ABSTRACT

The competition of cities and nations around the favour of the tourists and investors is a long-known phenomenon. However the conditions have changed radically as a result of the general globalization, the rapid technological progress and the distinctive increase of mobility. Today the tourism destinations compete in worldwide rivalry and the competition becomes more and more intensive. By the various and penetrating operational activity level of the media, the potential tourists are exposed to a constant incessant flood of irritations, in which only exceptional messages get any attention. In the last years the acquisition of large events was therefore established as a strategy, in order to gain the attention of the customers in the hard competition (Häusermann & Siebel 1993, p. 13). Exceptional crucial (publicity-) effects are attributed sport-mega-events and first of all positive effects for the tourism are stressed. (Rahmann et al. 1998, p. 66; Hall 1992).

In short-run perspective it is the demand effect of the travelling fans, which is most notably important. Although some tourists stay away from the destination during the event because they fear chaotic conditions, increasing prices as well as further disadvantages, the positive effects usually prevail. The additional tourists create value added through their expenditures and the indirectly induced increases in value can be estimated by multiplier calculations. However this effect is diminishing quite fast, because the expenditures in each round of this chain are reduced as a result of the drain of funds (imported goods, saving, taxes).

In the long-run the improvement on the supply side is much more important. The most relevant effects are:

- Upgrade in the infrastructure level
- Image and promotion effects (publicity, image-enhancement)
- Networks (contacts, alliances,...)
- Establishment of know-how

Associated with mega-events image effects are often named central long-run benefit. The main goals in this field are an increase of the publicity-level, as well as conscious communication of success-promising image components. At least as important as the image effects are the benefits, resulting in longer term from the upgrade of the infrastructure. These investments are limited not only to the sports facilities, but cover depending upon situation also the sectors traffic, accommodation, telecommunication, entertainment and the general appearance of a destination. A well developed infrastructure can be decisive, both for tourists as well as for investors, to prefer a destination. Since the preparations for a mega-event attract often simplified grant procedures and additional subsidies, the opportunity is frequently used to improve the appearance of a destination and to close gaps in the infrastructure supply (cp. Obermair 1993). If all these investments are taken into account calculating the economic impact analysis of a sport-mega-event, a false impression of the induced benefit can occur. In particular during the legacy it is not adequate to charge all the long-term benefits and costs to the event. Therefore the question arises, according to which criteria the investments should be differenti-
ated between event-related and not event-related. Dealing with this central question six models were developed on the basis of demarcation criteria used so far in the literature. The models regulate the charge of the investments in different ways: While some take only clearly defined parts of the investments into account, others work with a weighted or a complete charge. These six models were applied to the case study FIS Alpine World Ski Championships 2003 in St. Moritz and an impressive variability in the results can be established. This means for the addressed impact analysis, that depending upon choice of the demarcation criteria a completely different level of benefits can be represented.

For the management of destinations it can be recorded, that a sport-mega-event represents a unique chance to release a lasting tourism effect, by purposeful infrastructure investments. The main chance arises from the pushing, mediating and accelerating effect of the mega-event. However for impact analysis a criteria-based examination of the event-connection for each individual investment project has to take place, in order to prevent an over-estimation of the economic benefits. Conditions for a positive total-effect of the infrastructure investments on the destinations are an adequate dimensioning and fit of the projects to the local conditions, as well as a long-term strategic master planning. Oversized facilities cannot be operated at full capacity in the long-run and cause the requirement of public subsidies instead of supplementary tourist demands. This is why sport-mega-event should be part of a superordinate and well-thought-out strategy, in order that the positive effects of the investments outweigh for the tourism.

1. INTRODUCTION

Basically, there are two different types of analysis to measure the effects of sport-mega-events on regional or national economy (cp. Késenne 1999, p. 29):

- Cost-benefit analyses (CBA)
- Macro-economic impact analysis

These two types can be classified in several subclasses. The main goal of the impact analysis is to show the local, regional or national importance of a (sport-) event. Turnover, added value and occupation are usually collected as most important economic numbers. Additionally the secondary effect released by multipliers for a defined time interval is computed. The cost-benefit analysis however is an approach, which is frequently used in order to decide whether a project implicates an increase in benefits to the society, compared to alternative options. It can be understood as social investment analysis to get a significant decision basis for a meaningful resource allocation. The key result of the CBA is a highly aggregated index (net present value) which illustrates all quantifiable positive and negative effects in only one monetary size. (cp. Kurscheidt 2004, p. 10)

Both approaches exhibit several well-known and sufficient documented lacks. However if the studies are reliably established and the results interpreted correctly, they supply nevertheless important (and correct) realizations (cp. Késenne 1999, p. 29; Maennig 1998, p. 311). Basically there are four different kinds of event-related expenditures which cause an economic inquiring effect (Voillat & Stritt 1999, p. 64):

- Spending on the bidding process
- Spending on infrastructure
- Operating expenses
- Visitor-related spending

Especially for the spending on infrastructure the distinction between event-related and not event-related is crucial, to avoid overestimating of economic event-effects in impact studies. In this point the available article will lend methodical assistance.
This article is dealing also with the importance of infrastructure investment for the tourism development. From the tourism point of view the main impact is not the additional demand and resulting value added, but the chance to benefit of the event-generated accelerating power for upgrading the appearance of a destination and creating a new level of tourism supply. It is an accepted matter of fact, that sport-mega-events have the power, to advance the town development, if the investments are well planed and if they are part of a superordinate strategy fitting to the image of the destination. The supply-effects can have an essential impact which is quite hard to calculate and therefore usually is qualitatively seized and descriptively held in scientific investigations. A quantification of the supply-effects represents a rare exception. (cp. Brunet 1995; Häussermann & Siebel 1993)

To realize the demarcation between event-related and not event-related investments, criteria used in other impact studies are precisely analysed and different charge models are developed and adopted. Not only investments from the organising committee and the public authorities, but also from private investors are taken into account, in order to receive a comprehensive picture of the total released infrastructure effects. Since the research project is not yet finished, the following remarks contain no locking realizations, but document the methodical derivation of the different charge models and their application to the case study of the FIS Alpine World Ski Championships 2003 (Ski WC 2003) in St. Moritz and the consequences for the tourism destination.

