Integrating Sustainability into Transport

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Introduction

There are two ways of embarking on a discussion of sustainability in transport. One is primarily concerned with defining sustainability (usually through a discussion of climate change) and then detailing the seriously unsustainable trends we are currently experiencing and finishing with a flourish about how we could change trajectory and solve the problem through some serious policy changes. This route is well rehearsed in the transport policy literature and has had no impact whatsoever on changing trends. The other approach is to exploit the very large scenario literature, backcasting methodology and "visioning" tools that exist and paint a picture of what things could be like and how we would get there. In this paper I will explore this second approach and define sustainability and its links with transport through a vision of a future that is not very far away. This future will be presented as a picture of transport in the UK in 2030. This possible future, I will argue, has to be rooted in sustainability and this in turn requires a strongly practical integration of sustainability into the transport sector.

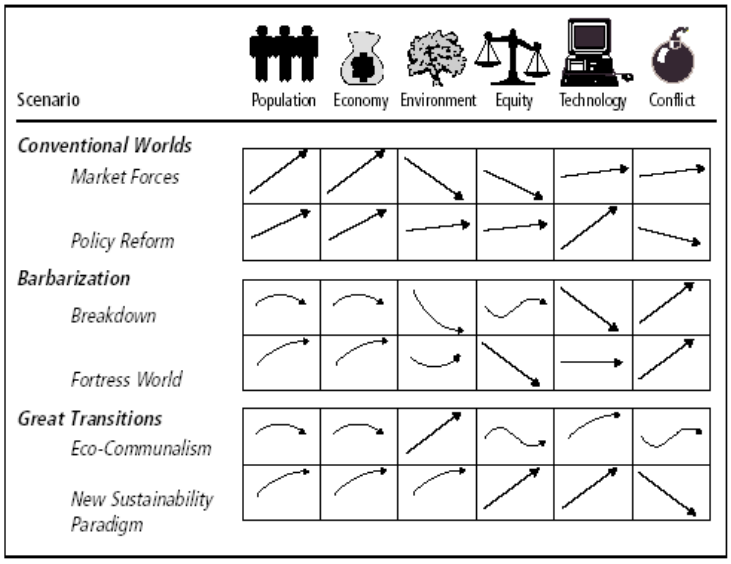
Scenario Approaches

There is a large literature on scenario approaches which sets out the advantages and the policy development possibilities of envisioning a future condition in a particular sector of the economy or in a particular area of human activity. This is a marked departure from traditional forecasting and modelling approaches that seek to predict future conditions on the basis of some kind of extrapolation of past trends (e.g. growth in car ownership and use). Scenario approaches take a radically different perspective and try to identify a number of options for the future some of which are simply desirable and aspirational and then set out to chart a course from where we are now to where we want to get to. This approach is known as "backcasting" and is the approach used in this paper.

For a more general approach to scenarios and some extremely thought provoking images of possible futures the reader is referred to the work of Paul Raskin at the Stockholm Environment Institute in Boston (USA).

Paul Raskin and his colleagues (Raskin, 2002) have set out a number of possible scenarios for planetary futures and summarised them in diagrammatic form (reproduced below):

Figure 4. Scenario Structure with Illustrative Patterns



Source: Gallopín et al. (1997)

Source: Raskin et al (2002), page 16

The thrust of Raskin's approach is that it is possible and desirable to set out scenarios ands then to decide which one is preferable. The bottom line of the diagram reproduced above shows the "new sustainability paradigm" showing significant gains in environmental quality, equity, technology and conflict reduction. The preferred transport future set out in this paper is consistent with the "new sustainability paradigm" in Raskin and is intended to be very clear about the practical steps that need to be taken to within one sector of the economy and one area of human activity if we are to succeed in achieving the "great transition" envisioned by Raskin.

Raskin summarises the scenarios as follows:

> The scenarios are distinguished by distinct responses to the social and environmental challenges. *Market Forces* relies on the self-correcting logic of competitive markets. *Policy Reform* depends on government action to seek a sustainable future. In *Fortress World* it falls to the armed forces to impose order, protect the environment and prevent a collapse into *Breakdown*. *Great Transitions* envision a sustainable and desirable future emerging from new values, a revised model of development and the active engagement of civil society.

