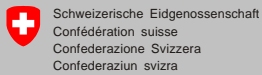




Royal Government of Bhutan
Ministry of Works & Human Settlement
Department of Urban Development & Engineering Services



Suspension Bridge Programme, Phase VI



Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Agency for Development
and Cooperation SDC

Backstopping, Review and Planning Support 2009

Mission Report



March 2009

skat Swiss Resource Centre and
Consultancies for Development

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St.Gallen, March 2009

Juerg Christen

Abbreviations and Acronyms

ADB	Asian Development Bank
AE	Assistant Engineer
AFD	Administration and Finance Division of MoC
CBR	Central Bridge Register of SBS
CST	College of Science and Technology, Phuentsholing
CSU	Central Stores Unit, MoC
CY	Calendar Year
DA	Dzongkhag (District) Administration
DADM	Department of Aid & Debt Management
DBA	Department of Budget & Accounts
DE	Dzongkhag (District) Engineer
DES	Dzongkhag Engineering Section
DoR	Department of Roads
DUDES	Department of Urban Development and Engineering Services
DYT	Dzongkhag Yargay Tshogchung (Dzongkhag Development Committee)
EE	Executive Engineer
FA	Financial Assistance
FY	Fiscal Year of RGoB: 1.7. - 30.6.
FYP	Five-Year Plan
GYT	Geog Yargay Tshogchung (Geog Development Committee)
Helvetas	Swiss Association for International Cooperation
HQ	Head Quarters
IPF	Indicative Programme Funds
JE	Junior Engineer
JNP	J. N. Polytechnic, Deothang
LSTB	Long Span Trail Bridge
MoC	Ministry of Communications
MoF	Ministry of Finance
MoWHS	Ministry of Works and Human Settlement
NPC	National Planning Commission
Nu	Nultrum (local currency 1US\$ ~ 45Nu)
PHES	Public Health Engineering Section, Department of Health
ProDoc	Project Document
RAA	Royal Audit Authority
RBS	Road Bridge Section
RCSC	Royal Civil Service Commissions
RGoB	Royal Government of Bhutan
RISD	Rural Infrastructure Services Division
RUB	Royal University of Bhutan
SBD	Suspension Bridge Division (Nepal)
SBP	Suspension Bridge Programme
SBS	Suspension Bridge Section
SDC	Swiss Agency for Development and Cooperation
Skat	Swiss Resource Centre and Consultancies for Development
SSTB	Short Span Trail Bridge
SE	Superintending Engineer
TA	Technical Assistance
TBSSP	Trail Bridge Sub Sector Programme (SDC/Helvetas Nepal)
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
WB	World Bank

1 Introduction

1.1 Background

Poor access has always been a major constraint affecting socio-economic development in Bhutan. Even though road construction, particularly agricultural roads is pursued with high priority throughout the country, road access will not be realised in the foreseeable future throughout the country, and many hamlets and settlements located in remote, mainly hilly and mountainous areas will remain isolated. During the rainy season, entire valleys become disconnected from the road network, breaking links with food supplies, health facilities, schools, important markets and other essential services. Despite of the great efforts of the Government to expand the road network, the socio-economic activities of these places will largely depend on a trail-based transport and communication system for many years to come, - using foot trails and mule tracks with reliable river crossings.

In 1971, RGoB started a countrywide pedestrian bridge programme. In 1979, the United Nations Capital development Fund (UNCDF) provided the first support package, and in 1985 the Swiss involvement through SDC/Helvetas in the Suspension Bridge Programme (SBP) was launched. Since then the programme went through a number of institutional changes. Today it is within the Suspension Bridge Section (SBS) under the Rural Infrastructure Services Division (RISD) of the Department of Urban Development and Engineering Services (DUDES) in the Ministry of Works and Human Settlement (MoWHS). In order to consolidate achievements of the programme during more than 20 years of Swiss involvement, SDC/Helvetas supports the programme in its current 6th Phase, the so called “Consolidation Phase” which is coming to an end in December 2010. Following latest indications, SDC has made an implicit commitment to further extend its involvement in trail bridge building until the end of the 10th Five Year Plan, i.e. mid 2013.

1.2 SBP Backstopping, Review and Planning Mission 2006

1.2.1 Purpose and Objectives

Following the Terms of Reference (Annex 1), the purpose of the mission was threefold:

- a) to undertake a progress review of ongoing SBP Phase VI,
- b) to provide backstopping and programme support, and
- c) to assist in planning short and long term planning, i.e. vision for trail bridge building in Bhutan for the years 2011 – 2013 and beyond

a) Progress Review

- Review achievements of targets vis à vis the bilateral agreement and the Project Document (ProDoc),
- Review institutional and capacity development (overall HRD policy) and assess the impact of training at all levels,
- Assess introduction of maintenance at the local level,

b) Backstopping and Programme Support

Assist the programme in issues related to the action plan of the March 2005 mission with emphasis on:

- Conceptual, institutional and organisational aspects,
- Management and capacities of the RISD,
- Introduction of the Short Span Trail Bridge technology,
- Monitoring and quality aspects,
- Introduction of maintenance and introduction of maintenance manuals,
- Capacity building measures and technical assistance.

- Consolidation concept developed during the last mission including interfaces with other Helvetas activities in the governance sector.

c) Planning Support/ Vision for Trail Bridge Building in Bhutan up to 2013 and beyond

Develop a vision, ideas and arguments for future sub-sector support particularly concerning:

- Bridge demands,
- Decentralisation, financial and personnel resources, institutional set up,
- Support measures towards better long-term sustainability,
- Capacity building and institutional development programme in view of the constitutional, political and structural changes in 2008.

1.2.2 Methodology and Working Programme

Compared to previous mission, the duration of this mission in Bhutan was relatively short to cover all the requirements of the ToR. Therefore, the mission schedule had to be changed substantially at the beginning of the mission.

The mission in Bhutan started with initial briefings with Helvetas, SBS/RISD, MoWHS and DUDES, in order to discuss objectives and expectations.

An important part of the mission consisted of the field trip, to several *dzongkhag* (districts), *geogs* (blocks), numerous bridges and communities. The programme was prepared in such a way to give the consultant the opportunity to meet as many stakeholders as possible, to conduct the required interviews and to familiarise with the local conditions. It allowed also valuable insights into the political and institutional context and the ongoing reform process within which the programme currently operates.

Final consultations and debriefings with the Minister of MoWHS, the RISD/SBS team and Helvetas in Thimphu concluded the mission in Bhutan on 23.01.2009.

After the mission in Bhutan, a group of SBS/RISD engineers together with the consultant left for Cochin/South India to participate in a workshop for the finalisation of the WinDequa design programme.

The mission was conducted by Juerg Christen, Civil and Environmental Engineer, specialised in institutional and community development of Skat, St. Gallen. The mission was supported by the Helvetas Country Director and the Engineers of RISD/DUDES.

As usual, the mission took place in a constructive and participatory way and was organised and accompanied by Helvetas and the programme team in an exemplary manner. The consultant wishes to extend collective thanks to Helvetas Bhutan and is particularly grateful to the Honourable Minister of MoWHS, the Director of DUDES and the staff of SBS/RISD for their active participation and support.

1.2.3 Reporting

As required by the Terms of Reference (ToR), the consultant has produced this report, giving a short overview of the status of the programme in the middle of Phase VI and providing strategic considerations and operational recommendations as well as a vision and arguments for future sub-sector support.

As agreed with the Helvetas Country Director and the Project Team, this report is a compilation of analyses, findings and recommendations of the current as well as the previous backstopping and review missions that are still applicable and relevant.

The report has been structured in such a way that it can be used for the preparation of a Project Document (ProDoc) of a possible next phase.

The report was prepared in Switzerland after final debriefings in Thimphu and was submitted to Helvetas, Zürich in March 2009.