2. TERMS AND DEFINITIONS

2.1 Classification of sport events

Sport-mega-events represent the central investigation subject of this article. In the literature there exists no precise definition concerning the size of a mega-event. But several points characterize a sport-mega-event, such as the Olympic Games or World Championships in well-known kinds of sport (cp. Ritchie 1984, p. 2):

- Large numbers of participants and visitors
- Worldwide publicity
- Key role in economic marketing strategies (tourism)
- Long-term social, economic and other legacies (cp. Hall 1992, p. 1)

In Switzerland Müller and Stettler (1999) shaped the term „large sport event“ and developed for the demarcation of this category a system with limit values for five central indicators. Concrete values represent an exception in the scientific context (cp. Schneider 1993, p. 122). Getz (1991, p. 46) tried to categorize mega-events on the basis of criteria as for example the number of visitors, monetary sizes, etc. However he came to the finding that the definition of mega-events will appear always subjective and that the meaning of a mega-event should always be regarded in its context. Since the indicator-system of Müller and Stettler proved suitable at least for Switzerland, higher limits were defined for all five indicators to define a sport-mega-event. With the approach of Müller and Stettler it was sufficient to exceed one of the values. To be called sport-mega-event however at least three of the five higher limits must be achieved, whereby two of them are compulsory. Since the economic effect is crucial for a sport-mega-event, the two indicators with the closest economic relation (budget and media covering) must be compellingly exceeded. Additionally at least one further limit has to be achieved. In order to define suitable requirements for a sport-mega-event, the values for the chosen indicators of numerous large sport-events were analyzed and evaluated. The limits were finally set in a way, that only events meet the requirements, which correspond to the characteristics held above. After
the demarcation selected here only two sport events in Switzerland belong to the category of the sport-mega-events:

- FIS Alpine World Ski Championships 2003 in St. Moritz
- UEFA EURO 2008 in Basle, Berne, Geneva and Zurich

| Table 1: Differentiation between large-sport-event and a mega-sport-event |
|---------------------------------|---------------------------------|---------------------------------|
| **Indicator**                   | **Limit: „large sport event“**  | **Limit: „sport-mega-event“**   |
| 1. Budget                       | > 1 mio. CHF                    | > 50 mio. CHF                   |
| 2. Media covering (TV)          | Direct or part time broadcast in swiss national TV (except sports program) | Disposal of the broadcasting rights in at least 30 countries |
| 3. Number of athletes           | > 10’000                        | > 20’000                        |
| 4. Number of officials, assistants, trainers, staff | > 1’000                        | > 5’000                        |
| 5. Number of spectators         | > 20’000                        | > 100’000                       |

Source: Own illustration following Müller & Stettler 1999, p. 11

2.2 Periods and organisation

In the literature the organisation process of a sport event is often divided into four periods. It is common to name the four stages conception, preparation, exploitation and closure (see SENTEDALPS 2005, p. 17). The subsequent period is called legacy and not until this stage, the effective tourism effects can be evaluated.

Simplifying and quite in a general manner, Rahmann et al. (1998, p. 21) name the three periods pre-event-stage, hosting-stage and after-event-stage. In the following these terms will be used, but in order to assign the important infrastructural procedures precisely, the pre-event-stage as well as the after-event stage are divided in two sub-classes each.

**Figure 1: Periods of organising a sport-mega-event**

Source: Own illustration following SENTEDALPS 2005, p. 17 and Rahmann et al. 1998, p. 21
Although the evaluation of the effective long-term tourism impacts has to take part in the after-event-stage 2, the demarcation models presented in this article refer exclusively to the first four stages (event-point of view). A correct differentiation between event-related and not event-related investment is a requirement to understand and account the tourism effects in the subsequent stage.

2.3 Categories of infrastructure

Through the accelerating effect and the remarkable size of a sport-mega-event, not only infrastructure needs in the field of sport facilities arise, but also in numerous other sectors as traffic, accommodation, entertainment, security, etc. Not only practical logistics have to be considered but also topics like technological requirements as well as aesthetic visions.

Simplifying infrastructure needs can be summarized in three groups (cp. SENTEDALPS 2005, p. 24)

- **Sports facilities**: Infrastructure for competitions, trainings and recovery
- **General infrastructure**: Facilities not used directly for competitions, but necessary for a smooth operational running of the event
- **Tourist infrastructure**: Hotels and restaurants, conference and exhibition centres, arts centres, leisure centres, etc.

From the point of view of the presented investigation this partitioning can still be further simplified, by dividing between core-infrastructure and further infrastructure. All those facilities, which must be compellingly present for the execution of a specific event, are considered as core-infrastructure. Typically this are the appropriate competition and training venues, the essential traffic or telecommunications infrastructure as well as further event-specific indispensable facilities for the sector of accommodation (e.g. Olympic village) or security. The demarcation of the core-infrastructure has to be determined for each event again, due to the specific conditions. The so called further infrastructure contains all remaining event-related investments. In case of need the meeting could take place also without these investments.