Backcasting

Backcasting is a well-established technique for charting a course to a "preferable future". A preferable future has to be defined and I turn to this issue later.

The backcasting technique has been defined by Robinson (1996):

“The major distinguishing characteristic of backcasting analysis is a concern, not with what futures are likely to happen but with how desirable futures can be attained. It is thus explicitly normative, involving working backwards from a particular desirable future end-point to the present in order to determine the physical feasibility of that future and what policy measures would be required to reach that point”

The approach adopted by Robinson was taken up by the OECD in its study of Environmentally Sustainable Transport (EST).

The EST scenario is summarised in Appendix 1

Robinson’s methodology was developed in the context of defining what a sustainable Canada would like in 2030 and then working out how to get “there”:

Based on research initiated by the Sustainable Society Project in 1988, Life in 2030 is unique in that it uses backcasting instead of forecasting to trace the path of Canada forty years into the future to the year 2030. Instead of predicting the most likely future based on current trends, the authors set out a desirable future and discuss the changes that would need to occur between 1990 and 2030 to arrive at this future vision. This vision, derived from ethical, political, and ecological principles, is not viewed as definitive, for the authors hope to inspire others to conceive of, and work towards, their own visions of a sustainable future.

Source: http://www.ubcpress.ca/search/title_book.asp?BookID=146

This backcasting methodology was used in the OECD Environmentally Sustainable Transport project published in 2002 under the title “Policy Instruments for Achieving EST”:

http://www.oecd.org/document/53/0,2340,en_2649_34363_1955509_1_1_1_1,00.html

“At the core of the design of the EST project is a method for policy development known as backcasting, a term to make a distinction from the forecasting methods that are more frequently used”

(Page 14)

“In backcasting goals are set and there is a working backwards – backcasting - to determine what must be done to reach them. Policy development based on forecasting results in

attempting to change projected trends to avoid an undesirable future. Policy development based on backcasting results in doing what is necessary to achieve a desired future."

(Page 14)

"The approach is as simple as what was outlined…..you decide what future you want, you plan for it, you secure it and then you hold on to it"

(Page 16)

This can be summarised diagrammatically from an EST report. In "Bridging the Policy Gap" (reproduced below) the OECD has defined a desirable future (EST). This is very different to Business as Usual (BAU) and attention must now be given to defining the "policy pathway" that connects where we are now in 2005 with where we want to be in (say) 2030).

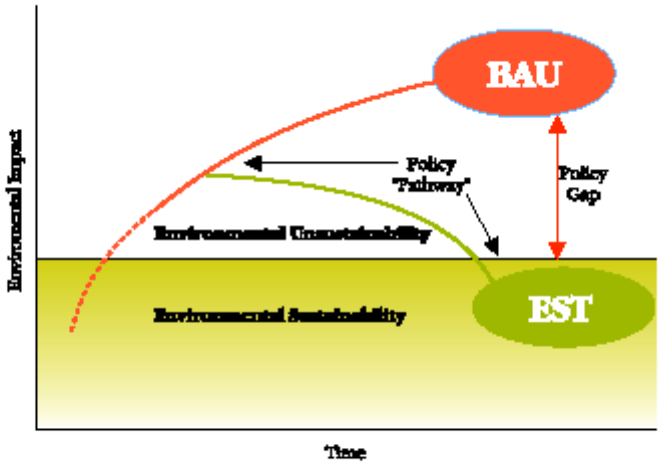
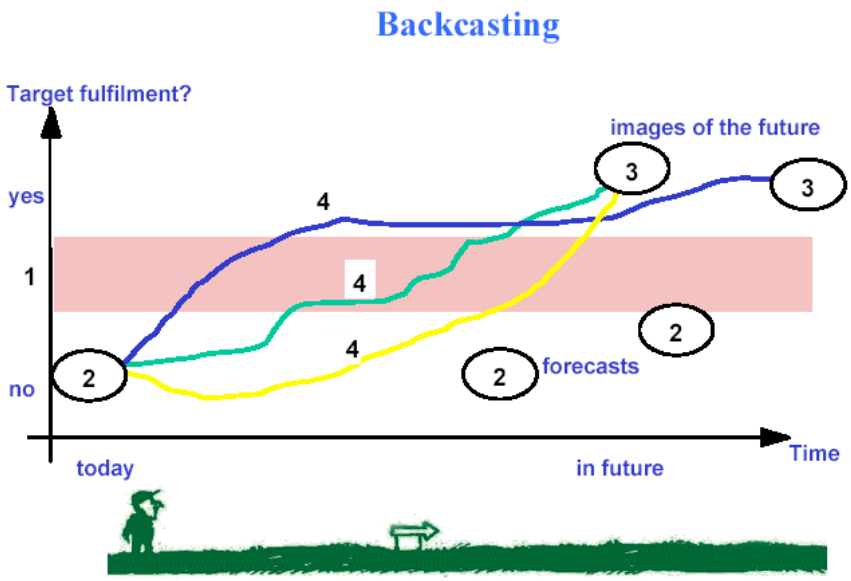