2 Programme Overview¹⁾

2.1 Country Specific Background

Bhutan is a landlocked country in the eastern Himalayas covering 38,394 square kilometres bordered by the Tibetan autonomous region of China in the North and by India in the South. The country has one of the most formidable mountainous terrains in the world, ranging from altitudes of 100 metres to 7500 metres above sea level. About 72% of the land area is covered by forests of temperate and sub-tropical species. The country has one of the richest biodiversity in the world with more than 3,200 plant species per 10,000 square kilometres and thus has been declared as part of one of the ten global biodiversity ‘hotspots’.

The population of about 670,000 is largely rural with 70% of it still living in villages and hamlets, despite a growth in urban drift in recent years. The population density of Bhutan is among the lowest in Asia, and there still remain large tracts of unoccupied land. It is estimated that about 40% of the population is under the age of 15. Migration from rural to urban centres, and the subsequent emergence of urban characteristics such as multi-storied buildings, restaurants, streets, shops, hotels and hospitals only began in the early 1960s. Today about 20% of the population dwells in urban townships like Thimphu, the capital, and Phuentsholing, a border town with India that is Bhutan's commercial hub.

In 1999, the Government produced a comprehensive vision statement “Bhutan 2020: A vision for Peace, Prosperity and Happiness”. The vision statement interprets modernisation in a cautious way, combining traditional values with modernity. The overarching goal is to ensure future independence, security and sovereignty of the Kingdom. The central development concept of “Gross National Happiness” stresses this goal in its development objectives. Administratively the country is divided into 20 *dzonkhags* composed of 205 *geogs*.

The decentralisation reform in 2002 marked an important step in Bhutan’s process of modernisation of its political system. The reform provides local and regional authorities democratic legitimacy and political powers and has introduced the system of direct election of local leaders representing their constituency at the district level. The national planning system has been modified through a complementary bottom-up process and the administration has partly been decentralised.

With the parliamentary elections in April 2008 Bhutan has undertaken an unparalleled step forward in its political and institutional reform and development process. The ongoing democracy and decentralisation process represents a great chance for the country. It opens new opportunities but also challenges, particularly for the local level where certain fears still exist whether the initiated transition will work out well.

The physical landscape of Bhutan is largely characterised by mountains, hills and valleys with a very high density of rivers and streams that separate settlements and its populations from their livelihoods and essential services. Difficulties in transportation and communication have over the centuries hindered not only the socio-economic but also the political development of the country. As in most Himalayan countries, the topography presents extraordinary difficulties for the construction of a reliable road network. Bhutan’s total road network measures only about 5,400 kilometres and the main routes largely consist of the east-west and four north-south highways. At the present time the national road network connects most of the major towns of the country.

Already back in the seventies the Royal Government of Bhutan (RGoB) realized that improved communication, access and mobility are an important precondition for the social and economic development of the population, particularly in rural areas where transport improves access to social and economic opportunities, including schools, clinics, employment, agricultural inputs and markets for produce, etc. Typically, poverty targeted intervention such as schools, health facilities, nutrition programmes and school services depend on transport as a complementary input for their effective delivery.

Transport is seen as an excellent entry point for democracy and good governance by facilitating participation in the political processes and reducing the marginalisation caused by rural isolation. For the majority of the

¹⁾ Chapter 2 is an updated version of mission report 2006 to be used for the preparation of a ProDoc of a possible next Phase

people in rural areas of Bhutan, walking is still the only means for personal travel and goods transport. As such, footpaths, mule tracks and pedestrian bridges are the prerequisite for improving their mobility and access.

2.2 Trail Bridge Building in Bhutan

2.2.1 History

As mentioned above, the socio-economic activities of most of the rural areas in the hills of Bhutan depend on trail-based transport and mobility. Trail and bridge building has a long tradition in the hills of Bhutan - for centuries, rivers have been crossed by bridges of limited span and safety, constructed through local initiatives. Despite of this advanced technologies become necessary when wider rivers have to be crossed safely.

The Suspension Bridge Section (SBS) was established in 1979 when RGOB started a countrywide programme. UNCDF provided the first support package, and since 1985, the Swiss Government (through Helvetas) has assisted SBS within its Suspension Bridge Programme (SBP) in the construction and maintenance of pedestrian trail bridges with technical assistance and financial support.

Since then trail bridge building went through a number of institutional changes. In 2004 SBS was transferred within the MoWHS to the Department of Urban Development and Engineering Services (DUDES) under the recently created Rural Infrastructure Services Division (RISD).

2.2.2 Swiss Involvement in the Sub-Sector

From 1985 until 1995, besides financial assistance, technical assistance was provided in form of Expatriate Engineers. Following the recommendations of the 1993 evaluation a more economical, though essential external backstopping and programme support arrangement replaced the permanent adviser. The aim of this new input was to assist the SBS in specific technical, conceptual and planning issues. Notwithstanding this strategy that is clearly outlined in the project document for Phase IV (1996 – 2002), in the year 1999 this external support and coaching arrangement was discontinued. However, it was in 2001, when the mid-term evaluation of Phase IV, and more prominently the Planning Workshop of 2002 for Phase V, stated that due to the discontinuation of the external support a number of conceptual and strategic issues had not been addressed with sufficient attention, and therefore clearly emphasised the continued need for such support. Whilst the backstopping of the nineties focussed primarily on technical and operational issues, the new “light” arrangement was designed to assist the programme in conceptual and strategic issues. The agreement for the current Phase VI covers the period between July 2007 and December 2010.

The Swiss contribution to the trail bridge sub-sector has been substantial not only in quantity but also in terms of conceptual work such as the development of viable standards, policies and strategies, as well as the strengthening of technical and institutional capacities within the public sector.

2.2.3 Summary of Achievements and General Observations

Until today, SBS has completed more than 450 pedestrian trail bridges. From this total, 151 have been jointly financed by RGoB and SDC/UNCDF. Since the beginning of the technical and financial cooperation between RGoB and SDC/Helvetas more than 250 safe river crossings have been constructed and about 100 existing bridges rehabilitated. These bridges provide access and mobility to thousands of beneficiary households all over the country. The socio-economic benefits of these generally remote river crossings are thus enormous.

Over the years, planning, design and construction procedures for suspension and suspended bridges have been standardised to a high degree and production processes and implementation quality continually improved.

With an extensive training intervention in August 2006, the process of decentralising planning, survey and design of the newly introduced Short Span Trail Bridges (SSTB) has been started and culminated with the completion of the first training /demonstration bridge Yamgay Zam in Thimpu *dzongkhag*. This effort has to

be seen in the context of substantial capacity building measures that have been undertaken not only at central but increasingly also at the *dzongkhag* administration (DA) levels. With the transfer of additional staff and the creation of the RISD there exist good framework conditions for the sustainability of capacity building and institutional development measures. For the first time SBS is almost fully staffed and thus operational.

As mentioned above the two years since the last mission in September 2006 were characterised by the elections of April 2008 that absorbed substantial capacities particularly in the *dzongkhag* administrations and consequently caused substantial delays. This is also true for the planning and implementation process of the bridge programme where only modest physical progress can be reported. Similarly the introduction of new concepts and structures has not yet been fully achieved. Therefore, continuous efforts are required to internalise new concepts, to improve and disseminate knowledge and skills and to ensure sustainability of activities.

2.3 The Suspension Bridge Programme (SBP)

2.3.1 Aims and Objectives of SBP Phase VI

Following the ProDoc of SBP Phase VI, the overall goal of the programme is

“to contribute towards poverty reduction by enhancing the living standards of the rural population through improved access.”