3. MODELS

Investments have an ambivalent character, representing costs on the one hand and benefit by accelerating the economy and creating income on the other hand. As a matter of fact, substantial investments produce a high income effect, but with unfavourable basic conditions they can cause high subsequent costs as well (cp. Rahmann et al. 1998, p. 24).

In order to meet the scientific requirements of the objectivity and the validity, during the evaluation of the economic impact, an adequate demarcation between event-relevant and not event-relevant investment is crucial. Based on large studies in the scientific context valid demarcation criteria were analyzed and six different charge models were developed.

3.1 Peer analysis

Impact analyses concerning sport events are composed much more frequently ex-ante than ex-post. This matter of fact is caused in particular by the authentication and argumentation need, which often occurs during the stages of bidding and preparation. Astonishing is however the tendency to distinc-
tively better results concerning the economic effects in ex-ante analyses, than in independent ex-post studies for the same event (cp. Kurscheidt 2002, p. 39). One reason for the named problem is the fact, that the organisers place the order for plenty of these studies by themselves, with the intention to win the public authorities for financial assistance by founded lists over the expected benefit. Since also the public authorities have often a concrete interest in hosting a sport-mega-event, the macro-economic impact analysis is used however less for decision making, but rather for the conviction of the voters. (cp. Jeanrenaud 1999, p. 1)

In the literature different demarcation criteria can be found.

- The most common criterion for the impact analyses is the question, weather an investment would have taken place without the event or not. This demarcation criterion is called in the consequence „with-and-without-principle“ (cp. Hanusch 1992, p. 6). This demarcation is used among others by Rütter and Stettler (2004, p. 29) composing the study „Economic impact of the UEFA EURO 2008™ in Switzerland“. Numerous authors follow this methodology, whereby the way of argumentation and above all the range of the included infrastructure vary clearly.

- In other studies dealing with the subject of the demarcation, a more restrictive handling is partly publicised. Preuss (1999, p. 254) holds for example the opinion, that with sport-mega-events only investment in temporary facilities can be called event-related.

- Especially in independent reports, but also in other investigations, the range of event-related investments is more generously defined. E.g. in an ex-post analysis to the Olympic Games 1992 in Barcelona, Brunet (1995, p. 6) selects an enclosing approach. The causality between event and structural projects is thereby not too hard examined.

### 3.2 General view

As shown before, there is no consistent demarcation found in the literature. Deviations exist in particular concerning the involved criteria and the range of infrastructure. However it is to be noted, that this fact does not only represent a lack, because with appropriate previous reflection and subsequent interpretation it can make sense to use different charge models, depending upon time and intended statement. On the basis of the peer analysis the following six charge models were developed.

**Figure 2: Synopsis of the charge models**

<table>
<thead>
<tr>
<th>Charge models for investments</th>
<th>Bottom up</th>
<th>Top down</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial charging</td>
<td>Weighted charging</td>
<td>Complete charging</td>
</tr>
<tr>
<td>Hosting-stage-principle</td>
<td>Event-factor-principle</td>
<td></td>
</tr>
<tr>
<td>Contract-principle</td>
<td>Before-and-after-principle</td>
<td></td>
</tr>
<tr>
<td>With-and-without-principle</td>
<td>Top-down-principle</td>
<td></td>
</tr>
<tr>
<td>Temporary infrastructure</td>
<td>Amortisation of existing infrastructure</td>
<td></td>
</tr>
<tr>
<td>Amortisation of infrastructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Move up-costs for the construction of permanent infrastructure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Own illustration*
3.3 Hosting-stage-principle (model 1)

Exclusively the part of investments is considered, which refers directly to the hosting stage of the events:
- Construction and deconstruction of temporary facilities
- Amortisation of existing infrastructure
- Move up costs for the construction of permanent infrastructure

Reasoning:

**Temporary infrastructure:** If a permanent facility is provided for a sport-mega-event, there has to be an autonomous re-use after the event. Otherwise infrastructure needs could be covered by temporary buildings. Therefore only the investment for temporary infrastructure is considered as event-related. (cp. Preuss 1999, p. 254)

**Amortisation:** Existing buildings used for the event have to be charged only for the amortisation costs. Usually the amortisation rate is included in the rental fee, which means in last consequence, that this fee has to be split in operational costs and amortisation. Only the second part has to be considered as event-relevant. Normally the amortisation of a building takes place over 50 years. With a hosting stage of maximally half a year (inclusive preparation and reinforcement), thus approximately 1% of the original construction costs might be brought in calculation. (Maennig 1997, p. 164)

**Move up costs:** If investments in permanent infrastructure are realized earlier as a result of the event, move up costs can be charged. For this calculation the interest rate of fixed income stocks for the observed area and the regarded period is required (Maennig 1992, p. 9).

3.4 Contract-principle (model 2)

All investments for buildings and facilities are brought in, which are specified as compulsory in the hosting-contract with the event owner and which are provided in the preparatory phase (pre-event-stage 1 – after-event-stage 1).

Reasoning:

So called “event owners” decide about the allocation of the specific sport-mega-events. The event owners are usually the international federations of the appropriate kinds of sport or in the case of the Olympic Games the IOC. In a concrete list of requirement the current conditions for infrastructure needs and capacities are named. With the bid for a sport-mega-event these requirements must be accepted. All investments into the contractually prescribed infrastructure therefore have to be rated as event-related. The acquisition of investments start with the beginning of the bid (pre-event-stage 1), since in the application phase often individual investments are already transacted, in order to testify the seriousness of the candidacy. Contractually demanded but already existing infrastructure is brought in with appropriate amortisation costs raised by the event. All additional expenditures for facilities, financing contractually not specified plants or exceeding demanded capacities, are rated as voluntary and in consequence as not event-related.

