

## Chapter 19

# INCREASING ECONOMIC FEASIBILITY OF PUBLIC TRANSPORT SUPPLY IN NATURAL AREAS – A GERMAN CASE STUDY –

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*Manuscript for Chapter 19 in:*

Orsi Francesco (ed.): Sustainable Transportation in Natural and Protected Areas.

Routledge: London – May 30th 2015, ISBN: 978-1-13-878857-2

### Introduction

It goes without saying that in today's time the remaining natural areas are of high relevance to be preserved for future generations, at the same time especially those areas represent in many cases mayor attractions for tourists and excursionists. *"Yet, in recent decades, visitors to the countryside have increasingly adopted modes of travel which bring negative externalities such as noise, emissions and pollution (Countryside Agency, 2003). "This not only threatens the environmental sustainability of many environmentally fragile areas, it also risks their economic sustainability by encroaching on the qualities (such as tranquility, unspoiltness) which attract visitors and their spending." (Guiver et al. 2007)* The conflict even gains on relevance when considering results such as the one of Reeve (2006 p.3): *"Currently many local authorities and national parks are reducing their financial support to rural public transport". "While research activities have focused on the efficacy of restricting cars, such as price or physical restraints, in comparison to social marketing approaches or the provision of other choices such as public transport" (Steiner and Bristow 2000) or the opportunity related to so-called "carrot and stick-approaches" (Dickinson et al; 2004)* this paper aims on the evaluation of tourists and excursionists as an opportunity to increase economic feasibility of rural public transport supply. The chapter will contribute a new perspective by introducing tourists and excursionist as additional target groups for scheduled bus services within rural regions, and by doing so, improving the cost-effectiveness of those services and consequently support sustainable transportation in rural regions. Hence empirical evidence will be presented on the opportunities of fruitful cooperation of the public transport and the tourism sector within natural areas.

### **2. The vicious circle of public transport demand and supply in rural natural regions**

When discussing the situation of public transport in rural areas several framework conditions have to be considered, *"there is a fundamental difference in perception of*

*public transport in metropolitan areas and public transport in rural regions. In opposition to rural regions public transport in metropolitan areas is perceived as a transport alternative even by non-users.”(Gronau, et al. 2004, p. 316), whilst in rural regions public transport usually suffers from a clear lack of awareness. Specific for rural regions is also a disperse settlement structure, which consequently results in a rather adhoc demand for public transport supply. In addition the low overall population density represents a second obstacle for public transport supply in rural regions in terms of generally low demand. This “low demand often results in doubt for the necessity of (public transport) services” in general (Gronau, et al. 2007, p. 128). Disperse and at the same time low demand, as well as a clear lack of awareness are therefore the significant aspects public transport supply has to cope with in rural regions. Beside these already quite unfavorable conditions for implementing a decent public transport supply, there is even a quite strong competition in the form of the private car. Rural areas show a significantly higher degree of car-ownership than it is usual within metropolitan areas. At the same time traffic conditions such as traffic jams, which could contribute to a higher share of public transport are relatively rare. Those conditions create a high competitive environment for any public transport supply in rural regions.*

Unfortunately the aspects mentioned above usually result in poor user intensity as well as a low productivity of rural bus services. Or as Dickinson sums it up: *“It is not surprising in a rural context that public transport proves a poor competitor to the car. In areas with low population density, economic and use level criteria are unlikely to be met and disperse destinations make it hard to offer a transport alternative that will appeal to the majority of people”* (Dickinson 2006, p. 194). The common answer by the responsible institutions is a rather poor supply especially outside the peak hours. However not only is the service in terms of bus schedule negatively influenced by low productivity, but also the overall infrastructure. For instance, the quality of buses or the appearance of bus stops suffers from this low productivity. Maintenance costs are reduced to a minimum level, which in the end results in a further decrease of the already quite low demand for public transport in such regions due to unattractive bus services.