In line with the decentralisation reform 2002, and particularly with the District Development Committees (*DYT*) and the Block (local) Development Committees (*GYT chathrims* (by-laws)), the strategic objectives of the programme include **the promotion of decentralisation and strengthening of institutional capacities** at the district and local levels. At the central level RGoB (i.e. SBS/RISD/DUDES/MoW&HS) shall be assisted to enhance its capacities in matters related to policy and strategy, norms and standards and facilitating local governments in planning and implementing trail bridge building. The operational objectives include planning and design, construction, maintenance and rehabilitation of specified numbers of river crossings.

2.3.2 Conceptual and Strategic Framework

Trail suspension and suspended bridges had been developed and standardised by the Helvetas supported Suspension Bridge Division (SBD) in Nepal. It was in the mid-eighties when the same design had been adapted to the specific Bhutanese conditions and introduced throughout the country. These bridges are based on a relatively sophisticated technology and follow high standards in terms of safety (live load), durability (design) and use (stability, walkway width, etc.). They need considerable technical expertise for survey, design and construction. These bridges are relatively costly and are therefore only justified for crossings on important (main) trails and at locations of specific socio-economic importance. For this reason already during planning of Phase V it was decided to introduce the more economical “Short Span Trail Bridge” (SSTB) technology that has recently been developed by Helvetas in Nepal. SSTBs have been developed in such a manner that they can be designed at the district level with relatively low engineering input and constructed largely by the communities themselves. Whilst they fulfil the same safety standards as the SBD design, they cost up to half as much. SSTBs are recommended to be built for crossings of up to 120 m span.

As mentioned above, with the new decentralised and democratic planning and decision-making processes, prioritisation of trail bridges has become more transparent and demand-oriented. Planning today starts at the community/village or *geog* level and prioritisation is done by *DYT* based on selection criteria that have been developed by the programme.

As from now onwards, trail bridges will be planned, designed and supervised by the District Engineering Sections (DES) (assisted by SBS) and implemented by skilled crafts persons from the *dzongkhag* administration (DA) and with substantial contributions from the beneficiaries through free labour (*zhapto lemi*). However, reduction or even abolishment of *zhapto lemi* is currently being debated in order to prevent exploitation of the people. The consequences of this will be increased construction costs to be covered by RGoB.

During the last years maintenance has become the major concern of SDC/Helvetas. Accordingly the maintenance concept has been revised and instruction manuals have been prepared, introduced and distributed to DES and bridge caretakers.

An important condition of Phase VI is the gradual phasing out of technical and financial assistance, the establishment of new partnerships and increased contribution and involvement of RGoB in a progressively more locally owned programme.

2.4 Institutional Context and Legal Framework

2.4.1 Democratisation/Decentralisation

As mentioned above, the current institutional and political environment is strongly influenced by the decentralisation reform 2002 and the *DYT* and *GYT chathrims* that have been introduced in all *dzongkhags* and *geogs* of the country following a continuous process of political administrative and fiscal decentralisation. The by-laws, which are now embedded in a truly democratic environment, endow local authorities with more democratic legitimacy and political powers. But they also delegate more financial and operational responsibilities. *Geogs* are now entitled to withhold the rural tax and levy other taxes. Some funds for maintenance of infrastructures are now potentially available locally. Allocated funds for planned activities flow now directly from the Central Government, i.e. from the Ministry of Finance (MoF) through the DA to the *geogs*. The so-called **basket funding** allows *geogs* to prioritise their development initiatives themselves and allocate funds accordingly.

Community representatives and leaders including *gups*, *maangmis* and *dshogpas* welcome the new powers but also accept their new responsibilities.

2.4.2 Consequences for the Trail Bridge Sub-Sector

As mentioned above the decentralisation of powers and responsibilities represent new opportunities but also challenges to the different actors for implementation of construction and maintenance of bridge projects:

a) Opportunities

The new decentralised powers clearly allow a more bottom-up decision-making and need-based prioritisation of bridge projects. Financial means for maintenance are now available at the *geog* level and can potentially be used for maintenance of trail bridges, if reserved in *geog* plans and budget.

The suspension bridge programme is a good entry point to promote good governance and strengthen local institutional structures through targeted capacity building measures such as instruction and training of *dzongkhag* and *geog* staff including caretakers in issues related to the institutional and technical aspects of bridge planning, implementation and maintenance.

b) Challenges

Although *gups*' offices have been lately reinforced by administrative staff, structures and infrastructures (of physical and administrative nature) at the *geog* level are not always in place, and need to be built up.

At this level there is also an undisputed lack of human capacities for planning, management and administration of local infrastructure interventions. This lack of capacities often leads to unrealistic annual plans that not only overload the DAs but even more the communities themselves.

3 Review (Findings, Conclusions and Recommendations)

3.1 Organisational Arrangements and Partnerships

3.1.1 Institutional Set-up and Partnerships at the Central Level

a) Institutional Set-up

In line with the recommendations of the 2005 Mid-Term Review and Backstopping mission, MoWHS has closed the institutional gap within DUDES and has created the Rural Infrastructure Services Division (RISD) (Annex 2).

The advantage of this arrangement is the fact that now all Engineering Services at the *dzogkhag* levels are coordinated and supervised by DUDES. As such all staff of the DES directly report to DUDES as their parent department and the Director of DUDES coordinates and supervises DES staff and thus could ensure sector-wise, balanced allocation and posting of engineers and specialists.

So far the only engineering services by RISD to the districts have been provided for trail bridges and mule tracks through SBS. It is being discussed that also other rural infrastructure services such as water supply and sanitation, district roads, health clinics which are still under the respective line ministries/departments could become sections under RISD.

As mentioned earlier for the first time SBS is almost fully staffed with the exception that the Executive Engineer SBS is acting as Chief Engineer RISD. In addition SBS/RISD has been provided with the necessary equipment and office space. As such, since recent, SBS is fully operational.

b) Coordination and Partnerships

As already mentioned during the last missions, there is still hardly any coordination amongst programmes and agencies that are working at the community levels. As a result, there is no uniformity in approach - particularly regarding community mobilisation/involvement - and experiences and lessons learned are rarely shared. The continued practice of sector rather than spatial planning combined with the lack of coordination between the ministries appears to be one of the inhibiting factors of the decentralisation process.

3.1.2 Institutional Arrangements at the *dzongkhag* and *geog* Levels

Following the decentralisation process DES organise themselves in different manners; either sector-wise or geog-wise, i.e. allocation of specialised technical staff to respective sectors (e.g. water supply, trail bridges, etc.) or distribution of technical capacity amongst the different *geogs* of a *dzongkhag*. Among the district technical staff over the years a considerable number of JEs have been trained by SBP in bridge related disciplines. After an intensive training programme for Short Span Trail Bridges (SSTB) JEs are increasingly able to carry out site selection, survey and design of the bridges including supervision of the entire construction process on their own. Today the entire bridge planning and implementation process for SSTB is decentralised.

There is still no balanced assignment of trained bridge engineers in the DES and they are often under-staffed and often lack knowledge and skills in specific technical fields. The lack of equipment such as computers is a concern. Due to lack of budget and facilities, absolutely necessary field visits for inspections and supervision is insufficient.