This approach shows up as basic consideration in most bidding documents. Due to the long lead time, the candidacies orient themselves strongly at the requirement lists and calculate on this basis the essential investments. By lack of other information sources the investigators are forced to orient themselves at these contracts as well. (cp. Helmenstein et al. 2005; Steiner & Thöni 1999; Rahmann et al. 1998; Maennig 1992)
3.5 With-and-without-principle (model 3)

The situation with event is compared to the appropriate situation without. All the structural measures which would not have been accomplished without event are regarded as event-relevant.

**Reasoning:**

This approach experiences a high acceptance, because the question about the causality makes sense on first sight. The majority of the examined studies argue in this direction and the principle of the approach is very rare challenged. Criticism is expressed particularly concerning two aspects:

- Permanent infrastructure, built in order to the event, should not be taken into account with full capital outlays, but only with the amortisation rate for the hosting stage. (Maennig 1997, p. 163)
- There is a large scope for decision-making to classify the causality and the influence of the event for the different facilities. So the final result is highly dependent of the personal estimation of the investigator.

In fact it is a challenge to examine all the information and reconstruct the way of decision-making process. It must be clarified, who can give an objective statement and how the different information are weighted. Usually the researcher tries to construct a complete picture by involving all the important stake holders (organising committee, public body, administration, politics, etc.), in order that he can specify the charge due to the available facts. It needs however a critical consciousness that depending upon point of view of the asked people, the estimates can differ notably even with the same demarcation criterion.

According to the with-and-without-principle all investments for buildings and plants are event-relevant, which would not have been constructed without the sport-mega-events. In addition expenditures for modernisation, extension, equipment and renovation as well as the move up costs are taken into account (cp. Maennig 1992, p. 20). For rented infrastructure the amortisation has to be seized as well.

3.6 Event-factor-principle (model 4)

For each structural measure in the preparation or reinforcement stage, the influence of the event is carefully examined, a percent so called “event-factor” is defined and the original expenditure is taken into account in appropriate proportion.

**Reasoning:**

Even by checking thoroughly the state of affair, the allocation between event-related and not event-related investments cannot always clearly be determined. Often the sport-mega-event is just one of several factors in the decision-making process for an investment. Therefore it is not easy to decide, which argument turned the balance in the end (cp. Ward et al. 2000, p. 10). In this specific situation it makes sense to calculate an event-factor to realise a weighted charge. Event-factors are already used for the determination of the event-related portion of consumer expenditures (cp. Rütter & Stettler 2002). This differentiation is now applied to the infrastructure investments.

The key question arises again, which stake holders have the suitable knowledge, in order to determine the height of this event-factor. This model pretends to survey one well-informed central person of each important field, like organising committee, public body and politics (executive). The answer structure is given, as two criteria on a scale with three options are evaluated, from which the final event-factor is finally determined. The evaluation criteria result from the following two considerations:
Influence on the investment decision: High influence → high event-factor

Expected service life: Long-term use of a facility → low event-factor

The longer the expected service life of an infrastructure is, the lower is the portion of the hosting stage and the smaller should the event-factor be set.

For the expected service life the following scale is fixed:

**Low expected service life:** Demand of the infrastructure does not go considerably beyond the hosting stage

**Medium expected service life:** Regular use over less than 10 years

**High expected service life:** Regular use over more than 10 years

### Table 2: Determination of the event-factor

<table>
<thead>
<tr>
<th></th>
<th>Low expected service life</th>
<th>Medium expected service life</th>
<th>High expected service life</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low influence</strong></td>
<td>40%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Medium influence</strong></td>
<td>70%</td>
<td>40%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Significant influence</strong></td>
<td>100%</td>
<td>70%</td>
<td>40%</td>
</tr>
</tbody>
</table>

**Source:** Own illustration

The percentages were evaluated in several experts' meetings and finally selected in a way, that the proportionate charge for the specific scenarios makes sense. The substantial advantage of this approach is the integral concept in order that all structural measures, without exception, can be evaluated.

### 3.7 Before-and-after-principle (model 5)

All investments in the period between the acceptance for hosting the event and the end of the reinforcement (pre-event-stage 2 – after-event-stage 1) are taken into account, if there is a minimal causality to the meeting.

**Reasoning:**

Contrary to the “with-and-without-principle” the condition at a specific moment before the event is compared to another moment after the event. Therefore this demarcation is called in the consequence „before-and-after-principle“. Often in the course of a sport-mega-event the urban development is advanced by means of (national) promotion programmes and subsidies. The large event is a unique opportunity to take advantage of simplified grant procedures and to reach a consensus on disputed projects. The sport-mega-event can activate numerous structural measures, which would not have been realized so fast or not to this extent without the meeting. According to this demarcation criterion investments for all infrastructures are taken into account, whose realization was favoured by the event in the regarded period. With this model the comprehensive effect of an event for the structural sector can be held. (cp. Brunet 1995)

However the specified determination of the event-related investments requires a scientific-critical basic attitude, in order that not any construction activity in the observed phase is attributed unscreened to the event. Although the basic principle is a comparison of a condition before and a condition after the event, the presence of a minimal causality represents still a compelling additional qualification.
3.8 Top-down-principle (model 6)

The development of the structural investments for the regarded area is observed and calculated by a linear extrapolation. The total of event-related investment is raised by the sum of the deviations from the prognosticated value for each year in the regarded time interval (pre-event-stage 2 – after-event-stage 1).

