences and counteracting regional policies (SCATTER); expertise to promote bicycle planning policies and bicycle use (VELO INFO); the assessment of Life Quality for citizens (ASI), and, finally, the TRANSPLUS project, whose aim was to identify best practice in the organisation of land use and transport measures in order to reduce car dependency in European cities and regions and promote economic, social and environmental improvement (in one word, sustainability).

The LUTR cluster has recently established the thematic network PLUME on integrated urban and mobility planning, which will provide an interface between the technical advances of the LUTR projects and the end-users in the cities and regions of Europe. More information on this network and the LUTR project can be found at www.lutr.net

Although it is fairly clear that successful policies require a combination of complementary measures to tackle all the aspects which may improve transport sustainability (i.e., in our framework above, lowering emission per unit of fuel, lowering units of fuel per passenger distance and reducing travel need), the aim of LUTR is to put the emphasis on the last component of the policy mix, i.e. integration of urban development and transport policies, which is perhaps the most neglected by the cities and difficult to enforce.

Whilst addressing different facets of the problem, the LUTR projects all together aims to answer to two basic research and policy questions:

1. is there a clear evidence of a significant benefit from integration of land use and transport planning and policies, over and above that of separated policies ? How this benefit can be measured/accounted for in future policy evaluation practices ?

2. if evidence of good practice and benefits of integrated land use and transport policies can be identified, how good practices can be transferred and implemented successfully in different contexts across Europe ?

These will be the main topics of the next LUTR conference and workshops, which will be taken in Budapest and Bratislava in October of this year. We will anticipate in the following sections some reflections and conclusions on the basis of the specific research undertaken by TRANSPLUS. But before to move to conclusions, we want to analyse more in depth what are in our opinion the most significant merits of integrated land use and transport planning, clarifying the relationship between accessibility and mobility goals.

2. The benefits of combining accessibility and mobility enhancing strategies

There are numerous sources and useful summaries concerning the need of integrated transport and land use planning and the presumable benefits of this integration. Among others, I will refer here to the discussion of accessibility and mobility strategies in Handy (2002). The terms "accessibility" and "mobility" are often used together in transportation plans but without a clear distinction. The distinction between the two concepts is important, however, especially to understand what is the "plus" that the integrated land use/urban/accessibility and transport/mobility planning will add over the traditional transportation planning.

Traditional level-of-service measures used in transportation planning are measures of mobility; higher volume-to-capacity ratios mean slower travel times, less ease of movement, and thus lower mobility. Mobility is sometimes also measured by actual movement, either number of trips made or total kilometres travelled. Accessibility has been both harder for planners to define and to measures. The more general concept, useful for the planning context, has been provided by the Hansen (1959) definition of accessibility as "the potential for interaction". In most cases, measures of accessibility include both an impedance factor, reflecting the time or cost of reaching a destination, and an attractiveness factor, reflecting the qualities of the potential destinations. Researchers have used many different forms of accessibility measures and have raised many important issues about these measures (Handy and Niemeier, 1997; SPESP 2000). Simple "cumulative-opportunities" measures, which count the number of destination of interest within a certain time or distance of the origin point, seem to be coming into greater use in transport planning. Choice is an important element of accessibility: more choices in both destinations and modes of travel mean greater accessibility by most definitions.

Part of the confusion in the use of the mobility and accessibility terms may stem from the relationships between them. Mobility is related to the impedance component of accessibility, in other terms how difficult it is to reach a destination. Thus, policies to increase mobility will generally increase accessibility as well by making it easier to reach destinations. But it is possible to have good accessibility with poor mobility. For example, a community with severe congestion but where residents live within a short distance of all needed and desired destinations has poor mobility but good accessibility. In this case, accessibility is not dependent on good mobility – the impedance factor – but on the dislocations of destinations in a compact space. It is also possible to have good mobility but poor accessibility. For example, a community with ample roads and low levels of congestion but with relatively few destinations for shopping or other activities or with undesirable or inadequate destinations has good mobility but poor accessibility.