This interdependency of demand and supply via the user intensity leads to the regularly discussed vicious circle for public transportation in rural areas. The overall low economic feasibility based on the low and disperse demand, results in a low quality public transport supply in terms of service, maintenance and number of trips. This problem is not only apparent in Germany but also in England where the UK-Department for Transport admits, *“that public transport is dirty, unreliable and slow”* (Department of Environment, Transport and Regions, 1998). This low and poor supply level leads consequently to a less attractive public transport supply; the existing demand cannot be sufficiently satisfied, which determines a low number of users. These small user numbers are not able to create a sufficient profit and the supply level is reduced once more.

This process results in a steady rise in car-dependency through the decrease of public transport supply and public transport attractiveness at the same time. The only way to end this ongoing decline of public transport in rural regions is the approach to create additional users for the system. The increased number of users contributes to higher economic feasibility, which can be used to upgrade the product and by doing so create even more demand.

### **3. Tourists and Excursionists as a chance for an increased public transport demand in natural areas**

When accepting the approach of generating higher economic feasibility through additional users, the question arises as to which new target groups may be favourable? This chapter, based on the project implementations within the German Ministry of Research funded research project IMAGO, focuses amongst several possible options on the group of tourists and excursionists. The advantages for this target group are evident due to several interesting opportunities. For people going on hiking or biking trips it is not necessary to return to the starting point, as researched also by Guiver et al., (2007, p. 279), *“while the main reason for using a bus was for linear walks”*. Complementing those findings, Downward et al., (2004, p. 418) found empirical evidence to support the view that people *“enjoyed using more than one mode of transport in the course of journey”*. Furthermore, they added that using public transport meant, *“that they did not have to worry about getting lost...”*, therefore also the fact, that no specific knowledge of the region is necessary, for example to find the way to a certain site can be used as an argument for the usage of public transport. In several case studies Downward et al., (2006, p. 145) stated that, the opportunity of *“both looking at the passing scenery whilst travelling, and touring the region”*, instead of concentrating on the traffic, is considered by a significant number of people as a clear advantage. Another advantage is the fact that there are no restrictions on alcohol consumption, when using public transport. At the same time parking restrictions and fees can be avoided, which is favored by the majority of the people as Dickinson (2007, p. 121) affirmed: *“participants disliked paying for parking, particularly for short stay”*. With a study of the “typical” public transport user in leisure time two groups can be distinguished: *“One group...uses the bus principally to avoid taking one or two cars in order to do a linear walk. These customers tend to have a vague environmental bent to make the effort. The other group uses the bus to sightsee and may prefer not to drive to avoid parking costs or driving in an unfamiliar area”* (Guiver et al. 2007, p. 277). Beside those opportunities of the public transport sector for tourists and excursionists regularly recorded, also several positive impacts of this target group on the public transport sector can be identified. This target group usually uses public transport within hours of low demand, at the weekends, in the late morning or the early afternoon; therefore they can supplement the already existing demand, without the need for additional capacity. This additional demand can support the economic feasibility of the public transport supply. At the same time the leisure and tourism sector is strongly subsidized by the public sector, this means that public transport supply

which is also targeting tourists and excursionists, can open up new funding opportunities. Moreover less time pressure on the weekends - there is usually no commuter traffic - allows different routing with slightly longer travel times, which once more allows the combination of “regular” users and tourists and excursionists aiming at particular sites off the usual route. Therefore combining the interest of tourists and excursionists to get to certain sites off the usual routing and the interest of locals to have at least a basic bus service even on days and hours of low demand, can be combined by introducing slightly different routings to meet the expectations of both target groups. Of course it has to be stressed that expectations of both target groups have to be combined, instead of just relabeling existing public transport offers to tourist and excursionists or as Les Lumsdon sums it up: *“What emerges is a substantial mismatch between the needs of utilitarian and the leisure user. Thus the common practice of designing networks primarily for utility purposes and then marketing them to the tourists is not likely to be attractive unless adapted to meet their need. (Les Lumsdon 2006, p.757).”*