Figure 27. Bridging the policy gap

Source: http://www.oecd.org/dataoecd/15/29/2388785.pdf

OECD (200) Environmentally Sustainable Transport, Synthesis Report

The policy development process can be illustrated diagrammatically. The purpose of the exercise is to get from the present (area 2) to the desirable future (area 3) via a number of possible pathways (labelled 4).



Source: http://www.framtidsstudier.se/seminarier/mhojer.pdf

The OECD backcasting methodology has been employed in the UK by the Stockholm Environment Institute to describe a desirable future as one with zero fatalities and serious injuries in the road traffic environment. This desirable future is based on the Swedish “Vision Zero” road safety policy which has these same objectives. The backcasting approach then goes on to defining the policies that would be put in place to produce a situation with zero fatalities and serious injuries in the road traffic environment. This is an important part of integrating sustainability into transport and is included in Table 1 summarising the main components of a preferred future.

Do we need to improve?

Identifying a preferred future requires a basic audit of how we are currently doing and whether or not we would like to see improvements. This is fraught with difficulties but the absence of a fully transparent debate on the eventual destination of all of our sustainability and transport rhetoric is essential to policy development. Indeed, I would I argue that in the UK we have one of the largest collection of policy documents and discussion documents and academic research on transport policy and practice of any country in Europe and one of the worst outcomes. There is very little doubt that the actual experience of transport users across all ages, gender and social groups is much worse in the UK than in many other countries and many (though not all) of these disparities have been identified in CFIT reports e.g.

Public Transport

Buses - which have been referred to as the centre piece of the Public Transport renaissance in Britain - have fared particularly badly in the UK over the last twenty years. Between 1980 and 1998, the average distance travelled by bus per person in the UK declined by more than a fifth. During the same period, most EU countries experienced growth in demand for bus travel - Austria and Sweden were up by more than 20%, Denmark by more than 40%, and Italy by more than one half. Over the same period, car travel per person in the UK rose by 51%.

Source: CFIT (2001)

Study of European Best Practice in the delivery of integrated transport: key findings

http://www.cfit.gov.uk/docs/2001/ebp/ebp/key/03.htm#1

The story is equally grim for walking and cycling where the UK is near the bottom of country comparison tables in terms of the amount of walking and cycling per capita per annum.