Thus, good mobility is neither a sufficient nor a necessary condition for good accessibility, and *vice versa*. Planning efforts that focus on enhancing accessibility have different consequences than planning efforts that focus on enhancing mobility. To plan for mobility is to focus on the means without direct concern for the ends: can people move around with relative ease ? To plan for accessibility, in contrast, is to focus on the ends rather than the means: do people have access to the activities that they need or want to participate in ?

The merit of integrated land use and transport planning can be identified with this: to ensure compatibility of planning for mobility with planning for accessibility. Although this is possible, the entrenched focus on mobility in transport planning has over time helped to decrease accessibility, primarily by encouraging sprawling patterns of development that limit choices. In Europe and elsewhere (primarily in the U.S.) low density suburbs are increasing, and in these areas public transport service is relatively sparse and destinations are generally beyond walking distance, leaving residents with no option but to drive.

Now a new paradigm of "planning for accessibility compatible with mobility planning" can create benefits by expanding choices and reducing the need to drive. For example, a city may adopt policies to encourage small-scale retail development in residential areas, thereby bringing shops within walking distance, or a city might operate a bus route that links residential areas to commercial areas, or a city might provide access to its services via the Internet and eliminate the need for a trip to city hall altogether. Instead of being forced to deal with increasingly pervasive traffic, residents can then choose to participate in needed and desired activities without driving.

But again there is no guarantee that planning for accessibility alone will actually reduce driving even if it succeeds in reducing the need for driving. Evidence from past and recent studies confirm the Zahavi conjecture that the time daily devoted to travel remains more or less stable, in different contexts and different times. So, if the need of work, shopping, accessing services is reduced, the time freed will be probably used not to curb travel activities, but to change them into more leisure trips, longer and attractive routes etc.. This effect has been observed in several time activity surveys, and it seems to challenge the assumption often overstated in transport policies and models that travel is only a derived demand. We do not use always to travel to do something different (to work, buy products etc.), but also for the fun of it, and this is increasingly true for affluent people of wealthier countries.

As a consequence, what could more directly help to reduce the total amount of vehicle travel are accessibility strategies combined with strategies to limit mobility. While strategies to enhance accessibility may lead to changes in behaviour by improving the alternatives to driving, strategies to limit mobility may lead to changes in behaviour by reducing the utility of driving (this is often done through physical barriers to driving, such as car-restricted zones, and/or pricing strategies, including fuel taxes, parking fees and road pricing). Mobility-limiting strategies on their own, however, offer little promise for reducing driving: there must be alternatives of the sort that accessibility-enhancing strategies can provide, or residents will simply pay more and spend longer getting to where they need to go.

To conclude, accessibility-enhancing and mobility-limiting strategies have together more potential to change behaviour than either approach on its own.

Several examples of integrated land use and transport policies that can be assimilated to compatible accessibility and mobility strategies were present in the 23 case studies of

European cities and regions analysed by TRANSPLUS[1]. The categories of policies surveyed include in particular:

1. **Improvement of public transport accessibility in existing settlements**: improving public transport in existing settlements via light rail and tram combined with the development of the central area is a solution which is proving to be very popular. The solution does not seem to be constrained to a city or town of any size as it has proven to work in smaller settlements such as Croydon and Orleans through to capital cities such as Brussels and Rome.
2. **Promotion of settlement around existing public transport corridors**: complementary to expanding public transport, encouragement of settlement around existing public transport corridors is also important for axial development with high priority of land-use and transport integrated strategies. By laying out a city in a certain way the use of public transport can be encouraged.
3. **Urban development with central functions around central stations**: key components of any public transport oriented initiative is the role of the railway stations as both pivotal to central functions and centres of mobility for the public.
4. **Usage of inner city brown-field sites**: in a number of cases older areas are re-developed by replacing old industrial or harbour areas with mixed use settlements. Existing areas within the city which lose their original function provide an ideal opportunity to create an environment that encourages cycling and walking and located near the public transport hubs.
5. **Transport intermodality**: any strategy to reduce car trips needs to combine any pedestrian and cyclist friendly environment with public transport in order to enable non-motorised longer distance travel. Bike and Ride is a concept which is clearly transferable. Providing quality pedestrian and cycling infrastructure at stations will increase public transport use.
6. **Development of new office or commercial poles with restrictive parking**: in addition to car restrictive neighbourhoods, the development of new office or commercial activities with restrictive parking is also an option. A classic example is the system in The Netherlands where an ABC classification is used which allows parking space based upon accessibility of the site by public transport. The underlying methodology is quite simple.
7. **Car restriction oriented development**: when planning new activities, disincentive measures for car use will be to restrict the car at the residential place and/or restrict the car at the work or retail place. Car free neighbourhoods are transferable projects provided certain conditions are met. The strictly car free zone is only likely to work for smaller areas.