**Reasoning:**
Impact studies have the central goal to analyze the additional benefit arising for a national economy. A condition for this analysis is a precise definition of the regarded geographical area, in order to examine the portion of additionally induced investment volume for this area. Contrary to the other charge models the top-down-principle offers the possibility to analyze a part of the event caused crowding out. These crowding out effects can express themselves in various ways and in different sectors of the economy. Two typical effects of the increased demand in the construction sector are rising prices and the displacement of other intended investments. Ignoring the price effects, two kinds of compensations are the most frequent:

- Crowding out of intended investments during the preparatory stage
- Compensation of the additional investment in the time before and after the event-related activities

With the suggested model the crowding out can be partly specified, since under the condition of a non-marginal event, the deviation from the long-term trend in the preparatory and reinforcement phase can be understood as additional released investments. Strongly simplified and exemplary the Figure 3 points out, how the investments transacted for the event, displace partially other investments, but also generate additional demand in the structural sector. Bieger (et al. 2003, p.85) analyzed the FIS alpine world ski championships 2003 in this point of view. However they proceeded exclusively descriptively and did not quantify the demand surplus.

**Figure 3: Additional investment volume**

This top down model can be used only for ex-post studies and only with sufficiently precise and detailed statistical data basis. Qualitative surveys with relevant stake holders could be used as flanking measure, in order to check the causality of the transacted investments more exactly.

Following conditions must be fulfilled, in order to reduce this model to practice:
Non-marginal event: The event-relevant demand has to be all-dominant for the observed area and period.

Precise demarcation of the observed area (city/region/country): The larger the regarded area is, the less goods and services are imported (multiplier increases) and the more is reallocated (the additional expenditures decreases)

Small integration level of the observed marketing area: The higher the import level, the more the picture is falsified.

Plausibility considerations:

Long-run tendency: The development of the construction industry without event must be realistically estimated. The trend of the investments volume for one or more reference marketing areas should be analysed for the same period to generate some additional experiences.

Cyclical trend: If the additional demand meets a fully operating economy, then the trend goes to rising prices and additional imports.

Influence of other non-marginal factors: The influences of other substantial events, structural measures or relevant legal adjustments in the regarded period have to be considered.

Investment strategy of the public authorities: Depending on the investment strategy (cyclic - acyclic) and the urgent investment need of the public communities, the structural effects of the event become more or less visible.

4. CASE STUDY: FIS ALPINE WORLD SKI CHAMPIONSHIP 2003, ST. MORITZ

4.1 Demarcation

The following investments are calculated net and nominally (market prices). Neither there is a discount of the investment nor is the inflation included in the calculations. This is justifiable, because the regarded period is quite short and the investigation is focused primarily on the relative comparison of the different charge models for the same event.

Temporal delimitation

The FIS Alpine Ski WC 2003 was accomplished during 16 days in February. Up to this time it was the largest sport event ever in Switzerland.

- Start bidding: June 1996
- Acceptance: May 1998
- Presentation final account: November 2005

The competence for the needed infrastructure became split in the summer 1999. For strategic planning, organization and coordination of the permanent facilities a project management with all relevant players was fathered. A slim executive commission was responsible for the operational aspects of this field. The organising committee worried about the temporary infrastructure and administered for this purpose its own budget.


**Spatial demarcation**

The district Maloja, with 16 municipalities, represents the examined perimeter for this research. Beneath these 16 municipalities St. Moritz is clearly the dominant player and has therefore definitely the largest effects of the Ski WC 2003. Since the local economy is relatively closely linked within the district, however this demarcation makes sense to get an overall picture.

### 4.2 Financing

The permanent buildings and plants were financed from a separate budget, which was carried mainly by the political municipality of St. Moritz. In the final report, edited by the project management for permanent infrastructure, investments with a total amount of 35.7 million Swiss francs (CHF) are numbered (Masüger et al. 2005, p. 37).

**Table 3: Financing of the permanent infrastructure (in 1000 CHF)**

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount (1000 CHF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit political municipality of St. Moritz.</td>
<td>27,611</td>
</tr>
<tr>
<td>Swiss Olympic</td>
<td>1,300</td>
</tr>
<tr>
<td>Subsidies of the national sports facility concept (NASAK)</td>
<td>3,000</td>
</tr>
<tr>
<td>Operational budget ski WC</td>
<td>3,700</td>
</tr>
<tr>
<td>Swiss national TV (SRG SSR idée suisse)</td>
<td>129</td>
</tr>
<tr>
<td><strong>Total financing</strong></td>
<td><strong>35,740</strong></td>
</tr>
</tbody>
</table>

*Source: Masüger et al. 2005, p. 37*

The distribution of the expenditures on the most important projects is evident in Table 4.

**Table 4: Investments into permanent infrastructure (in 1000 CHF)**

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount (1000 CHF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take off area</td>
<td>3,354</td>
</tr>
<tr>
<td>Slope and snowmaking system</td>
<td>23,114</td>
</tr>
<tr>
<td>Target area and access</td>
<td>6,009</td>
</tr>
<tr>
<td>Compensatory measures</td>
<td>914</td>
</tr>
<tr>
<td>Scheduling, project planning, granting, miscellaneous</td>
<td>2,349</td>
</tr>
<tr>
<td><strong>Total investments</strong></td>
<td><strong>35,740</strong></td>
</tr>
</tbody>
</table>

*Source: Masüger et al. 2005, p. 37*

The temporary constructions for the event were planned and realized by the organisation committee and financed from the operational budget, amounting to 56.8 million CHF. By this budget 10.5 million CHF was invested for temporary infrastructure, such as grandstands, tents and containers in the target area, chronometry, acoustic irradiation and cabling along the track as well as equipment for the press and media centres and further small plants. A contribution of 3.7 millions CHF to the special budget for permanent buildings and plants was made. (VAS¹ 2005)

**Total account:**

For easier accounting and higher transparency in the following the two separate budgets are considered as one pot of available funds. If the expenditures for the infrastructure are regarded from this point of view the investment for temporary infrastructure amounts to 12% and the investment for permanent facilities even to 40% of the total account. Altogether the infrastructure investment represents more than half of the total available funds.