#### **4. Framework conditions for attracting leisure demand in public transport**

While the section before outlined various arguments to support the opportunity given through the combination of utilitarian public transport use and the field of tourism and leisure related use Les Lumsdon outlines: *“In reality, the linkages between transport and tourism are weak. The provision of local passenger transport, for all purposes, falls within the Local Transport Planning system and this places great emphasis on trips for utility purpose”* (Les Lumsdon 2006, p.751). In his research on the design of tourism bus services Les Lumsdon identified amongst various stakeholders in the field the consensus, *“that the design of a multifaceted conventional bus network to transport customers for any purpose .. (is) .. more appropriate”*. (Les Lumsdon, 2006, p.754). However precisely such an integrated approach towards providing a multifaceted bus network is still an exception. At the same time several important aspects on the design of tourism bus networks are identified:

- Appropriate design of the network:  
*“In reality most services are put together from an operator’s point of view – one bus has to do everything in the day and hence is not user friendly (Les Lumsdon 2006, p.757).*
- All year service:  
*“All year services were considered to be important for customer confidence even if less frequent service was planned for the low season. (Les Lumsdon 2006, p.757)*
- Marketing plan:  
*“Marketing communication was also considered to be essential to the success of a tourism bus network and 10-25% of an overall funding package was typically allocated to this. (Les Lumsdon 2006, p.757).*

- Creation of a specific brand:  
*“Some interviewees had chosen a strong brand image, such as Hadrian’s Wall Bus or Moorbus, both located in national parks in the north of England. This had proven to be very successful in building customer confidence for a long period. (Les Lumsdon 2006, p.757)*
- Priority access:  
*“Priority access is given to those arriving by public transport at a main park visitor center, where the car park is situated on the periphery of the site and bus stops are located adjacent to the center (Les Lumsdon 2006, p.761).*
- Service delivery:  
 Beside several aspects such as modern vehicles, personal security, cleanliness etc. The interviewees identified the driver of the bus as the key factor in service delivery. Experts recommend “ *to select a small group of drivers to operate the tourism buses*” (Les Lumsdon 2006, p.759).

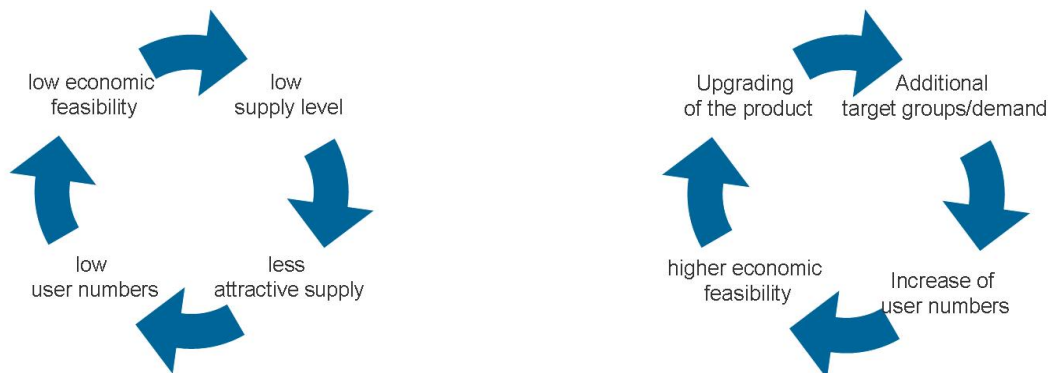
The aspects outlined above also set the starting point for the development of the public transport product introduced in the following section.

## **5. Empirical findings from a German case study**

The following section will present a case study from North Rhine Westphalia, where the existing public transport supply was reworked to satisfy the needs of tourists as well. The case study refers to the region of Lippe in the north-eastern part of North Rhine Westphalia, the so-called “Naturparkbus” (nature park bus) represents an example of a less tourist-focused concept by mainly following the regular route of the already before existing regional bus 792. The starting point for the redesign of the mentioned regional bus line was formed by the research and demonstration project “IMAGO”, funded by the German Ministry of Research in 2003. The project focused on the introduction of high quality public transport supply within rural region, by utilising existing high quality local urban bus networks and spreading them out the surrounding areas, while at the same time connecting the existing high quality networks. Amongst several projects great attention has been given to the so-called regional bus 792. This line connected two major towns in hourly intervals and related to that two major regional railroad lines with each other. Unfortunately demand on the weekends and public holidays, when there was no demand from the commuter side, was pretty poor and local authorities were about to close down the connection. The project and the related funding opened up the opportunity for the project team to work on possible solutions to ensure a public transport supply on this line even on weekends and public holidays. The regional setting of the bus line within the natural reserve of the “Teutoburger Wald” and the high amount of tourism sites and attractions within the area, namely an open-air museum, a memorial for a roman battle, a medieval castle, a bird park, and a natural monument (see figure 1), spurred on the concept of redesigning the existing regional bus from a traditional local public transport product into a tourism product aiming at tourists and excursionists for the weekends.