❖ Conclusions and Recommendations

a) For the Central Level

- As mentioned in the ProDoc of phase VI with the consequent decentralisation of tasks and responsibilities to the *dzongkhag* level in future SBS will increasingly act as a **Resource Centre and Service Provider** with the following main tasks:
 - Assist DES in survey and design of SSTB,
 - Overall planning, budgeting and cost control,
 - Monitoring and quality control including supervision and final inspection of planning and implementation processes,
 - Tendering of steel parts fabrication,
 - Procurement of wire ropes,
 - Further development and maintenance of planning tools (Central Bridge Register, Bridge Location Map, etc.),
 - Assist *DYT/DES* in strategic planning,
 - Conduct in-country training and provide lectures at national engineering institutions,
 - Stakeholder coordination.
- In view of these essential tasks MoWHS should ensure institutional continuity and sustainability of RISD/SBS.
- Donors and implementing agencies should pool their resources and efforts behind one common framework and approach towards strengthening local, i.e. *geog* capacities and reinforcing a comprehensive, multi-sector approach through an area-based planning process at the *geog* level. (Who takes the lead?)

b) For the Local Level

- The potential of the new structure at the central level (DUDES to plan and coordinate DA staff) should now be utilised, and trained bridge engineers allocated/posted according to the requirements of the *dzongkhags*. Prior to postings or transfers the management of SBS should be consulted.
- With the ongoing decentralisation of the entire planning and implementation process for SSTB, the DES will have to assume the following responsibilities:
 - Assist *DYT* in prioritisation of bridge projects,
 - assist *geog* administration in preparing financing proposals,
 - Mobilisation of beneficiaries,
 - Assist in nomination and training and supervision of caretakers,
 - Survey and design of SSTB,
 - Implementation and supervision of trail bridge projects,
 - Training of DES staff in bridge related topics.
- Training interventions by SBS should be tailored according to these needs.
- Possibilities and measures should be explored to upgrade the technical facilities in the DES.

3.2 Bridge Planning and Implementation

3.2.1 Strategic Planning and Decision-Making

a) Planning Process

As mentioned earlier, planning has become a multi-level exercise within the decentralised structures of the *DYT* and *GYT chathrim*s. Five-Year Plans (FYP) at *geog*-level are prepared in a participatory manner. However, the plans presented by the *geogs* resemble lists of wishes rather than plans based on rational considerations. Nevertheless, these plans are presented by the *GYT* through the DA to the Gross National Happiness Commission (GNHC).

It is questionable whether the available funds of SBS provided by RGoB and SDC/Helvetas (SBP) for the programme will be sufficient to cover the construction of 100 (!) new bridges (refer to ProDoc, Logical Framework output 2.1).

b) Strategic Planning Considerations

So far, strategic considerations and rational planning aspects - such as local and regional transport (road and trail) and mobility development plans - have not been systematically included in the selection process. Other tools that would support a rational planning process either do not exist or are not being used. The previous bridge location map has not been updated for years and the recently developed District Transport Masterplans (DTMP) as a basis for rational strategic planning has still not been introduced by the Department of Roads and is not consulted by SBS.

However, during the mission the development of the bridge location map could finally be initiated. The work will be sub-contracted to a local consultant, who has access to the required information.

c) Monitoring and Evaluation

It is a well-accepted fact that Monitoring and Evaluation (M&E) are the cornerstones for any informed management decision. They ensure that project information is regularly updated, assessed and documented. M&E should be seen in the context of the project framework as it develops over time, including the maintenance phase. It is important that all decision makers, including those at the community level, should be identified and involved in the system.

Over the years, SBS has developed a rather elaborate monitoring system, consisting of various inspection and reporting cycles throughout the entire project process. The data is documented in the computer based **Central Bridge Register** (CBR) and serves for planning of new and maintenance projects. Following the recommendations of the last missions the CBR containing all relevant information of the bridges has meanwhile been updated and is sent to the DES on a regular basis.

d) Finalisation of Design Software

Following the ToR during the mission the deficiencies of the design software (WinDequa) could be rectified successfully. The software is now working properly and is ready to be used also in other bridge programmes.

❖ Conclusions and Recommendations

Planning and Decision - Making

- In order to minimise potential planning errors (such as building trail bridges at locations where a road bridge is planned and will be constructed in the near future or using costly technology at locations of low strategic importance), proper assessment of bridge locations is essential.
 - Only strategic bridges (i.e. those that are either of regional and national importance and/or fulfil the criteria of the “New Bridge Survey Proposal Form”) should be SBD standard bridges.
 - For all other bridges of less than 120 m span, the Short Span Trail Bridge (SSTB) technology should be introduced (refer to Chapter 3.2.3).
- In order to improve future strategic planning (and thus optimise limited resources), the development of a bridge location map (based on the information given in the CBR) should now be pursued with priority. Use the transport Infrastructure Map produced by TBSSP Nepal as an example. Main features should be:
 - administrative borders and major locations (service centres)
 - river system
 - strategic, feeder and rural/agricultural roads network
 - existing and completed trail bridges.

Monitoring and Evaluation / Central Bridge Register (CBR)

- Informed planning and decision-making depend on reliable information that is updated on a regular basis. In view of this, established inspection and reporting cycles should be adjusted and strictly adhered to and the CBR updated regularly.
- Besides the two-yearly inspections by the DES, inspections should be carried out and documented by SBS staff in the course of their survey and on final check tours of new bridges.
- At the beginning of every financial year a reminder letter should be issued and sent to all DES to carry out these inspections.
- At the beginning of every FY an updated copy of the CBR should be sent to the DES of the respective *dzongkhag*.

3.2.2 Bridge Planning and Implementation Processes

a) Planning and Programming

According to the Project Document (logframe) the implementation of a total of 100 (!) new, 55 rehabilitation and 100 major maintenance (MM) projects are planned during Phase VI. Ideally new and rehabilitation projects should be carried out in batches of 10 projects each. In view of this the completion of 100 new projects is **not realistic**.

Planning Phase VI:

- 100 new (SBD/SSTB) / 20 SDC funding rest RGoB
- 55 Rehabilitation (steel deck) / 30 SDC funding rest RGoB
- 100 Major Maintenance by DES /RGoB/*geog* funding)

b) Physical Achievements

Achievements to date:

- 17 out of 20 new (SSTB/SBD) surveys and designs received from DES
- 42 rehabilitation projects completed
- 15 major maintenance projects completed

Add. Programmes (so far):

- 2 SSTB (financed by commune of Spreitenbach)

- 1 Bazam (RGoB)
- 1 DSP/UNDP
- 4 power tiller bridges (JICA/WB)

Comments:

Planning, programming and implementation of trail bridges principally follow the well tested, staged, three-yearly process. However due to the delay caused by the elections, the physical programme of phase VI started late.

The output of 100 bridges as stated in the ProDoc is unrealistic within a period 3.5 years (Phase VI). As a matter of fact, SBS reports that this number was foreseen for the duration of the entire five year plan since with a possible annual output of max. 20 bridges and considering the late start (expected in October 2009) a maximum of 20 bridges financed by SDC and another 20 bridges financed by RGoB/*geog* can be expected (a revised workplan for the remainder of the Phase VI has been proposed by SBS and is reflected in Annex 3).

It must be also noted here that with the introduction of the SSTB technology bridge cost could be reduced substantially. However, with the reduction or even abolishment of *zhapto lemi* labour cost will increase again.

Major Maintenance works that were reported from the DES mainly consisted of DES supported replacements or improvements of the wooden planking. However, besides this there is evidence that much more maintenance work has been executed by the communities without assistance and reporting to DES and SBS.

Rehabilitation, i.e. replacement of wooden planking with steel decks can be considered a real success, as it substantially decreases routine as well as major maintenance work.

c) Financial Status

Provided the 20 SSTB and 30 rehabilitation bridge projects will be realised, the budget for infrastructure support by SDC of approx. Nu 49 million will be spent.

However, following the philosophy of the consolidation phase increasing RGoB/*geog* contribution is expected. Unfortunately, this trend cannot be observed so far.

3.2.3 Technology and Implementation Quality

a) Technology Aspects

As mentioned in previous reports standard suspension and suspended bridges had been developed by SBD in Nepal and in slightly modified form introduced in Bhutan in the eighties. They are based on relatively sophisticated technology and follow high standards in terms of safety (live load), durability (design) and use (stability, walkway width, etc.). They need considerable technical expertise for survey, design and construction. The so-called “SBD bridges” are costly and are therefore only justified for crossings on main trails and at locations of specific socio-economic importance. Main trails connect hubs of regional and national importance. Main trails and bridges are part of the rural transport network including feeder and agricultural roads, mule tracks and trails.