¹ VAS: Association for alpine world cup racing and FIS alpine ski WC 2003 St. Moritz/Pontresina/Engadin; in liquidation
Regarded by the financing side, three important resources can be constituted for the total budget of 88.8 million CHF.

- Sponsoring (40%)
- Public subsidies or contributions (45%)
- Event-related income - such as ticket, etc. (15%)

The FIS and the sport marketing company IMG were clearly the most important sponsors a total expenditure of ca. 30 million CHF. The public contributions were distributed on many different sources; however the municipality of St. Moritz engaged themselves definitely strongest.

4.3 Analysis by the different models

The application of the six different charge models leads to a broad range of results.

Table 5: Event-related investment according to the different charge models (in million CHF)

<table>
<thead>
<tr>
<th>Charge model</th>
<th>Core-infrastructure</th>
<th>Further infrastructure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Hosting-stage-principle</td>
<td>11.4</td>
<td>1.0</td>
<td>12.4</td>
</tr>
<tr>
<td>2) Contract-principle</td>
<td>45.8</td>
<td>-</td>
<td>45.8</td>
</tr>
<tr>
<td>3) With-or-without-principle</td>
<td>46.7</td>
<td>-</td>
<td>46.7</td>
</tr>
<tr>
<td>4) Event-factor-principle</td>
<td>30.3</td>
<td>3.3</td>
<td>33.6</td>
</tr>
<tr>
<td>5) Before-and-after-principle</td>
<td>46.7</td>
<td>956.0</td>
<td>1002.7</td>
</tr>
<tr>
<td>6) Top-down-principle</td>
<td>13.9</td>
<td></td>
<td>13.9</td>
</tr>
</tbody>
</table>

Source: Own illustration

If the core-infrastructure is focused, only a slight difference between the charge models can be identified whereas the inclusion of the further infrastructure shows a remarkable deviation. There are two main reasons for this matter of fact. On the one hand side the interpretation range is generally much smaller for the core-infrastructure; on the other hand the core-infrastructure is to a large extent congruent with the two official budgets for the Ski WC and therefore the range of interpretation is diminishing even more. In contrast there is a large range of interpretation for the further infrastructure and the specific demarcation criteria can evolve a strong differentiating effect. Therefore results like the event-related investments of more than one billion CHF for the integral “before-and-after-principle” are possible.

In the following the key findings for each charge model are mentioned:

Model 1: Hosting-stage-principle

Temporary infrastructure: All in the context of the operational budget realized infrastructure for approximately 10.5 million CHF are by their nature temporary and are therefore taken completely into account. Within the budget for permanent buildings and plants, however some constructions were deconstructed after the event and are consequently included according to this charge model (Masüger et al. 2005, p. 17). Additionally to the contribution included in the budget for permanent facilities the host broadcaster SRG SSR idée suisse transacted further 451,000 CHF for infrastructure. Thereof only the technical operation centre with an investment of 100,000 CHF has a temporary character. (Hächler 2006)

Amortisation: The amortisation is usually included as a part of the rental fee. Traditionally with the Ski WC the portion of rental fees is small, because for the use of the central infrastructure (slopes) no compensation has to be paid to the owners (municipality of St. Moritz). Effectively only the indoor
swimming pool (press centre) and the tennis centre (media location) were rented for approximately three months. Altogether thereby 292,064 CHF were paid. This amount is already included in the 10.5 million CHF for temporary buildings.

**Move up costs:** For the range of core-infrastructure no move up costs are known. However special attention has to be paid to the field of the snowmaking system, because before the Ski WC 2003 the artificial snow production was limited by law to maximally 20% for the whole canton Grisons. The contract with the FIS however dictated a complete covering with artificial snow on the competition runways. Therefore this law had to be revised. As a matter of fact this development would have taken place anyway, due to the climatic change and the need of equal opportunities in the competition with other regions. However the decision was accelerated by the Ski WC and therefore a certain portion of move up costs could be taken into account. Since it is extremely difficult to define this effect concerning the move up time and effective influence, this calculation option was turned down.

According to the hosting-stage-principle (model 1) **11.4 million CHF** were invested in core-infrastructure due to the Ski WC 2003 in St. Moritz.

**Further infrastructure:**

**Temporary infrastructure:** There is no temporary infrastructure and no amortisation known for this category. However it is probable that for example in the range of catering temporary infrastructure was provided (stalls or tents), but these investments are neglected here.

**Move up costs:** According to Bieger et al. (2003, p. 82) the renovation of the station St. Moritz required an investment of 6 million CHF. In order to the event this investment was brought forward by 5-10 years. In the relevant period for the construction from 1998 to 2002, the average interest rate for Swiss federal obligations add up to approximately 3.2% (BFS 2006). Calculating with a move up period of five years approximately 0.96 million CHF can be taken into account.