Whilst considering research results on the design of tourism bus networks in the German context to be rather similar to the ones of *Les Lumsdon (2006)* outlined in the section before, the project team -in cooperation with the local public transport authority “KVG-Lippe”- aimed at creating a multi-faceted bus network facilitating local as well as leisure and tourism-related demand, focusing on the previously mentioned all-year round regional bus line 792.

*Figure 1: Vicious Circle of public transport supply*



*Source: own illustration*

In the first phase an analysis of existing attractions within walking distance of the existing bus route and a detailed mapping of the specific bus stops was done. This analysis aimed at identifying possible additional attractions along the route, which were not yet accessible due to the lack of a bus stop, on the one hand, and evaluating the accessibility of the specific site by the existing bus network, especially in relation to the private car on the other. In several cases bus stops were located based upon an operator benefit rather than the customers’ point of view. For example small and narrow access roads to the specific sites were not serviced by the bus network resulting in rather long distances for public transport users to cover on their way to the site. In some cases the bus stops lacked any additional infrastructure beside the bus stop sign, in order to reduce operational costs. Therefore the first focus of the project was set on re-designing the network in order to increase accessibility of the sites especially in relation to the main competitor the private car. Slight changes in the location of bus stops took place while also upgrading those new established bus stops. Nowadays at the site of the “Herrmansdenkmal” or “Externsteine” bus users have direct access from the bus stop to the ticket office and the entrance to the site, while motorized visitors have to cover a certain distance from the large-scale car park. Furthermore the bus schedule was re-worked in order to ensure good connectivity to the existing train network. By ensuring access to regional trains especially in the morning and the afternoon the local bus network turns into an interesting day-trip opportunity for urban population from Bielefeld and Paderborn.

Figure 2: The “Naturparkbus”



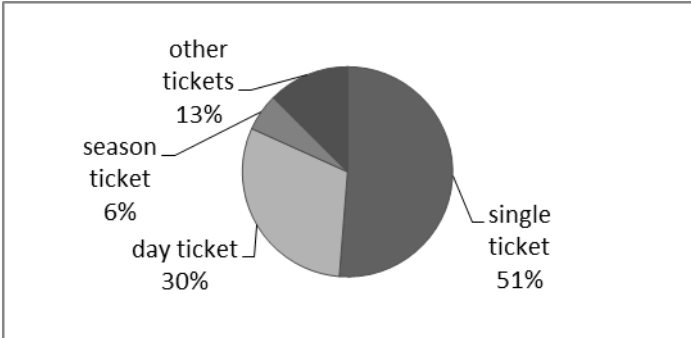
Source: KVG-Lippe

The second phase following up the optimization of the supply-side focused on the demand side for the network. As outlined in section 4 high quality marketing plans including designated brand strategies have proven to be a very efficient instrument to create awareness for the supply and by doing so increasing the customer numbers. Consequently the “regional bus 792” was renamed to the so-called “Naturparkbus” for marketing purposes. In addition to the new brand name a specific design was introduced and a designated flyer outlining the leisure and tourism-related opportunities of the network was published. The specially designed bus replaces the standard equipment on weekends and public holidays and turns the “regional bus line 792” into the “tourism line 792” served by the “Naturparkbus”. Therefore existing local demand is still familiar with the weekday line 792, but at the same time tourists and excursionists are easily able to identify the supply of the “Naturparkbus” as an designated leisure and tourism bus network. The attractive re-design of the buses furthermore ensured an increased attention amongst visitors in the region, especially at the designated sights; the bus itself with its new - close to the attraction - bus stops created a high amount of awareness amongst visitors for the new product and therefore supported the promotion activities.

