ASIA BRIEF
TRAIL BRIDGES IN NEPAL: PARTNERSHIP RESULTS

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EDITORIAL

The Asia Briefing Paper Series aims at informing development practitioners and the (Swiss) public about new developments, results and impacts of Swiss development cooperation in Asia. It shall particularly highlight past and present efforts to achieve aid effectiveness through partnerships among Swiss agencies and with local partners. Discussion and learning from these experiences shall further enhance our motivation and efforts to halve poverty in Asia by 2015.

Walter Meyer, Head East Asia Division

RESULTS OF THE NEPALI-SWISS PARTNERSHIP

Nepal has a long tradition of constructing trail bridges. For centuries, communities have been building bridges across Himalayan rivers using indigenous technology. At the beginning of the 20th century, the government started to become involved in constructing bridges at key locations. It was however only in 1964–65 that systematic and planned construction started, including Swiss support that has since led to one of the most successful development partnerships in Nepal. By 2004, more than 3'000 trail bridges for pedestrians had been constructed, including 2'230 bridges through Swiss support with an overall length of more than 180 kilometres. This achievement corresponds to twice the total length of the 5'800 bridges of the Swiss Federal Railways network. Every day, some 500'000 people and 90'000 animals now cross rivers safely. This saves millions of walking hours; children can go to school, and people can visit medical centres and temples, access public services, their fields and go to markets to buy and sell products more easily.

Since SDC/Helvetas (Swiss Association for International Cooperation), started in 1972, the trail bridge programme has been able to boast multiple achievements. The importance Switzerland has given to capacity building of local institutions and people is now paying off. Thousands of Nepalese, including civil servants, local engineers, teachers, private entrepreneurs, craftsmen and local communities have been trained. By making trail bridge building part of the national curricula in engineering schools, national capacity has grown, now enabling Nepal to build 350 new bridges per year. The increased capacities in many localities have allowed the Nepali government to hand over the responsibility for bridge building to district and village authorities. The lessons learned and the recommendations from the Nepali-Swiss partnership have substantially contributed to the elaboration of the new Trail Bridge Strategy (2006). Since many more bridges have to be built in Nepal, this Strategy is now mainstreaming project experience on a national level, stating more precisely the roles and contributions of local authorities, of communities, of the private sector and of NGOs. Considering the political conflict in Nepal, the current policy dialogue between Nepal and Switzerland concentrates on working in actual and potential conflict situations, and thus making the Trail Bridge Strategy more conflict sensitive.

The local population has profited from bridges in various ways. Because of the labour-intensive construction approach chosen, a bridge may require 600 person-days of skilled and 2'000 person-days of unskilled labour. This is a significant contribution in rural Nepal where lack of employment is a major cause of poverty. With a special focus on community participation, the Nepali-Swiss partnership has pushed empowerment, social inclusion of lower castes and classes, democratization and decentralization as far as possible and with increasing concern. These aspects are in fact considered to be the root causes of the actual violent conflict in Nepal. Communities became involved through their User Committees in making their own decisions, participating in bridge building and maintenance; social audits on funds and projects have led to an outstanding transparency. This ownership of the community, the checks and balances and the transparent processes left minimal space for corruption.

ACTUAL BRIDGES: 2'230 BUILT – OVER 180 km

Where there is no bridge, it is easier to imagine the benefits of building a new one, or using an 'old' model as on page one

Two types of bridges have been built: 1) 580 long-span trail bridges with lengths ranging from 120 to 350 meters on the main trails[1] under the responsibility of the Department of Local Infrastructure Development and Agricultural Roads; 2) 1'650 short-span community bridges up to 120 meters in length, built by the communities themselves under the responsibility of 'User Committees'.
In all, the total length of all 2'230 bridges exceeds 180 kilometres – twice the total length (90 km) of the 5'800 bridges on the Swiss Federal Railways (SBB-CFF) network.

MOBILITY NEEDS CALL FOR PEDESTRIAN BRIDGES

Nepal is a land-locked, mountainous country of 140'800 km² with a population of 23 million. The total road network of 16'000 km – all built since the 1950s – is mostly concentrated in the flat Terai region adjoining India.

Mobility in the hills is a great challenge. Sometimes, people have to walk for days to reach the next village or town. Crossing rivers is dangerous, especially in the rainy season. "In view of the huge number of rivers and streams, it seems essential to construct many more such bridges here" (Trail Bridge Strategy 2006).

The obviously high demand for pedestrian bridges in the hilly landscape of Nepal is not new. Early in the 20th century, the first modern trail bridges were manufactured in Scotland and dispatched in parcels to be assembled on site. The first bridge built with Swiss support was in 1961. Formal Swiss technical assistance started in 1972, with growing emphasis on local ownership, capacity building and community involvement.

COMMUNITY BRIDGES AND LOCAL CAPACITY

There was not only a need for long-span bridges on the main trails, but also for smaller bridges owned, built and maintained by the communities. Therefore, a lighter and more reasonable bridge for short spans up to 120 meters was developed. This bridge type was derived and improved from the bridges indigenously built by Nepalese craftsmen for centuries. Thus communities can easily accept this new technology intervention, because the key elements of their traditional way of bridge building were appreciated and even got promoted.