In view of this, already during the planning exercise for Phase V it was recommended to introduce a more appropriate technology recently developed by Trail Bridge Support Programme in Nepal. These bridges called Short Span Trail Bridges (SSTB) are standard bridges that have been developed in such a manner that they can be designed at the district level with relatively low engineering input and constructed largely by the communities themselves. Whilst they fulfil the same safety standards as SBD bridges, they cost around half as much. SSTB are generally built on local trails, but up to 120 m span they can also be built on main trails.

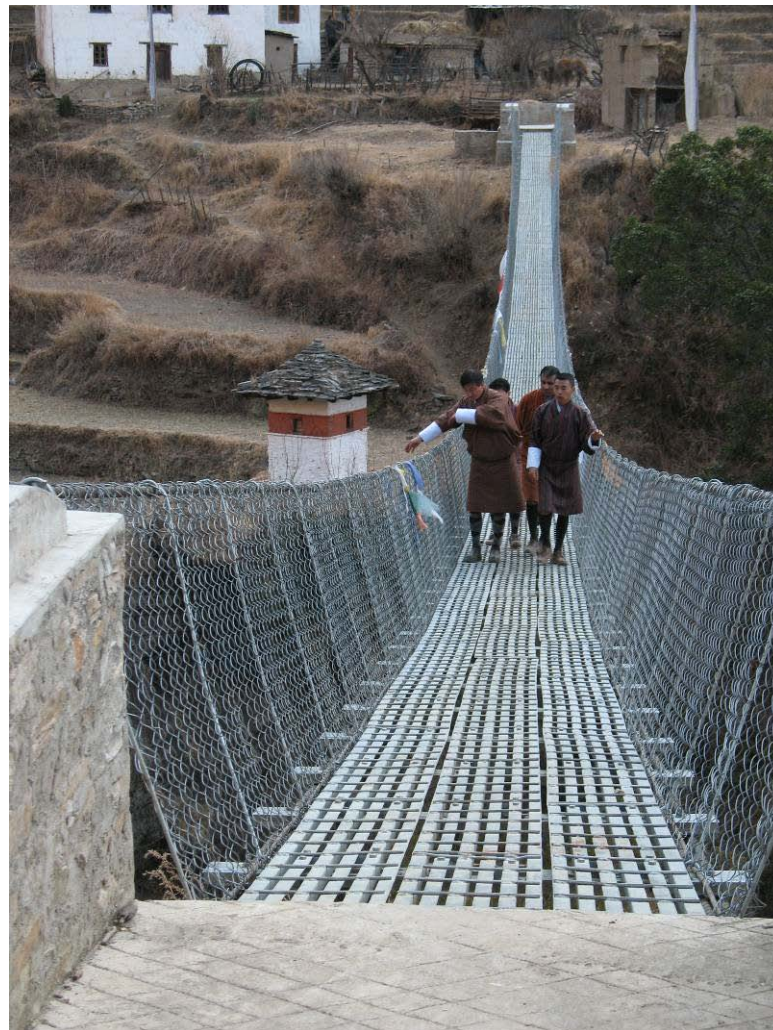
The most important characteristics of the SSTB standard can be summarised as follows:

- Same safety as SBD standard (400kg/m^2 live load), but slightly less comfort (no windguy arrangement, light walkway deck)
- Maximum span 120m
- Walkway deck: steel, 70cm or 106cm width
- Rock anchorages: drum arrangement
- Soil anchorages: dead man beam
- Gravity blocks mainly out of dry stone masonry (less cement)

The main advantages of the SSTB standard design are:

- Design can be carried out by Junior Engineers with training (by SBS); (modular system per span and soil/rock type, no computer programmes needed)
- Cost of SSTB **approx. 50% of SBD standard bridges**
- High level of community participation possible

With the survey and design training conducted by bridge experts of Helvetas Nepal in 2006 and the bridge erection training in spring 2007 the SSTB technology has been successfully introduced in Bhutan. District bridge engineers are now in a position to survey, design and construct SSTB on their own.



SSTB Training/Demonstration bridge Yagay Zam in Thimpu *dzongkhag*

With the progressive expansion of the agricultural road network in the country the demand for so called motorable (by power tillers) “light load” cable bridges is increasing year by year. In response to this SBS has started to design and is in the process of constructing such bridges. For the design and the structural analysis the trail bridge design programmes have been used and optimised by a Swiss bridge specialist during and introduction training conducted by the same. The costs of these bridges are relatively high and often replace existing pedestrian bridges. With the rapid expansion of the rural road network it is expected that these bridges will rather soon be replaced by road bridges.

b) Implementation Quality

Survey and design follow well-tested and clearly defined procedures given in the respective forms and manuals.

However, despite the fact that SBS has sophisticated surveys and computerised design procedures, several deficiencies related to geological assessments, topographical surveys, accuracy of drawings have been identified during the last missions’ site visits. In addition, the quality of construction work - planned and supervised by the JEs of the DES and implemented by skilled crafts persons from the DA and (still) with substantial contributions from the beneficiaries through free labour (*zhapto lemi*) - leaves still room for improvement. This is not astonishing, considering the comparatively low level of training and experience of JEs. The quality of steel parts fabrication varies greatly from one manufacturer to the other, and galvanisation by Indian manufacturers is still unacceptable.

c) Monitoring and Controlling

Monitoring and controlling mechanisms have been developed and documented. However, final checks by SBS of completed bridges, being the most important controlling intervention, are not always being carried out in time. Similarly, regular bridge inspections (every 2 years) by the DES staff do not take place systematically, and site inspections during construction by SBS are equally rare.

d) Store Management

The store of SBS in Phuentsoling organised under the Central Stores Unit appears to be very well organised and functional. Material procurement, storage and supply to the different construction sites work well.



❖ Conclusions and Recommendations

a) *Technology*

- Systematically follow up the introduction of the SSTB technology and the implementation programme in the DES.
- Intensify coaching of DES during most crucial stages of survey, design and construction.
- Whenever possible prevent building “power tiller” bridges as they are expensive and soon might be replaced by road bridges.
- In case such bridges become unavoidable, serving enclosed pocket areas (where further road development is unlikely) carefully assess bridge location. Designs for such bridges need to be done at SBS.
- For the planning and implementation of future light load bridges a policy and clear guidelines and criteria should be developed (with DoR?).

b) *Implementation Quality*

- In order to continuously increase the quality of bridges the quality of steel parts’ fabrication including galvanisation must be improved. Quality control by SBS must be intensified. Inferior quality must be rejected. Never compromise on quality.
- Consider steel parts’ fabrication in Nepal where competition exists and quality is substantially better. Conduct a cost evaluation.
- In order to improve the quality of construction work it is essential that experienced SBS engineers inspect the construction work at critical stages of construction - i.e. layout, cable hosting, etc. Particular attention should also be paid to ensure that rectification works will be enforced after final checks have been carried out.
- Include quality assurance into the forthcoming bridge erection training.

c) *Monitoring and Controlling*

- In order to ensure high quality standards of construction work, SBS should intensify site inspections.
- SBS should systematically carry out final checks after completion and insist on rectifications
- DES should be reminded and encouraged to regularly inspect completed bridges at least every second year.

3.3 Maintenance - Ensuring Sustainability

3.3.1 *Background*

One of the central concerns of Phase VI is the consequent implementation of decentralised maintenance as defined in the maintenance concept, developed several years ago.

The maintenance concept essentially consists of Routine and Major Maintenance. Whilst **Routine Maintenance** is the responsibility of the *geogs*, carried out by appointed caretakers, **Major Maintenance** should be carried out by the DES with free labour contributions from the communities. **Rehabilitation** work is carried out following the procedures of new construction programmes.

At the time of the mission caretakers were selected and trained in nine dzongkhags only. Caretakers also did not have toolboxes which were reportedly in the process of being procured and financed by RGoB.