The third and final phase of the project was dominated by the evaluation of the newly established supply. Beside basic data on the occupancy rates, tickets types and the user specifics special attention was given on the economic feasibility and the environmental sustainability of the product. The evaluation took place two years after the

introduction of the product on 4 different days during the week and the weekends within the summer holiday season. Utilizing a quantitative approach, users were questioned on the introduction of the new service. First of all one has to notice that already in the third year the new product was very well accepted by the market, the given demand doubled based on the average occupancy rate compared to the numbers before “relabeling” the product, although starting off from a quite low level of around 10 passengers per trip. At the same time one has to mention that occupancy rates were heavily influenced by the weather conditions, whilst during rainy days demand dropped to just a few passengers per trip, on sunny days the demand quite often outgrew the supply. Unfortunately absolute figures cannot be published due to data confidentially related to the German public transport licensing system. Nevertheless already in the third year of service the tourists and excursionists represent the majority of users. At the same time it has to be clarified that the number of every-day users remained constant.

Figure 3: Share of Tickets

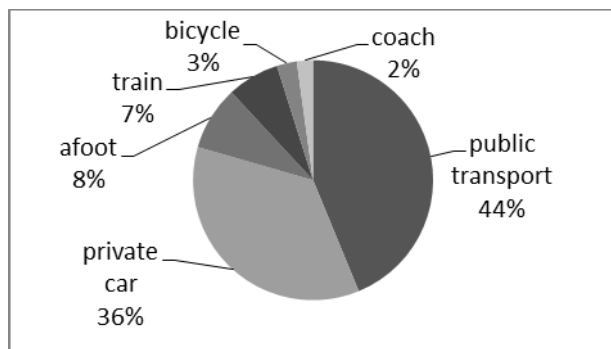


Source: own data (n=400)

In other words the new marketing approach including a slight change of the routing was able to double the number of users in only two years. What consequences this increase of passengers had on the economic feasibility of the product can best be shown by taking a look at the tickets used by the tourists and excursionists. Tourists usually purchase the relatively expensive single or day ticket. Season and other tickets, which mainly include the special ticket “Fliegender Hermann” and special tickets for handicapped persons or pensioners, play a negligible role compared to the day and single tickets. This means that this type of additional user creates a significantly higher income than the regular users, who mainly uses season tickets. This means that the economic feasibility of the product almost quadrupled while the degree of capacity utilization doubled. Therefore the new target group safeguards the long-term existence of this product and by doing so, also ensured a mobility opportunity for the locals. Beside the economic sustainability also the environmental sustainability played a certain role within the evaluation procedure of this bus line that is why also the former modal-split of the bus users was surveyed. By consulting the figure 4 it becomes clear that the increased accessibility of the sights by public transport through the rerouting of the bus line has clearly changed the mobility patterns of the return visitors towards a more environmentally friendly behaviour. In the context of the given question on the transportation mode used on the last visit, 36 % of the users stated that they had used their private car on a former visit.



Figure 4: Modal Split former visit



Source: own data (n=400)

Therefore a clear modal shift can be monitored, which makes the “Naturpark-bus” not only an economic, but also an environmental success. Hence an overall positive result can be drawn. The number of users could be doubled through the approach of addressing tourists and excursionists as an additional target group, furthermore the high share of single tickets amongst the tourists drastically increased the revenue of

the network and finally a clear modal shift amongst the tourists was recorded.

## 6. Discussion on economic feasibility based upon the case study

Following up the data presented before, one has to consider, that beside the clear increase of passengers numbers through the involvement of tourists and excursionists, a mayor role for the increased economic feasibility was related to the specific ticket used by the additional customers.