These and possibly other policy packages could be more widely transferred within and between EU and CEEC regions and cities. However, to facilitate this process, the observation of facts concerning “past” transfers it is not enough. It needs to be complemented with a prospective approach, apt to analyse “ex-ante” the transferability potential of policies with the help of a consistent assessment framework based on lessons learned in past experiences of policy implementation. This framework has been produced and tested so far with the policies

[1] Currently five additional case studies in the Newly Associated States (NAS) are being analysed, 2 for Poland (Warsaw and the “Tricity” case of Gdansk, Gdynia and Sopot), 1 for Slovakia (Bratislava), 1 for Romania (Ploiesti) and Malta.

identified in the 23 case studies within the EU, and it is described in the TRANSPLUS deliverable D4 – Barriers, Solutions and Transferability. The framework is going to be expanded to include special transferability issues concerning the implementation of policies in the NAS countries. The whole issue is going to be addressed in the TRANSPLUS Guidelines, and the complementary data base of case studies of land use and transport policies, which will be completed and available by the next few months.

What it is clear so far is that compatible accessibility and mobility planning strategies are useful, but pose significant challenges on their own, including:

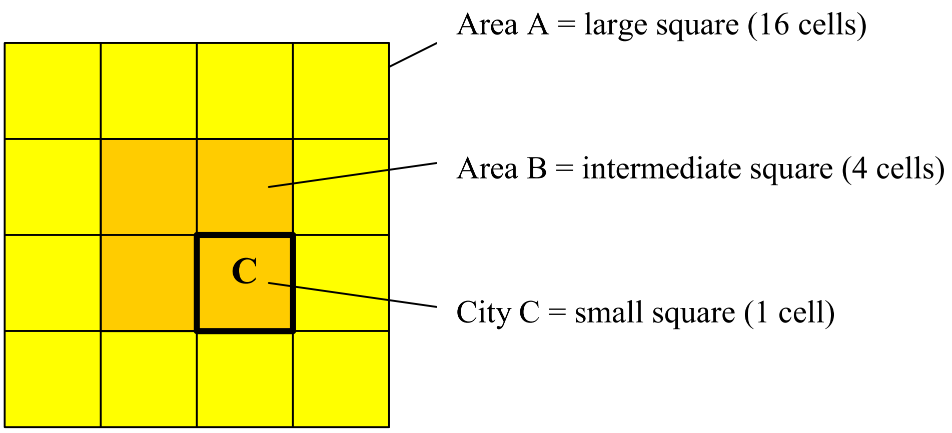
1. the difficulty to evaluate and monitor the often mutually interacting effects on mobility (usually short term) and accessibility (more often long term) of the integrated measures and strategies;
2. the traditional divisions between authorities and agencies with responsibilities for transport planning and those with responsibility for land use planning.

Both these challenges have been considered in the TRANSPLUS research, and are analysed in the following sections, which include a brief description of methods proposed to assess the benefits of integrated land use and transport policies and transferability of good practice.

3. How we could assess the benefits of integrated land use and transport policies ?

In order to show how to determine the benefits of the integration of land use and transport policies at different territorial levels – national, regional and local – we will introduce hereafter an abstract representation of a territorial system. This abstraction is needed to focus the reasoning on the relevant aspects, without being confused by the manifold differences which characterise the territorial systems in the real world.