3.3.2 Assessment of Maintenance

During the mission, completed bridges were visited in various *dzonkhags* (see Annex 1). The assessment of the current status of maintenance is similar to what has been observed during the last mission. It varies from bridge to bridge and can be summarised as follows:

a) Routine Maintenance (RM)

On almost all of the bridges visited, RM is not done in a systematic way. However, some communities carry out certain maintenance activities on an annual or semi-annual basis or in cases where crossing of the bridge would not be possible anymore.

Most deficiencies observed are:

- Bridge entrance and foundations and drainage channels covered with soil, debris and other garbage,
- Anchorage parts covered with soil (untreated steel parts start to rust),
- Loose windguy cable arrangements, open cable ends,
- Missing steel parts, nut and bolts, loose wiremesh.

There is a clear lack of awareness that regular maintenance clearly contributes to the life span of a bridge. During the mission, the following reasons for this situation have been observed:

- Previous lack of capacity and capability within SBS, low priority given by the programme staff and the authorities (physical targets get priority before sustainability),
- There is a general absence of a maintenance culture, both within the communities and also amongst the DES,
- Insufficient control and support from the DES,
- Funding for RM is irregular and ownership arrangements/responsibilities are often unclear.

However, as mentioned above there is a growing awareness amongst the local decision-makers visited during the mission who support the concept and are willing to introduce it.

b) Major Maintenance (MM)

The planning process of MM is similar to the processes for new construction. Today, the responsibility of MM is with the DES. However, in many cases MM activities such as replacing wooden planks are taking place unnoticed as physical biennial inspections and subsequent reporting is not carried out systematically by the DES.

c) Rehabilitation Works (RW)

RW include all activities related to the replacement of the wooden planking with steel decks. The concept has been taken up in Phase V. So far 50 have been completed, and the fabrication of the steel parts for planned 42 is completed. Also here, the implementation process follows the procedure for new bridges.

For future planning of RW, emphasis should be given to bridges of strategic importance, i.e. river crossings with substantial traffic (refer to chapter 3.2.1)

3.3.3 Organisation and Implementation Arrangement for Routine Maintenance

Following the delay of the implementation of maintenance, and particularly of RM, the Project Document of Phase VI clearly identified the introduction of a sustainable maintenance concept and implementation plan as one of the main operational objectives of the phase. In view of its importance for sustainability of the bridges the implementation arrangement described in the last report will be repeated here:

Past experience and extensive consultations between most of the stakeholders, and particularly with the *geogs* (*gup/mangmi*), two basic options for RM have emerged as a uniform system that does not respect local realities (which are characterised by long traditions that vary greatly from area to area) will not be appropriate.

Institutionally, *geogs* consist of a number of villages that have been organising themselves for various interventions. They have also developed various systems to deal with social and communal services, including maintenance of social infrastructures. A commonly applied system is the exemption from *zhapto*

lemi against a particular caretaker service. In the water and sanitation sector, a system is promoted whereby households in individual villages pay up to 50 Nu per annum to the caretaker.

However, none of these systems appear to be appropriate for RM of trail bridges as they not only cover specific villages' and households' individual needs. Bridges are generally considered as a service provided to more than one village or even *geog*. For the majority of the bridges, **willingness to pay** (or contributions to RM) would be negligible or non-existent. In addition, RM requires some basic knowledge and skills. The generally applied system of *zhapto lemi* exemption is rotated on an annual basis. Continuity of acquired know-how and skills would be questioned.

In view of this, the following options will be offered/proposed to the *geogs*:

Option 1:

The *geog* (*GYT*) most benefiting from the bridge appoints a caretaker from a village within the vicinity of the bridge who is able to undertake physical work and to report about the condition of the bridge, and entrusts him/her with the execution of RM. A contract between the *geog* and the caretaker will formalise this arrangement. The contract is based on terms of reference (including the scope of work) and the *Instruction Manual for RM of Pedestrian Bridges*.

It is recommended that a single amount per bridge be fixed by the *GYT* as monthly remuneration. It is estimated that not more than one day will be required to carry out reliable RM.

The remuneration of the caretaker, per month and bridge including the purchase of small materials, should be included either in the *geog* budget or the annual budget allocated for bridge maintenance by RGoB.

The caretaker will be directly supervised by the *gup*. Payment of the monthly remuneration will be made by the *gup* upon receipt of the caretaker's monthly status report.

The DES should technically supervise and support the caretaker whenever required/requested. DES should report at least every two years to SBS following the format given in the instruction manual.

An initial training will be provided to the caretaker during introduction of the system to ensure that he/she is aware of the concept and to provide him/her with the basic knowledge and skills. The *gup*, the *mangmi* and other relevant actors in the *geog* (see stakeholder analysis in Annex 5) will also be informed about RM requirements to enable them to supervise the performance of the caretaker and to foster social control.

The caretaker reports major damages or emergencies through the *gup* to DES.

In cases where extraordinary or emergency work is required, the community will assist the caretaker in the form of free labour.

Option 2:

In cases where a concerned *geog* has established a well functioning approach utilising traditional forms of decision-making and community work to carry out reliable RM of communal infrastructure (that we do not know yet), the community should be encouraged to apply this system also for trail bridges. In no instance should SBP intervene in mechanisms of participation and decision-making processes at local level, but enhance the existing mechanisms through advocacy and targeted capacity building measures.

However, even if the *geog* uses other approaches, the procedures, tasks and responsibilities (see instruction manual) of the individual actors should be adhered to and continuity of RM should be ensured. Any RM management system selected should be transparent and financially sustainable. It should in no way be detrimental to any ongoing development initiative in the *geog*.

For either of the options the following general recommendations should be considered:

❖ Recommendations

- For new bridges, the caretaker should already be appointed at the beginning of the construction. This condition should be included in the agreement between the *dzongkhags* and the *geogs*. Annual rotation of trained caretakers should be prevented.
- Include social component into RM training, train all SBS and JEs/DES staff in relevant methods related to community participation through social mobilization.
- After selection, the caretakers in the remaining *dzongkhags* should also receive a two-day practical training/instruction about their responsibilities, duties and tasks from the DES. This instruction should be repeated in the form of refresher trainings at least once after one year and later on a regular basis. This is essential to maintain a good level of performance.
- For completed bridges, it is essential that awareness is created within the *geogs* and their main actors regarding the importance of RM, cost for RM should be gradually included in the annual budgets of the *geog*.
- For existing bridges, basic tools are currently being procured by the SBS (financed by RGoB) and should be handed over to the caretaker during the instruction training.
- During the first years of the implementation of the scheme, regular contacts with the DES' JEs should be maintained by SBS. The results of the biennial inspections by the DES should be carefully analysed and if necessary, corrective actions initiated.

3.3.4 Instruction Manuals for Maintenance

Following the recommendations and with the support of previous backstopping missions, an **Instruction Manual for Maintenance of Trail Bridges** has been prepared. The manual consists of two volumes:

Volume 1: is for **planners and decision-makers** at national level (SBS), *dzongkhag* level (DES), and local level (*geog* / GYT). It describes the concept and the entire process of planning and implementation for all types of maintenance.

Volume 2: is for **caretakers**. It is a practical manual for the execution of RM, it uses a clear language and is richly illustrated.

The manuals have been completed and the printed version has now been distributed to all *geogs* and trained caretakers respectively.



Caretaker instruction

3.4 Capacity Building

SBS/SBP has a long track record in various fields of capacity building. Since the beginning of the programme, training has been a key component and has significantly contributed towards the success of the programme. A key element underpinning sustainability is professionalism. Training has always been seen as a means to improving awareness, knowledge and skills and as a measure to increase motivation and professional perspectives. In general trainings have been practical, need based and adjusted to the changing structural and technical requirements. Although, there exists no official HRD strategy within MoWHS, training interventions organised by SBP have substantially contributed to the capacity of the Ministry.