Today, the Nepal-Swiss cooperation programme has the capacity to build some 50 long-span and 200 community bridges annually. Overall, Nepal has some 3'600 trail bridges, 1'300 of them built without Swiss assistance but modelled on the improved 'Swiss' design. Nationally, there is an annual capacity of building some 350 bridges per year. The World Bank and the Asian Development Bank have recently signed agreements with Switzerland to build bridges in 60 districts of Nepal.

Initially, trail bridges were built by the Suspension Bridge Division (SBD) of the Government of Nepal, with technical cooperation from Switzerland. SBD had 270 staff members and 5 expatriates. In 1990, a complete role change took place: instead of building bridges directly, SBD became a facilitator. Its new tasks were to outsource execution to the private sector and to actively involve communities. Such a dramatic step meant that some 170 staff members became redundant and were laid off.

The role change also implied listening to the people. Instead of centrally deciding, planning and building bridges, the new role of SBD was now to write and evaluate tenders, train people and supervise progress. With the Local Infrastructure Development Policy 2004, handing over of people-oriented responsibility and accountability for planning, implementing, operating, maintaining was mainstreamed and handed over to local authorities (decentralisation). At the same time, new actors came into the picture: the private sector for the long-span bridges (over 120 meters), and communities for the short-span bridges. There was also a reversal from a top-down,

1 In 1985 the Main Trail Study was launched with the objective of defining the most important trails. The methodology for determining main trails was based on the "central place" theory by W. Christaller (population density & central services). The same theory was also applied for defining the National Highway system in Switzerland back in 1960.

predictable approach to a less predictable bottom-up approach. Decisions on building a bridge were now with the communities; they took over the driver's seat.

Initially these changes slowed down progress, but over time they have created a much more dynamic and sustainable approach as people are now actively contributing. Construction of a bridge may in average require 600 person-days of skilled labour, and 2'000 person-days of unskilled – a considerable amount of work of roughly 10 person-years. Basically, everyone in a village has to contribute in kind or in cash. The average contribution is 5 to 8 days of labour per person.

Swiss support puts a heavy focus on capacity building to train the private sector and even more, the communities. An excellent training concept has ensured that all processes and technical details are documented, and trail bridge building has become part of the regular curriculum of engineering students and of craftsmen in vocational training schools. Nepal thus now has the capacity to build bridges on its own and in sustainable ways.

TRAIL BRIDGE TRAINING AT THREE LEVELS

The programme has designed specific courses and training materials for universities, colleges and vocational training schools. For such practitioners as trail bridge engineers and supervisors, tailor-made courses are conducted at engineering schools and include not only technical but also managerial and social aspects. The capacity building programme includes 34 educational institutes (1 university, 5 colleges, 28 vocational schools) and involves practitioners from central and local government, the private sector and NGOs in all 75 districts.

A demonstration miniature bridge is presented to villagers, illustrating all the technical issues involved

Instead of maintaining a separate training institution, this integration into regular curricula permits a sustainable and cost-effective capacity building for all engineering students in Nepal. More generally, it helps to encourage engineering schools towards practical and relevant technologies for the country, rather than learning how to build skyscrapers and 4-lane highways.

INVOLVING PRACTITIONERS AND COMMUNITIES

Especially at the local level, bridge building is a very intensive community process and technical people alone are not in a position to initiate and facilitate such a process. The programme involves local NGOs for training villagers in the entire process of trail bridge building. These NGOs facilitate the community process and stay alert to social dynamics and equality issues.

Before a bridge is built, the community must form a User Committee, agreeing on the site of the bridge and on the contributions the villagers will provide. Without this commitment for contributing their own resources, the programme will not support the bridge with materials and financial resources.

Initially, all steel parts were imported from India, because local manufacturers were lacking. The breakthrough came when the best mechanical workshop, Balaju Yantra Shala2, was able to produce these parts in Nepal. Today, some 30 private workshops produce all the steel parts locally, except for cables.

2 Balaju Yantra Shala workshops and vocational training centre was established by Helvetas in 1961 and handed over to the private sector in 1987.

ECONOMIC AND SOCIAL BENEFITS

It is estimated that the trail bridges serve some 7.8 million users, or about one third of Nepal's population. The average daily traffic on all the 2'230 bridges built with Swiss support amounts to some 500'000 persons. Another 100'000 users are benefiting from the 1'300 bridges built under other programmes.

Just compare this impressive order of magnitude with the 700'000 passengers transported daily by the Swiss Federal Railways.

Most of Nepal's traffic in the hills is still pedestrian traffic: the most remote trail bridge constructed so far is 22 portering days (!) from the nearest road head.

DAILY TRAFFIC ON THE BRIDGES

The average daily traffic for people ranges from 150 crossings on short-span bridges to 400 per day on long-span bridges. This amounts to 247'500 daily crossings on short-span bridges and 232'000 on long-span bridges – almost 500'000 daily crossings in all – on the 2'230 bridges built with direct Swiss support. In addition, there are 91'000 animal crossings each day.