Ca. 250 million CHF were invested directly before the ski WC in hotel and catering business (Bieger et al. 2003, p. 82). According to the information of the building authorities of St. Moritz most of these investments were brought forward as a result of the event, which was used to accelerate the grant and construction procedure. Due to the high complexity of the specific situation it was however not possible to receive precise information about the extent of move up and the appropriate amounts. (Caminada 2006)

The considerations about the move up effects for the snowmaking systems could be carried on for other destinations, since the law was repealed and a complete covering with artificial snow was made possible.

Combining the ranges of core- and further infrastructure a total event-related investment of **12.4 million CHF** is resulting. However it can be assumed that still further important move up costs were released by the Ski WC, which cannot be numbered here.

**Model 2: Contract-principle**

Although the FIS defined also certain conditions concerning the accommodating capacities and the traffic infrastructure, no further investments were released on this way, since these minimum requirements were already fulfilled in St. Moritz. All additional activities within this range were therefore voluntary and according to this model not event-related. Therefore only investments in core-infrastructure can be taken into account for this model:

The FIS defined the following contractually guidelines with certain relevance for this case study:

- An 800 meter altitude difference for the men descent
- Minimum provided surface for starting and target area
- Minimum requirement for the size and quality of the big screens, grandstand, time measurement and acoustic irradiation
- Complete covering with artificial snow of the competition runways
- Minimum requirement for the telecommunication and media infrastructure

The infrastructure concept is strongly orientated at the minimum requirements placed by the FIS. On the one hand side this was a conscious strategy of the responsible persons; on the other hand it was dictated by the ecological conditions. So the target area in Salastrains had to be planned quite restrictively in arrangement with environmental and conservation organisations.

It can be held that all investments raised by the budget for permanent facilities resulted directly from the guidelines of the FIS. Only the compensatory measures are not included here, since they were released indirectly as consequence of the realization and not by the contract guidelines.

Needless to say, also the temporary plants financed from the operational budget and the expenditures of the SRG SSR idée suisse are directly motivated by the contractually conditions and are therefore taken into account at full extent (Hächler 2006; Trivella 2006).

According to the contract-principle (model 2) **45.8 million CHF** were invested in core-infrastructure due to the Ski WC 2003 in St. Moritz.

**Model 3: With-and-without-principle**

In order to estimate the influence of the event, different experts from the ranges politics (executive), organising committee and public body were interrogated. These experts agreed that only the investments in core-infrastructure were released directly by the Ski WC. Therefore no distinction in core- and further infrastructure is necessary for this model.

Concerning the core infrastructure it must be held that in the context of the event preparation the long-term tourism benefit released by the realized adjustments of the slopes and the investments in snow-making machines were already anticipated and exerted a certain influence on the decision. However there is no doubt, that the main reason for these investments was the Ski WC 2003.

Thus the compensatory measures, which are included likewise here in order to their distinct event connection, constitute the only difference to the previous model.

According to the with-and-without-principle (model 3) **46.7 million CHF** were invested in infrastructure due to the Ski WC 2003 in St. Moritz.

**Model 4: Event-factor-principle**

Each relevant facility is evaluated on the basis of the two criteria „influence on the investment decision“ and “expected service life”. If the evaluation for single plants was ambiguous, important stakeholders (organising committee, public body, executive) were interrogated to clear the circumstances and to define the, the appropriate event-factor.
Table 6: Investment in the core-infrastructure according to the event-factor-principle

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Evaluation</th>
<th>Event-factor</th>
<th>Total investment</th>
<th>Event-related investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take off area</td>
<td>low service life / significant influence</td>
<td>100%</td>
<td>3,353,569</td>
<td>3,353,569</td>
</tr>
<tr>
<td>Slope and snowmaking system</td>
<td>high service life / significant influence</td>
<td>40%</td>
<td>23,114,441</td>
<td>9,245,776</td>
</tr>
<tr>
<td>Target area and access</td>
<td>medium service life / significant influence</td>
<td>70%</td>
<td>6,008,777</td>
<td>4,206,144</td>
</tr>
<tr>
<td>Compensatory measures</td>
<td>low service life / significant influence</td>
<td>100%</td>
<td>913,727</td>
<td>913,727</td>
</tr>
<tr>
<td>Scheduling, project planning, granting, miscellaneous</td>
<td>medium service life / significant influence</td>
<td>70%</td>
<td>2,349,009</td>
<td>1,644,306</td>
</tr>
<tr>
<td>Investment SRG SSR idée suisse</td>
<td>medium service life / significant influence</td>
<td>70%</td>
<td>351,000</td>
<td>245,700</td>
</tr>
</tbody>
</table>

Preliminary result 19,609,222
Total budget for temporary infrastructure 10,546,000
Investment in temporary infrastructure SRG SSR idée suisse 100,000
Total 30,255,222

Sources: Hächler 2006; Masüger 2006; Trivella 2006; Wetzel 2006

According to the event-factor-principle (model 4) 30.3 million CHF were invested in core-infrastructure due to the Ski WC 2003 in St. Moritz.

Combining the ranges of core- and further infrastructure a total event-related investment of 33.6 million CHF is resulting.

Model 5: Before-and-after-principle

In May 1998 the FIS decided to allocate the Ski WC 2003 to St. Moritz. The event-point of view ends with the presentation of the final account in November 2005. So the regarded period for this model leads from the acceptance in 1998 to November 2005.

The so far discussed investments in core-infrastructure were transacted within the defined time interval and are therefore completely taken into account.