3.4.1 Overall SBS HRD/Training Programme

Training activities under the current Phase VI focused on practical in-country trainings for DES staff, caretaker training, exposure visit to Nepal, short-term training abroad, and the completion of BSc and Masters courses for HQ staff.

In the past, it was a common practice that two JE per DES were trained in bridge-related topics. Although these trainings were appreciated throughout the *dzongkhags*, their impact was not always optimal due to frequent rotations. The fact that certain DAs require their JEs to be “generic”, i.e. to master all engineering topics used in the district makes the situation even more difficult. Such an approach naturally restricts the specialisation that is necessary for the construction – and lately also for survey and design - of comparatively sophisticated structures such as suspension and suspended bridges.

SNV under the Rural Infrastructure Support programme (RISP) conducted an overall training needs assessment and functional analysis of the DES. The result of this exercise is a comprehensive training programme. However, so far no training interventions have been planned or undertaken for the staff of the DES.

The training related to social skills of communication and cooperation including community participation through social mobilisation has not been provided as recommended during the last missions.

3.4.2 Capacity Building at the Central Level

With currently eight technicians (engineers of various levels) SBS’ technical manpower to manage the current and also future workload and to assume old and new responsibilities (see 3.1) is adequate. During the last and the current phase two Masters and three Post Graduate (BSc) courses have been completed. With this level of training SBS will be very well equipped to perform its tasks.

3.4.3 Capacity Building at the dzongkhag Level

The numbers of staff in the DES vary greatly from DA to DA depending on their size and their development programmes. In general the technical staff of the DES is overloaded. Often one JE has to look after up to 25 projects at a time. So far only selected JEs (usually one per *dzongkhag*) have been trained. However, as mentioned earlier the distribution of those trained bridge specialists is still not balanced.

3.4.4 Capacity Building at the geog/Community Level

With the ongoing caretaker trainings, for the first time training interventions have also taken place at the *geog* level. However, during the mission it was clearly seen that more awareness and a greater sense of ownership must be developed and enhanced amongst the communities and their representatives. They should be actively involved during training of caretakers to understand their roles and responsibilities.

3.4.5 Institutionalised Capacity Building

Within the existing local technical education institutions today no specific courses or trainings related to bridge planning, design and implementation are being offered. Therefore, during the previous mission the Directors of the following institutions were met and they showed interest to include the subject into their curricula:

- College of Science and Technology, Phuentsholing (BSc level)
- J.N Polytechnic, Deothang (Diploma level)

Consequently, in 2007 a delegation of the directors of the two institutions and the Vice Chancellor of the Royal University of Bhutan (RUB) visited the Institute of Engineering of the Tribhuvan University in Nepal to learn how bridge building has been included into the formal curriculum of the institute. Unfortunately no follow up took place thereafter.

During the mission the discussion with the RUB and both directors of the two institutes was taken up again and a meeting of the heads of their civil engineering departments with SBS has been planned in March/April 2009 to discuss the curriculum content and the role of SBS engineers in curriculum development and as possible guest lecturers.

3.4.6 Information and Communication

The flow of information and communication is an important prerequisite for a successful personnel management - only informed team members can develop initiatives and actively participate in creative and innovative development processes. Since the last mission communication and interaction within SBS/RISD and with DUDES has been improved substantially and should be maintained.

Following the recommendations of previous missions Helvetas has produced the brochure “Trail Bridge Building in the Himalayas- Enhanced Access, Improved Livelihoods” that capitalises lessons learned and the wealth of information and experience of past and current practitioners in the trail bridge sub-sector over the past 20 years in Nepal and Bhutan.

❖ Conclusions and Recommendations

a) Training

In order to maintain a high level of knowledge and skills, regular training at all levels (including the communities) is necessary. Within the limitations of the budget for capacity building initiatives, the following training measures are planned or recommended during the remainder of phase VI (refer also to Annex 4 and the ProDoc)

Scholarships:

- B.Sc. Courses:
B.Sc. scholarship programme for about 20 experienced bridge builders (JEs) in India.

Short Term Courses:

- Regional seminars/conferences on relevant topics for SBS engineers
- Project management course for SBS engineers

In-Country Training:

- Refresher courses in engineering geology and survey
- Training for new JEs on bridge survey, design and construction
- Caretaker training and necessary refresher trainings including awareness creation at geog level
- Awareness raising of DES staff on social issues, i.e. training in basic community development, social mobilisation techniques, to enable them to act as trainers.

b) Future Orientation

In view of the new decentralised tasks and responsibilities to the *dzongkhag* level future training measures should emphasise on interventions for DES staff. In addition institutionalisation of capacity building should be pursued with priority, in particular

- Introduce B.Sc. courses for JEs/DES.
- Conduct refresher courses and exposure visits for SSTB.

- Training in engineering geology, social mobilisation, etc.
- Caretakers and local decision makers should be trained on a regular basis.
- Make sure that training interventions do not exceed the possibilities of the DES (work must go on).
- **Disseminate the suspension bridge technology through local education institutes, support them in curriculum development. SBS engineers should assist institutes and provide guest lectures.**

3.5 Governance

An important part of the ToR was to look and/or stimulate interfaces and synergies of SBP with other initiatives within Helvetas' governance sector. However, it must be stated here that given the limited time of the mission this issue could only be covered superficially.

However, the following aspects and features have been highlighted and discussed during the meeting with Helvetas and should be considered particularly when it comes to the capitalisation of governance experiences and the management of knowledge which is available within SBS/SBP.

As stated already in the previous mission reports the consultant is convinced that SBS/SBP respects the concerns related to good governance in an excellent way. A specific characteristic of the SBP approach is that it combines a **process** (user orientation, step by step approach) with a **product** (a river crossing facility) through substantial community involvement and participation. Question of equity particularly related to *zhapto lemi* (contribution of "voluntary", free labour required from each household towards communal infrastructure projects) are currently debated within the Government and the substantial reduction or even abolishment are being discussed.

The programme clearly follows the principles of decentralisation and promotes the ongoing democratisation efforts of the Government. As such it corresponds with the Helvetas working area "civil society and the state" and synergies with other Helvetas projects can be utilised that focus on social mobilisation capacity development and reinforcing governance structures.

By nature, the programme addresses SDC/Helvetas' cross cutting themes in an excellent manner, contributing significantly to improved communication, access and mobility. These factors are a precondition for social and economic development. This is particularly true for rural areas, where transport significantly improves access to social and economic opportunities (including schools, clinics, employment, agricultural inputs and markets for produce, etc).

Typically, **poverty** targeted interventions such as schools, health facilities, nutrition programmes and social services depend on transport as a complementary input for their effective delivery. However, transport should be seen as an intermediate service – it is not a means to an end. Transport alone cannot reduce poverty, but serves a pervasive and crucial complementary role. Transport should thus be geared towards supporting people and their livelihoods. Transport is an excellent entry point for **democracy** and **good governance** by facilitating participation in the political processes and reducing the marginalisation caused by rural isolation. Increasing women's mobility through bridges can empower them to take greater control of their lives by increasing their access to markets and their exposure to education, training and information, and by providing more opportunities for their political participation.

The following aspects of governance within the programme that have been analysed during 2005 review mission deserve particular attention and are repeated here:

3.5.1 Bridge Site Selection / Transparency

Within the decentralised structures of the *DYT* and *GYT chathrims*, planning has become a multi-level exercise. Five-Year Plans (FYP) at *geog*-level are prepared in a participatory manner as the local representatives, who are accountable to their constituency, set priorities. Under this new political and institutional framework bridge site selection has become a truly participatory and transparent approach.