The reason for the poor performance of the UK in public transport, walking and cycling is quite simply the absence of intelligent policies to promote these modes and the pursuit of policies (e.g. bus privatisation) that damage bus use (outside London)

A Preferred Future

In the spirit of transparency and stimulating debate I will now identify a preferred future. The importance of this future is not that it is the only one or the right one but that it attempts to translate the rhetoric of sustainability and transport policy objectives into a clearly structured vision of what could be achieved. The preferred future is summarised in table 1

Table 1

Elements of a preferred future to be achieved by 2030: principal outcomes

Component	Comments
Modal split for all trips in urban areas to be one third by car, one third walk/cycle, one third public transport	Currently achieved or exceeded in part or whole in Copenhagen, Basle and Vienna
Zero fatalities and zero serious injuries in the road traffic environment (including 20mph	Currently Swedish government policy (Vision Zero) and adopted under different names in

limit in all urban areas and in all roads through villages)	Norway and Denmark
90% of all journeys to schools in the UK to be by non-car modes	Successes in the UK with safe routes to school plans and with US school buses and with routine school travel in Germany and Austria indicates this is possible
90% of all commuter trips over distances of up to 5 km by non car modes	This is more demanding than the usual travel plans but there is no reasons why it cannot be achieved
60% reduction in lorry kms in cities	Achieved in German city logistic projects
Increase in number and density of local shops, post offices, dentists and other everyday destinations	Well within the sphere of influence of government policy and already in place in German, Swiss and Austrian towns and cities
All 134 Air Quality Management Areas declared by local authorities (July 2007) to eliminate exceedances of AQ standards	Traffic reduction and switch to sustainable modes can produce this result
All UK local authorities to deliver World Health Organisation recommendations for noise levels not to be exceeded for outdoor and indoor noise and for day time and night time noise	

The outcomes described in Table 1 will require sustained and bold interventions in a number of policy areas. There is nothing new or difficult about these policy areas. The main ingredient lacking in the UK over the last 20 years has been a strong sense of purpose and commitment to achieve outcomes and this is the whole point of defining a preferred future and backcasting.

Having established the main components of a desirable/preferred future we now need to identify the measures and interventions that are likely to be successful in producing the outcomes listed in table 1. The key areas of intervention would be:

- Changing the planning system so that it does in reality deliver PPG13 objectives (reduce the need to travel especially by car)
- Design the “city of short distances”. How do we re-engineer our cities to make sure that there are many more destinations and facilities within short distances rather than accepting longer distances and reduced accessibility?
- Much strengthened urban design interventions to make absolutely sure that walking and cycling are prioritised

- Accelerated programme of work place and school travel plans with legal “teeth” to make sure that all sites have clear and systematic polices to reduce car use and increase the use of alternatives to the car
- Personalised journey planning to convey information to all citizens and bring about changes in their travel choices
- The systematic elimination of all perverse transport subsidies. If a transport subsidy encourages car use or flying it is eliminated
- Introduction of urban logistics methodology to reduce lorry activity in cities
- Introduction of regional production and consumption projects to encourage a substitution of “near” for “far” in the supply of goods and services
- Adopt sustainable procurement methods throughout the public sector e.g. the £80 billion annual spend of all local authorities
- Implement the German heavy goods vehicle tax (the “Lastkraftwagen Maut”)
- Task all urban areas to reduce car trips for all journeys under 5 kms in length. This can be done by any or all of or any mixture of parking strategies, road pricing and charging and workplace car parking space taxation. The choice will be made at local level but all local authorities must do it. The current “free for all” is ineffective.
- Introduce rural transport strategies based on Swiss levels of rural public transport and on German innovations such as the North Rhine Westphalia “Citizen Bus”

There will, in addition, be a need for larger scale changes especially in the following areas:

- A complete audit of the taxation system to eliminate every aspect of support for car ownership and use and to reward those who use bikes, walk or use public transport
- A thorough and system-wide implementation of the polluter pays principal and cost-recover principle so that every trip by whatever mode pays its full external costs (air pollution and health, climate change, noise and health) and achieves 100% cost recovery (each mode pays in full for all safety and security procedures, all infrastructure repair, renewal and new build, all policing, regulatory and legal systems

- A systematic elimination of the £240 billion Euros annual subsidy to all forms of transport starting with those subsidies that are the responsibility of the UK government and moving on to the many subsidies that originate in the EU, EIB, ERDF and other European level agencies

- A review of city-region governance in the UK. This is already underway and promoted by the Local Government Association. We need city-region governance equivalent to that in place in Greater Copenhagen or Zurich or around all large German cities