Table 7: Investment in the further infrastructure (in 1000 CHF)

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain railways, additional slopes and snowmaking machines in the surrounding area</td>
<td>~300,000</td>
</tr>
<tr>
<td>Construction of vacation homes</td>
<td>~400,000</td>
</tr>
<tr>
<td>Construction and renovation of hotels</td>
<td>~250,000</td>
</tr>
<tr>
<td>Extension of the main station</td>
<td>~6,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>~956,000</strong></td>
</tr>
</tbody>
</table>

Sources: Bogner 2006; Caminada 2006; Holinger 2006; Ryffel 2006

According to the before-and-after-principle (model 5) 46.7 million CHF were invested in core-infrastructure due to the ski WC 2003 in St. Moritz.

The investment in core-and further infrastructure are totalising altogether with approximately 1002.7 million CHF.

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Model 6: Top-down-principle

Because St. Moritz is quite a small place, the whole district Maloja was chosen as regarded perimeter for the whole case study. However the main portion of the investments took place in St. Moritz itself. The evaluation according to the top-down-principle is focused on the district Maloja as well, but the calculations are also realized for the area St. Moritz in order to generate additional information and receive comparative data.

Due to the geographical situation, the district Maloja represents a quite independent economy, with comparatively small cross-linking outward. This matter of fact favours the demarcation by the top-down-principle, as interference factors such as imports are much lower. It can be assumed that the best part of the event-related investment produced their impact in the district Maloja.

Figure 4: Calculation of the expected value of the investment volume

The linear regression yields the function \( y = 6912.9x + 151'311 \) for the district Maloja (regression coefficient \( R^2 = 0.598 \)). The deviation between the effective investment and the expected value is calculated for every year in the research period from 1998-2005.

According to the top-down-principle (model 6) 13.9 million CHF were invested in infrastructure in the district Maloja due to the Ski WC 2003.

Realizing the same calculation for the municipality of St. Moritz, the result is significantly higher, with an event-related investment of 68.8 million CHF. This matter of fact shows the strong influence of the chosen observation area. Also the temporal dimension is quite important. By eliminating the year 2005 in the research period, the result would change drastically, for the district Maloja as well as for St. Moritz. The selection of the base period can have a substantial influence as well, especially if e.g. important legal adjustment in the structural sector took place in this period. There are scores of various interpretation possibilities and therefore the dependence as well as the general plausibility of the results must be submitted to an intensified examination.

Reference values for other than the observed area can help to check the plausibility of the calculated numbers. In this case study the appropriate data for the canton Grisons and for entire Switzerland are regarded. Because of the higher aggregation level the tendency is much more flat. However, after 2000 for both areas an easily rising trend is apparent, after a longer rather declining development.
5. CONCLUSION

Concerning infrastructure need an Alpine Ski WC represents a special case, as the most important part of the infrastructure (slopes) is mostly natural. For the hosting of the competitions fewer facilities and plants in the general sense are needed, different from comparable events in other, less natural, sports. Besides, the number of occurring spectator for a Ski WC is on a level, which does not represent new ground for larger winter sports destinations such as St. Moritz, compared to the peaks in tourism high seasons. For this reason fewer substantial measures in the sector of traffic infrastructure are necessary, than this would be the case with other sport-mega-events. Despite these specific differences the general realizations from the investigation can be adapted also on other sport-mega-events.

Generally can be held that a sport-mega-event is a real chance to improve the level of facilities for diverse ranges of economy and that this chance is taken by plenty of host cities and regions. The rate of calculated infrastructure effects depends strongly on the used charge model and the chosen point of view. It is a big difference to charge the event-related investments for an impact analysis or to summarize the infrastructural effects for the management of a tourism destination. While the impact analysis favours restrictive demarcations as shown in the model 1-4, the perspective of a tourism destination focuses rather on more extensive demarcations like the before-and-after-principle. The most suitable charge model has to be chosen, depending upon initial position and mission (client, hypothesis, time and kind of research, etc.). Maennig (1992, p. 7) expresses this point of view by formulating at the beginning of an appraisal: “In this case, which examines urgently the financing process of the Games, the term of the Olympic-relevant investments is far seized, motivated by overall economic considerations.” The fact of different resulting numbers is not a sign of disability, but of the different possible points of view in the evaluation. The following recommendations try to help avoiding a misinterpretation of the results:

- Highest possible transparency by publishing the mandate, hypothesis and the chosen demarcation criterion
- Previous evaluation of the different charge models by regarding the power of expression for the given research goal
- Reasons for the chosen methodology
- Publish the lack and inadequacies of the selected charge model
- Subsequent method criticism for the suitability of the selected model, in order to provide a guidance for a correct interpretation of the results

These recommendations for action are getting more important, the more open the selected demarcation criteria are.

Decisive for a tourism destination is the total and the quality of the effective structural measures motivated by the event, whereas the kind of causality between event and investment is secondary. The primary focus for the host cities should be, to plan and realize the necessary and additional event-motivated facilities in the right way. This means to evaluate the initial position and the infrastructure need for the future. So if there is a substantial future need, the facility should be constructed in a permanent and attractive way, in order to enforce the attraction of additional tourists. Conditions for a positive total-effect of the infrastructure investments on the destinations are an adequate dimensioning and fit of the projects on the specific local premises. If no future need can be located, the necessary infrastructure should be realized in a functional and temporary way, so that it can be deconstructed or changed in the idea of use and no overcapacity is produced. Oversized facilities cannot be operated at full capacity in the long-run and cause the requirement of public subsidies instead of supplementary tourist demands. Only by integrating these considerations in a superordinate long-run infrastructure-development-strategy a lasting structure effect can be generated and therewith additional investors, firms and tourists can be attracted.
REFERENCES


INTERVIEW SOURCES