Today communities identify their own priorities, e.g. the need for a trail bridge. Mutually agreed requests are forwarded to the *GYT* for discussion and *geog* prioritisation. The proposed bridge project is then put before

the *DYT* where priority locations will be negotiated and debated amongst the different *geogs* for *dzongkhag* level approval. After having reached consensus regarding a bridge project, with the assistance of SBS and DES, the final location will be determined and the survey and design carried out. Already during this stage the community is fully aware of its future contribution (*zhapto lemi*) in terms of unskilled labour by all the households throughout the construction of the bridge.

3.5.2 Community Participation, Empowerment and Ownership

The SBP process ensures that communities, under the leadership of the *gup*, organize themselves, define their needs, participate in decision-making and contribute substantially towards realization of the project. This process is generally working well. The main contribution consists of unskilled labour, generally by all households of the community. However, very poor households, widows and elderly people are often exempted. On the other hand, some of the richer households of the community might contribute cash in lieu of labour.

As mentioned earlier the *GYT* and the *DYT chathrims* provide communities with more power and greater responsibilities to plan and implement their priorities. They empower communities to take greater control over their lives. The democratic decision-making and prioritisation process has helped communities to obtain full transparency and accountability as they are aware of budget allocations and payment procedures.

However, *geog* plans are often too ambitious, overloading communities with too many development activities. Particularly in *geogs* with many poor households that rely on daily wage work outside the community the burden of free labour at times exceeds their possibilities.

On the other hand, it has been observed that free labour contribution can substantially contribute to social cohesion of communities by working together in a team to achieve a common aim. It also enhances their ability to resolve potential conflicts in cases of land compensation disputes, etc.

In many cases bridge projects have brought together different communities not only through greater exchange but also through intermarriages after a new bridge had brought the communities together.

Ownership on the other hand is only a partial success. It seems to work for the construction process, but to a lesser extent for maintenance. This may be explained by the fact that once constructed, the bridge gives free access to everybody and is therefore a public good.

3.5.3 Equity and Support to the Poor

a) Equity within communities:

Institutionally, *geogs* consist of a number of villages which over time have developed various systems to deal with social and communal services, including maintenance of social communal infrastructures through the traditional system of *zhapto lemi*. However, *zhapto lemi* bears the danger of creating social disparities during the implementation **process** with the poor contributing most and the rich profiting most.

On the positive note, however, the **product** of this process - the bridges - provides equal access to all. Whilst the poor get easier access to income opportunities such as road side the rich get better market opportunities.

Women are generally mobile and thus their benefit from bridges is substantial. Trail bridges significantly contribute to reducing travel time, facilitating the marketing of produces, ensuring safe and easier access for children to schooling, providing opportunities to work outside the village, providing farmers and their livestock access to fields and grazing land and improving the delivery of services by government agencies to the villages. Child labour on bridge sites is common, especially during school holidays.

❖ Conclusions and Recommendations

- Identify the interfaces with Helvetas and other activities in the governance sector and exchange experiences for mutual learning.
- Capitalisation/Knowledge Management:
The valuable experiences and vast stakeholder knowledge should be documented in a brochure for demonstrating good practices of local governance for wide dissemination (document 1-2-successful bridge projects)
Utilise the capacity of the Helvetas intern currently working in the governance sector.

3.6 Consolidation Concept

3.6.1 Rationale for the Consolidation Phase VI

After more than 20 years of cooperation within Phase VI SDC/Helvetas decided to gradually phase out technical (backstopping) and financial assistance. Accordingly the current phase places increased attention on consolidating concepts and achievements from past inputs. For sustainability of interventions more emphasis is given to establishing new partnerships and increased contribution and involvement of RGoB in a progressively more locally owned sub-sector programme. Emphasis is also given to strengthening the capacities at all levels, particularly at the local level, thus actively supporting the ongoing decentralisation process. Therefore, the focus of the interventions is on local capacity building, governance and sustainability.

3.6.2 Review of the Consolidation Concept

In principle, the current political and institutional environment is ideal to consolidate the concepts and processes developed and tested over the past years. In addition the institutional set up as well as the capabilities and capacities at the central level are in place. There is also a strong commitment from the Ministry to continue bridge building as still more than estimated 300 bridges will be needed in the years to come. However, the current phase still has to prove whether the financial commitment of RGoB can be realised.

It should be noted, that the consolidation phase started in a rather fragile period of change, when national and local governments have been newly constituted and new funding mechanisms (basket funding) are being discussed and put in place soon.

At the same time it must be seen that the technical and managerial capacities in the DAs are still limited and need to be further strengthened and consolidated. Particularly in view of the new responsibility of decentralised planning, survey and design of bridges, with resulting new tasks and responsibilities given to the *dzongkha*. In addition creation of a culture of maintenance at the local will not yet be achieved during the current phase.

On the other hand, the obvious physical, institutional and conceptual successes of the programme clearly show that SBP is on the right track and the concept of strengthening capacities particularly at the local levels is valid and should be pursued with increasing involvement of RGoB.

4 Vision and Outlook

4.1 Conceptual Framework

Following the ToR, SDC has made an implicit commitment to be engaged in trail bridge building until the end of the 10th Five Year Plan (2013) , i.e. beyond the current phase.

During most of the discussions and contacts at all the levels the consultant had during the mission this announcement has been greatly welcomed. It comes at the juncture when Bhutan is in a crucial transition period and at the crossroads in its development process. At this time Bhutan needs to prove to its people that democracy and decentralised service provision work. For this Bhutan needs strong partnerships and continuity also in SBP where strengthening of capacities and the consolidation of concepts particularly in maintenance, technology and quality assurance are still ongoing and need time.

Together with the local partners the following vision and outlook has been developed and is recommended:

Vision:

Promote and demonstrate good governance and decentralisation in the trail bridge sub-sector in Bhutan for further replication (in other sectors).

Outlook:

After 2013 RGoB takes over all responsibilities in the sub-sector, finances new bridge building and maintenance as well as capacity building through decentralised structures.

RGoB maintains and finances an adequate institutional arrangement at the central level that assumes the role of a Resource Centre for the regional and local levels.

4.2 Justification

Today RGoB clearly demonstrates its commitment to political, administrative and fiscal decentralization. People's representatives are elected democratically, national, regional and local decision-making processes are in place and finances for development activities flow directly from the central level to the *geogs* where they are administered independently. However, in this fragile situation Bhutan needs reliable partnerships that assist the country in the transition process. In order to face the challenge of decentralized decision-making and management, capacities need to be strengthened particularly at the local level. In addition, there are still more than 300 bridges required that will engage RISD/SBS for many years to come. Institutionally DUDES is committed to maintain and finance the current institutional arrangement.

In view of this the main elements of a continued engagement in a programme that could be called

“Strengthening Good Governance and Decentralisation in the Trail Bridge Sub-Sector in Bhutan”

- Further consolidation achievements and concepts developed during previous phases and strengthening capacities at all levels, thus supporting the ongoing decentralisation and democratisation process focusing on local capacity building, local governance and sustainability.
- Increased local ownership through active involvement and (financial) contribution of the entire bridge programme

The arguments for a future engagement are similar to the consolidation phase and can be summarised as follows:

❖ Conclusions and Recommendations

a) SDC/Helvetas is advised to continue cooperation (technical and financial) until 2013:

- The capacity building programme (B.Sc. scholarships, specialised training, and institutional capacity building, awareness building) that has impact needs still more time.
- The consolidation of complex concepts such as maintenance and SSTB technology, quality aspects need time.

b) Continue to co-finance bridge building:

- In order to be effective, capacity building measures must be accompanied by concrete project work. SDC/Helvetas is therefore advised to complement the proposed support of capacity building measures with a moderate, though adequate (SSTB) bridge construction programme.

c) The Ministry should now give utmost priority to the acquisition of alternative sources of funds for the bridge building and rehabilitation programme (approach bi- and multilateral donors)