In purely topological terms, a territorial system could be represented as a system of cells of the kind reproduced below:



The large square of 16 cells (Area A) may represent a Nation. City C forms one cell in a tiling of cells – surrounded by cells of the same type[2]. For instance, these cells could represent

[2] This diagram has been used as a basis of assessing relationships between different "levels" of authority relating to different spatial territories (Marshall, ed., 2003)

territorial areas with a rayon of 40 Km (the typical short trip distance) each corresponding to a single municipality. The intermediate square B represent a Region including the city C and three adjacent municipalities.

In our abstract representation, the City C will have a population of, say, 100.000 residents, and will receive every working day an inflows of 10.000 commuters from the adjacent areas of the Region and 1.000 visitors from the rest of the Nation (business visitors, tourists).

In order to see what happens in this very simplified system, we want to focus our attention on the total number of city C users, i.e. 100.000 residents + 10.000 commuters + 1.000 visitors = 111.000 city users.

For each of these users we would like to define an index of "willingness to interact" *x*, variable between 0 and 1. A low value of x (between 0 and ½) indicates a low interest of a city user in establishing an interaction with other city users, while a high value of x (between ½ and 1) would indicate a high interest to enter into any form of interaction with others. Ideally, we would like to know the real willingness to interact of each individual – something that is impossible. However, the propensity to social interaction depends on the necessity of satisfying needs such as nutrition, health, education, on activities as working, shopping, leisure etc., and on different lifestyles that in the aggregate are influenced by some basic factors, such as for example the level of income and age. Thus, a simplified index *x* will be considered hereafter, taking only discrete values for some categories of people as shown in the table below. These values are only conjectures, not empirical observations. However, realistic values could be drawn from detailed travel activity surveys or counts of users' characteristics at main attractor points.

	Low Income			High Income		
	0-15	16-65	> 65	0-15	16-65	> 65
Residents	0,3	0,6	0,2	0,5	0,8	0,4
Commuters	1	1	-	1	1	-
Visitors	1	1	1	1	1	1

Although city C in our simplified system is only represented as a small square, in reality could be a town of 100.000 inhabitants that might be divided in, say, 10 sub-municipal districts. Then, the next step should be to compute the total distribution, for instance during an average working day, of the present population (i.e. residents + commuters + visitors) in the 10 zones in which the city is subdivided.

From this distribution, which will show the consistency of present population in each zone by income class and age group, it is possible to compute the *aggregate potential of interaction* in the city C as follows:

- multiply the population of each zone, income class and age group by the correspondent willingness to interact index *x*;
- compute the total potential of interaction for each zone, adding up the values of interaction computed for the income classes and age groups within the zone (in practice these are weighted population values);
- order the zones by descending rank of potential of interaction, from the highest to the lowest, and draw the function of distribution of potential of interaction putting on the X-

axis the cumulative values of potential interaction for the zones 1, 2, etc., and on the Y-axis the cumulative percentage of this potential interaction. This function will show what share of the potential of interaction within the city C is concentrated in the first zone, in the first two zones etc.. (in practice this is a Pareto diagram of the potential interaction of zones within the city).

Having determined the potential of interaction related to our stylised city C, the next step is to determine how this potential of interaction can be satisfied based on the present performance of transport networks: i) within the city; ii) connecting the city C with the Region and the Nation (for the share of trips to be undertaken by commuters and visitors respectively).

This task can be accomplished using transport models of the city C to compute average indices of accessibility to each of the city C zones (ranked by level of potential interaction - i.e. zone 1, zone 2 etc.) and the remaining zones within the City, the Region and the Nation as a whole.