- Spend more on public transport, walking and cycling and reverse many aspects of the failed privatisation and deregulation of buses and trains. There will be a need for much more transparency and accountability in public finance. How much does the UK government spend on transport infrastructure and transport projects in British (or English) cities? How does this compare with Vienna or Berlin? At the moment Vienna spends about 400 Euros per capita per annum on public transport and Manchester spends 32 Euros. The result is a very good public transport system in Vienna and a poor one in Manchester (in spite of the Metrolink)

The promise and lure of the times ahead

Vauban is a suburb of the southern German city of Freiburg. It is served by high quality cycling routes and by a new tram line. It has extensive car share infrastructure in place and road design that delivers low speeds (less than 30kph). The houses and apartments are designed to high energy efficiency and low carbon standards and the living quarter has high levels of child play space, green space and recreational amenities. It is a thriving, quiet, enjoyable and successful community. It is a model for all community development and it exists now. The main features of Vauban are summarised in Appendix 2.

Conclusion

The debate about sustainability and transport is about the radical transformation of living conditions, health, mobility, planning and the fiscal regime underpinning many transport choices. The integration of sustainability into transport offers a powerful tool to achieve all these gaols including the delivery of a major contribution to climate change policies through the reduction of greenhouse gases in transport. It would, of course, be possible to achieve all this even if “sustainability” had not been invented but the overarching significance of this policy driver does provide us with a strong sense of purpose and policy direction with which to produce these changes in transport.

The definition of a preferred future in transport terms is the mechanism selected in this paper for fully understanding the potential of these changes and for driving their successful implementation. Progress to date in transport in much of the developed world has not been good and the gathering experience of India and China is that our explosion in mobility with associated social, environmental and fiscal problems is to be repeated and multiplied in scale.

In many ways the future is already with us. Vauban is in place and working. Copenhagen and Dutch cities like Delft and Groningen have very large proportions of their trips accomplished by walking and cycling (often more than one third). People working in Frankfurt in Germany can buy a monthly “job-ticket” that is approximately 50 Euros to cover all travel 7 days a week in Frankfurt, in the town or city nearby (e.g. Darmstadt) if they do not live in Frankfurt and all

travel on the corridor between the cities. The public transport co-ordination in Zurich and Basle (Switzerland) demonstrates that all the difficulties and complexities generated by UK policy making are in the realms of self-inflicted wounds. It is not difficult to organise a highly efficient system and ten minutes spent watching the seamless web of buses, trams and trains at Dornach-Arlesheim (near Basle) should put all UK decision makers in transport to shame.

We have now spent many years discussing transport and discussing sustainability and yet the majority of UK citizens still live out their daily lives with transport services and facilities much poorer than in mainland European countries and with much higher costs. The integration of sustainability into transport offers a way out of the delivery impasse but it cannot transform complacency and it cannot deliver across the board quality improvements in all aspects of transport and mobility unless there is a dramatic cultural and policy shift towards a radical transformation. This is a task that all of us must share but will we do it?