The witnessed effect of a clearly increased economic feasibility through the high share of single and day tickets amongst tourist and excursionist raises the question on the role of different tariff and fair systems for public transport supply in the leisure context. Looking at the findings of Les Lumsdons’s study (*Les Lumsdon 2006*) outlining, that: *“In many cases, day or weekly tickets and fares had been heavily discounted, so as to be attractive to price-sensitive car-users and those on low incomes”*, one has to question such approaches.

The results of the case study outlined that a professional and high quality product increased its share on the local modal split, while increasing its economic feasibility. In other words the product was successful without additional discounts on the single or day tickets. Of course there has been financial support in the phase of planning and setting up the network, furthermore the creation of marketing material was supported, while the operation itself was not supported. Furthermore based upon the results of Gronau et al (2007, p. 133), outlining, that *“in many cases, it can take several seasons for a service to become well used and to reach its saturation point in terms of possible market share”*, there was a clear commitment of the public transport authority not to stop operation in the first few years, but rather give the product the chance to get known amongst possible target groups and supporting this process with designated marketing material. Such an approach simply means to have a clear budget, to introduce the best possible product and support it with the necessary marketing activities as it is common in any other sector of the economy. While in the field of public transport for the leisure and tourism context, one regularly sees the intro-

duction of low quality public transport supply with high amounts of financial incentives for a short period of time after its introduction and being closed down after one or two years of operation due to an lack of economic feasibility. Therefore it might be a better option to utilize financial incentives in setting up a quality public transport product and the related marketing material rather than spending money on the constant discounting of an unattractive supply.

Of course in this context the issue of social accessibility or environmental issues might be raised to support an ongoing discounting of such networks, but as shown in the case study there have been positive effects on the modal split through the introduction of the ticket even without special discounts. Again it was not the discount to ensure occupancy, but the product itself. To what extent the discounts really contribute to an increased customer number for tourism and leisure-related public transport networks still lacks empirical data. Within the presented case study no clear empirical evidence was found on an existing correlation amongst the existence of discounted single or day tickets and the evaluated attractiveness of the public transport supply through the customers. Also to what extent the discounts provide social accessibility has not been studied in detail yet. Therefore the authors recommend concentrating financial support in the planning and development phase of tourism and leisure related public transport networks rather than in supporting the everyday operation.

## **7. Conclusion**

As elaborated in the chapter the overall public transport supply in rural regions is rather poor, which quite often leads to the situation that even basic transportation needs of the local population cannot be fulfilled. Simultaneously many of these rural regions witness an increasing demand by tourists and excursionists seeking recreation in an unspoiled environment to do various cycling or hiking activities. In particular, this target group has a certain affection towards public transport products when it comes to mobility patterns, as well as the opportunities related to public transport in the context of hiking and cycling, e.g. the opportunity to do linear walks can even be an convincing argument for more car-oriented users. To match those two aspects of increasing demand through tourists and at the same time securing a basic supply for locals in rural regions was one mission within the German research and demonstration project IMAGO. Based on the empirical findings of the project the combination seems to be quite promising. On the one hand a clear increase of public transport users could be reported after implementing a public transport supply considering the needs of both target groups; while the economic feasibility could be drastically improved. Discussing the increase of users it has to be clarified as well, that only minor investments were required for implementing a new marketing approach and at least in the given example, only a minor change of the existing routing was necessary. Beside the positive increase of users the clear increase in revenues has to be outlined. The particularity of tourists and excursionists, as recorded in the empirical research, to use mainly single and day tickets had very strong impacts on the overall feasibility

of the given product. The usual pricing strategy of public transport providers to increase discounts related to increasing validity periods results in rather high profits for single and day tickets. As a result the economic feasibility increase is significantly higher than the increase of customers. Furthermore the positive results indicate the opportunity to combine the two given target groups of everyday users and tourists and excursionists. Of course the given example cannot be generalized nor copied to other regions in right the same way, nevertheless it demonstrates a promising potential for specific regions. At the same time the simple fact that tourists and excursionists can be used in order to secure a certain basic transport supply for locals in rural regions by increasing user numbers and economic feasibility, may bring the opportunity to consider further implementation of such examples instead of cutting down further supply, based on the lack of demand!

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