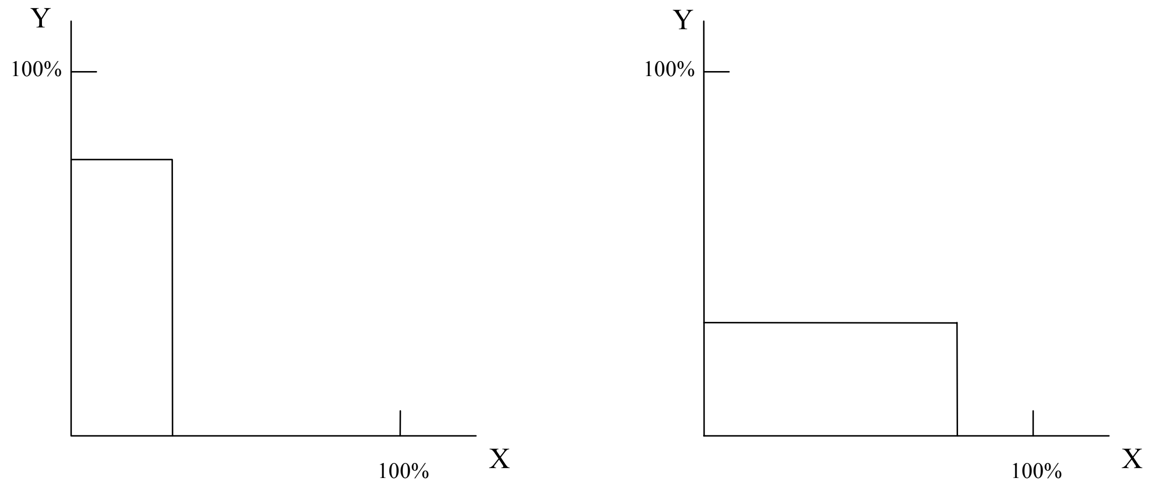
In this context, we propose to compute as index of accessibility the share of the potential of interaction of the zone during the average working day that can be satisfied within a reasonable door-to-door travel time by existing transport modes. In our simplified case the average door-to-door travel time could be 30 minutes – a reasonable time to spend to go to work, shopping or establishing any other social interaction outside home in a city of 100.000 inhabitants and its surroundings. In principle, accessibility indices should be computed separately for different transport modes: i) walking; ii) cycling; iii) separated PT services (i.e. bus, tram, metro without integrated schedules); iv) integrated PT services; v) intermediate forms of transport (e.g. collective taxi, car sharing etc.); vi) private car. These computations should be based on data of network configuration, performance and average travel times + access/egress and waiting times (when relevant), usually available from city models at a disaggregate level (i.e. zone by zone). These data should include also car availability – in order to compute private car accessibility only in relation to the share of city users owning a car.

Note that the perspective taken here is to consider rather aggregate zones within the city "cell", and to compute the accessibility to the zones, not from the zones. Thus, the index proposed will measure the accessibility for all the city users of the zone internal to the city C[3]. While building the accessibility index, we recommend to use not a distance but a time threshold, in order to consider both accessibility and mobility conditions. Indeed, the time threshold will be affected both by the location patterns (how far the city users live away from their destinations in the zone) and by the fluidity of mobility on the transport network within the zones or on feeder connections from the origins outside the zone.

As noted above, accessibility indices should be computed for the single transport modes that connect the zone to other zones of the city or origins abroad. However, it is important to achieve an overall vision of accessibility and mobility of each city C zone comparing the two main alternative of transport, that is the private car and the combination of the other modes (walking and/or cycling and/or public transport and/or intermediate transport) into door-to-door chains. Thus more synthetic accessibility frontiers should be computed for the private car and for the other modes combined into chains. The results for each zone of the city C can be plotted on a plane, putting on the Y-axis the share of potential interaction that can be established within a given time threshold (e.g. 30 minutes) travelling by car, and on the X-axis the same share that can be established travelling with alternative modes.

[3] More precisely, the quantity of city users should be computed for each zone as " number of residents + (commuters inflow – commuters outflow) + (visitors inflow – visitors outflow)".

Slim/high rectangles elongated on the Y-axis will represent a zone where accessibility by car is far more substantial than that by alternative modes, flat/low rectangles will represent a zone where the opposite happens, i.e. the accessibility by alternative transport is dominant, e.g. La Defense in Paris (squares will represent neutral zones, where accessibility with both ways – car and alternative modes – is ensured, but this latter case should be a less frequent eventuality).



Y = % of city users with access by car to the zone within T minutes

X = % of city users with access by alternative transport to the zone within T minutes

We propose to use this diagram representation – or better a system of diagrams elaborated for the zones of the city C – as a way of visualising the benefits of integrated land use and transport policies in a territorial system, measuring the accessibility and mobility by car, by alternative transport or both, before and after the implementation of the integrated scheme.