Appendix 1

OECD, EST Scenario for the year 2030 and business as usual (BAU) comparison

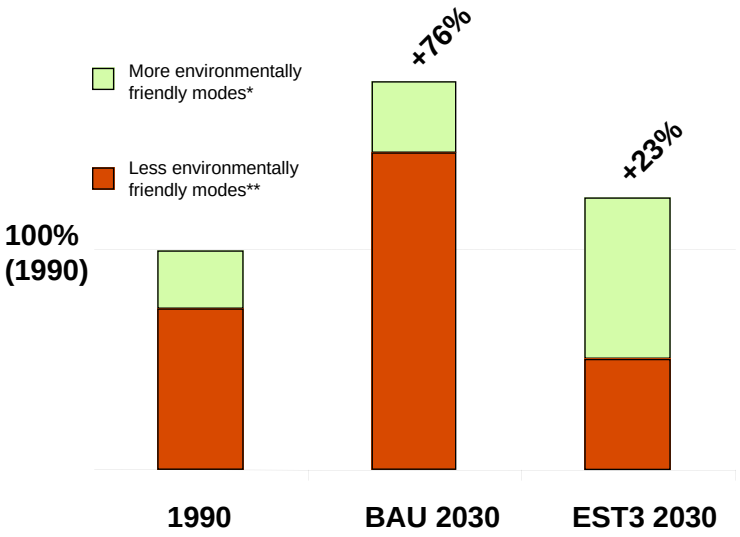
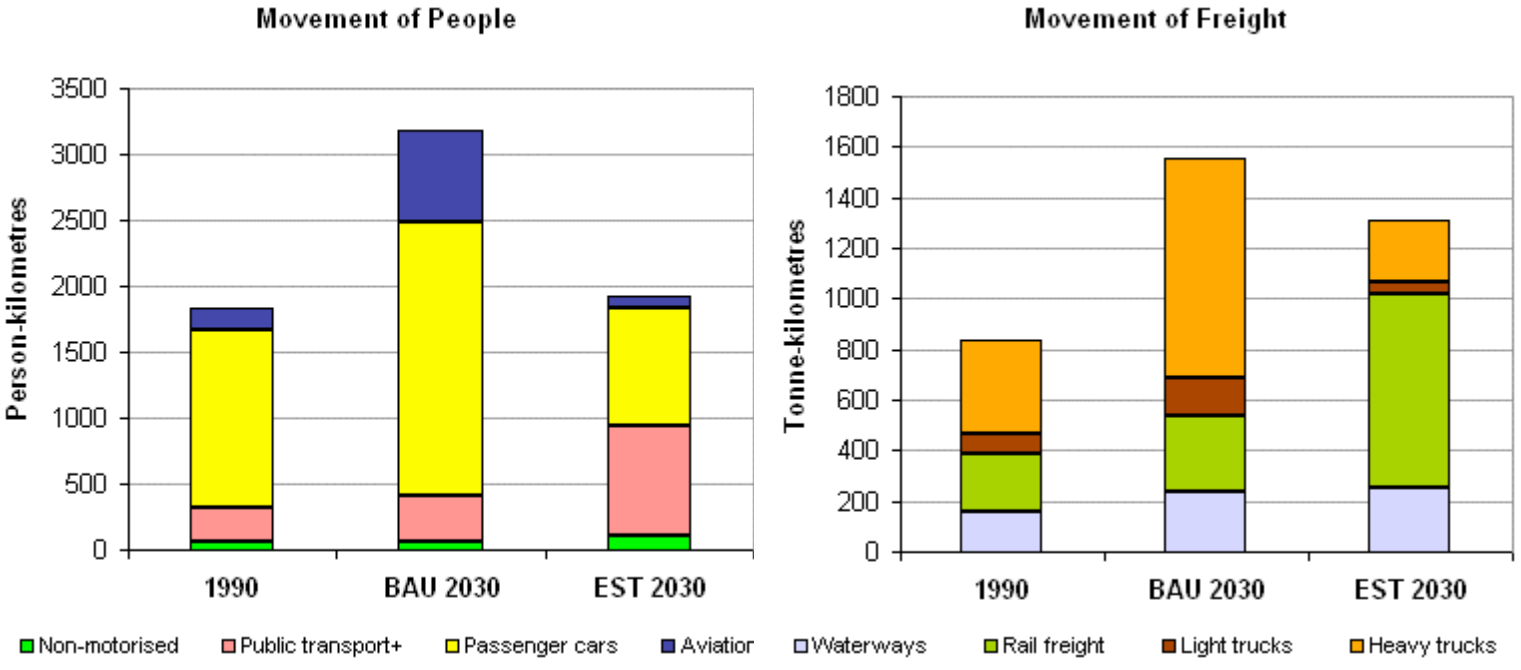
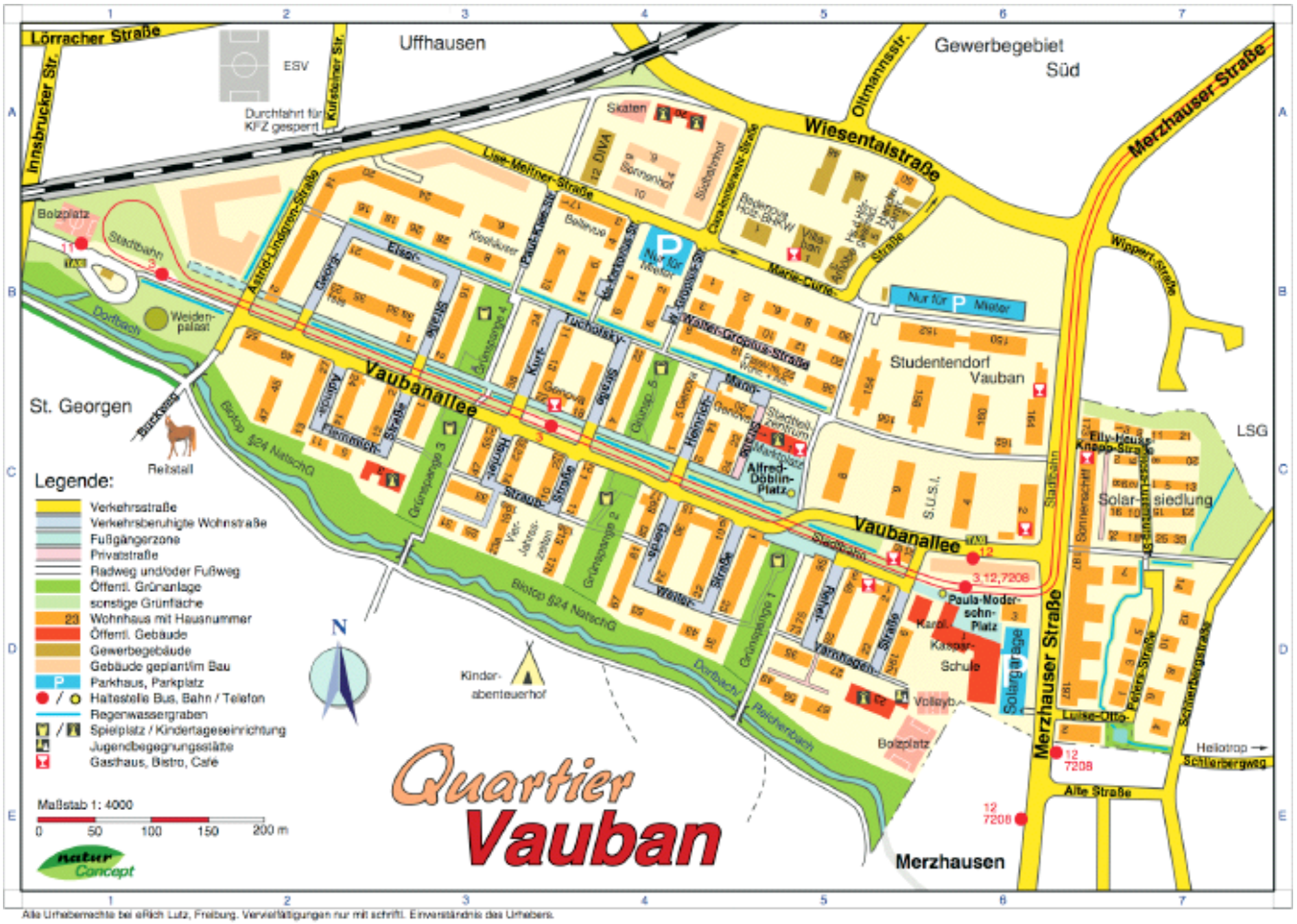


Figure 13 *Transport volume index: growth and modal split from 1990 to 2030 for the BAU and EST3 scenarios*



Appendix 2

Vauban



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Map of the Vauban Quarter, Freiburg, Germany

Arial view of a section of the Vauban Quarter

Examples of some of the residential spaces within the Vauban Quarter, with courtyards and gardens for residents to share. Individually styled dwellings give variety and a feeling of ownership.

Examples of the extension of Freiburg's sophisticated multi-modal public transport network (VAG), bicycle and walking network into the Vauban Quarter.

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