Indeed, the overall effect of an integrated transport policy will be represented by changes in the dimensions and/or shapes of the private car and alternative transport accessibility frontiers represented in the diagrams for each zone of the city C, as well as for the city as a whole (it should be always possible to add the potential interaction satisfied within the fixed time threshold by the two transport alternatives across all the zones of the city). It should be possible and particularly interesting to focus the analysis on important attractors within the city which are connected with fast links (e.g. new suburban trains) with places located in the cells surrounding the city C, to evaluate potential effects of relocation of city users in the suburbs and monitor them over time.

More complete but also more sophisticated ways of evaluation could compare accessibility not simply within a time threshold, but within a generalised cost threshold, to include also the influence of policies that modify not only the time of travelling with the different modes but also user costs – e.g. fares of public transport, and fuel costs, vehicle taxes, parking charges etc. for private car use. Finally, an even more general threshold could be considered, including social cost of transport (i.e. impacts on environment and health), and determining the share of potential interaction that could be achieved for each zone of the city while staying within a given threshold of social cost of travel. However, how to implement these more complex forms of computation of benefits of integrated policies on the city users welfare is beyond the scope of this note.

4. Transferability of good practice

Best practice is concerned with the transfer of successful policies between different contexts. This clearly requires consideration of two components: the identification of successful policies, and the identification for potential successful transfer between contexts. In a sense, the application of any policy measure (that did not originate *in situ*) could be regarded as the transfer of an existing measure type to a particular location. Identifying conditions that allow successful transfer, or finding solutions which overcome barriers to transfer, can be seen as a key to unlocking the latent 'best practice' in every successful policy application (Marshall, ed., 2003).

The TRANSPLUS research has demonstrated that there are a series of links between different types of barriers and transferability that may be related to the relationships between institutions, instruments and territories. While some barriers are site-specific – or *embedded* in their local context – others are *contingent* on the system of laws, policies, institutional arrangements, and so on. These contingent barriers may be amenable to change.

Transferability does not only imply attention to the individual technical or operational features of policy instruments concerned, but how a policy instrument may fit with the context of the receptor city. Identification of comparable cities can assist assessment of potential transferability. There may be a need to transplant a policy with part of its institutional context, i.e., transfer not only of a policy instrument, but some of the relationships between institutions and territories may have to be replicated as well in the new location.

The TRANSPLUS project has addressed the issue of transferability adopting two significant methods for analysis.

The first relates to the issue of compatibility. A method of representation and analysis of institutional structure in relation to political and geographical territories has been developed and reported (Marshall, 2003 - an example illustration is given in Figure 1). This method distinguishes systematically between different kinds of actor such as institutions and authorities; between different kinds of policy instruments; and different areas, zones, territories to which policies are applied.

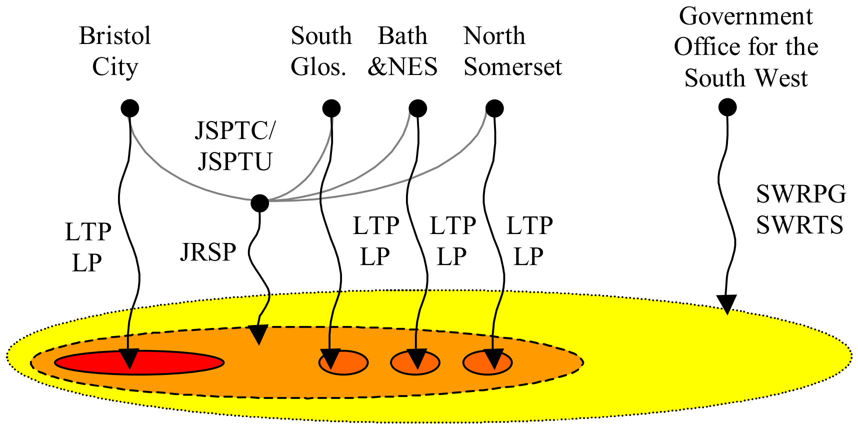
This compatibility analysis fits into a second, more general system for analysing transferability, which takes account of the overall processes of transferability, including factors of success and risk assessment analysis (barrier analysis) (Figure 2).

While the TRANSPLUS methods and findings have focused on integrated transport and land use planning, the methodologies devised are suitable for application to a much wider variety of policy spheres. These certainly include the application of policies oriented towards sustainable development, not only at the urban level, but at regional and national levels.

Indeed, distinctions between different kinds of policies and their scales of application is one of the areas of focus of the transferability research. For example, we can distinguish between the physical scale of application of a policy on the ground (e.g. a shared surface street) and the scale of application of policy legislation (e.g. nationwide policy on shared surface streets). The issue of scale is also important for addressing the issue of sustainability, since sustainability issues often have a wide 'footprint' or area of impact (up to the global scale) relative to the consideration of individual activities which give rise to them.

As noted above, the detailed methods of transferability analysis used in TRANSPLUS have originally been devised and tested with respect to 23 case study cities in the EC, and now they are being applied to further cases in New Accession States. The further application and development to address a wider range of urban sustainability policies would appear to be a promising and advantageous next step.

Figure 1. Example of system analysis of institutional structure (part of TRANSPLUS compatibility analysis).

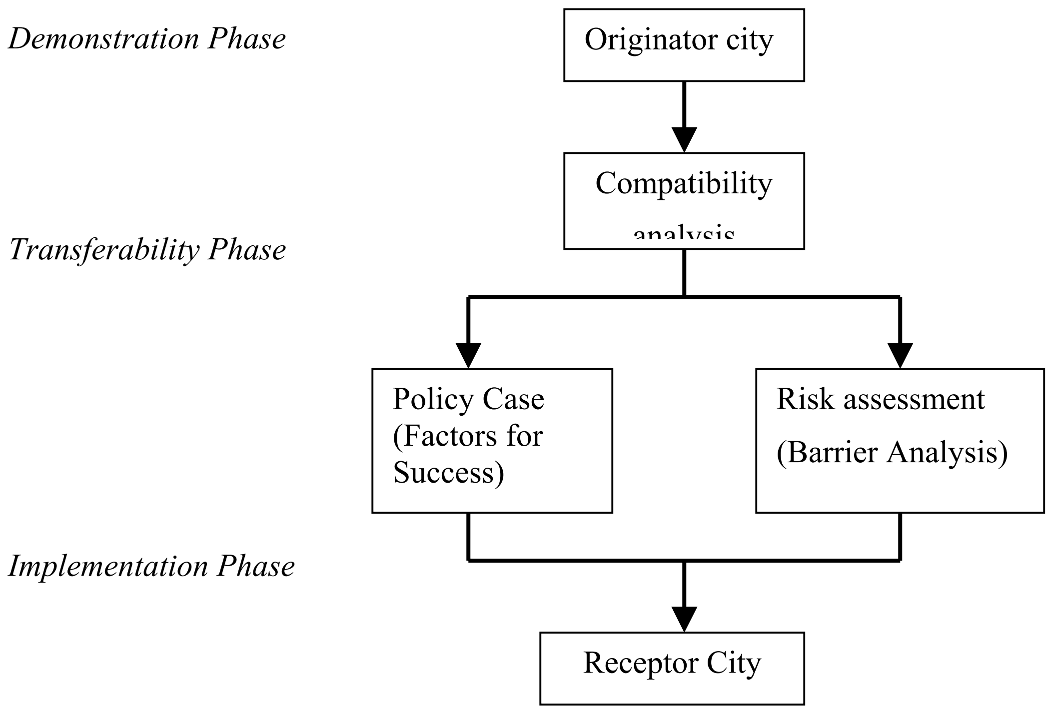


LP = Local Plan (Land Use); LTP = Local Transport Plan; JRSP = Joint Replacement Structure Plan

JSPTC = Joint Strategic Planning and Transport Committee; JSPTU = Joint Strategic Planning and Transport Unit; SWRPG = South West Regional Planning Guidance; SWPTS = South West Regional Transport Strategy

SOURCE: TRANSPLUS Deliverable D4.2, TRANSPLUS Deliverable D4.

Figure 2. TRANSPLUS transferability process framework



SOURCE: TRANSPLUS Deliverable D4.3; TRANSPLUS Deliverable D4.

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