COST AND BENEFITS OF A BRIDGE

a) **Economic benefits and costs**: better access to fields and markets provides farmers, traders and porters with higher trading volumes, better prices, and increased income. Hence, bridges lead to poverty reduction. The total investment for the trail bridge programme in Nepal amounts to almost 100 million Swiss Francs (CHF) over the last 33 years. Of this, CHF 71 million are donor contributions primarily from SDC and DFID. CHF 24 million was contributed by the Government of Nepal and some CHF 4 million from the communities. The Nepali share of contributions has now increased to over 50% of new investments.
b) **Return on investment**: If a hypothetical bridge toll of 2 Rupees (CHF 0.03) was paid per person per crossing and 1 Rupee per animal, the annual income would be around CHF 7.5 million. It would yield a return on investment of 7.5 % on the total amount invested. The Government and donors are strictly against such tolls, but this calculation nonetheless shows that bridge building is a good investment.
c) **Socio-economic benefits**: better access to public and private services, especially to schools and health facilities.
d) **Socio-cultural benefits**: better access to relatives and to cultural festivals, celebrations and temples.
A recent study among villagers has shown that an overwhelming majority appreciates the bridges for the better access to services and economic activities: 97 % agree that the bridges fulfil important community needs. Seventy to eighty percent of those interviewed felt that the bridges had brought about social change and had improved the opportunities for landless and marginal farmers.

SOCIAL EQUALITY: WHO BENEFITS?

The Swiss supported programmes have been sensitive to equity questions and have stipulated that the User Committees supervising the construction of bridges include at least 30% low caste people and women. These concerns are now also included in the national trail bridge strategy. It is difficult to guarantee adequate participation of disadvantaged and marginalized groups, but a large survey on social equity has revealed that:

a) poor districts and regions benefit from the bridge programmes even more than the more wealthier districts;
b) bridges provide substantial benefits which are distributed across all social groups.

However, Nepal being a very hierarchical society, some inequalities continue to be evident, namely that Dalits (low caste people) are not able to benefit in the same way as other castes, women get paid less than men for the same work, and land losses and displacements are not always adequately compensated.

TRAFFIC INCREASE AND IMPACTS

The improved mobility brought by a bridge has varying impacts on traffic flows. In some cases the replacement of an uncrossable river, or a seasonal ford, creates new opportunities. In other cases, where a fragile bridge – or a wooden log – once stood, a new bridge brings greater safety, without traffic growth.

An impact study on selected bridges has shown a dramatic increase in goods traded: the Molung Bridge (see page 5) in the Eastern region has saved one porter-day in distance. The volume of goods transported grew from 2 tons to 27 tons in the wet season, and from 40 tons to 56 tons in the dry season.

Assessing the economic impact of the bridge programmes would be a huge task, one which has not been undertaken so far. Nonetheless, the change in the 'before and after' situation can be well illustrated (see following pages).

AND THEN CAME A BRIDGE – THE 'BEFORE AND AFTER' EFFECT

Sitka Ghat, Ramechhap, before…

and after bridge construction

At Chuti, Bajura, a wooden log served as a bridge before…

the short-span bridge was built

Molung, Okhalda, the ferry boat before...

and a wedding party after the bridge construction

For porters, crossing a river like this is cumbersome and dangerous. For children needing to get to school and for sick people to get to hospital, it is impossible.

Goats crossing a wooden bridge before ... and after bridge construction. Sometimes the big step forward is just a qualitative improvement – in safety. Children, men, women and animals can now cross the river safely all the year round

BRIDGING THE GAPS IN GOVERNANCE …

Swiss support has gone beyond bridges as being an important element of infrastructure development. A decentralised and structured process has been established where decision-making for building a bridge requires a democratic and transparent procedure at village level. The high transparency effectively prevents corruption.

TRANSPARENCY AND PUBLIC AUDITING

The programme has a remarkable track record on transparency with many people feeling that corruption is non-existent. As most cost elements are known, and the key decisions are made at public meetings right at the bridge sites where the Villagers regularly gather for "public review and audit".

User Committees assure that there is far-reaching social control of the overall process. It is indeed very difficult for any person involved to hide facts or to obtain bribes.

One of the innovative 'controlling' measures in Nepal is 'Public Auditing': the audit takes place in a large open space, with all villagers invited. The district engineer, social mobilisers and the User Committee make public the amount of funds received from the government and donors, and explain how they have been spent, especially how they were distributed as wages amongst the workers. The labourers can then cross-check their wages against the expenditure of the programme.

Public audit: villagers assemble to assess whether the money was well spent

…AND DURING CONFLICT

CONFLICT SENSITIVE PROGRAMME MANAGEMENT

Nepal has been suffering from an armed conflict since 1996, when the Maoists declared a "Peoples War". Despite the deteriorating security situation and more difficult access to certain areas, bridge building has continued. This is partly because of the effort made to ensure community participation and inclusion, especially that of the rural poor. Nevertheless, SDC often had to obtain the agreement of both parties to the conflict before new bridges could be built. Indeed, conflict-sensitive management became an important element of all development programmes. Where needed, the fee contributions of those suffering most from conflict were reduced and additional income generating activities initiated. With the increased focus on inclusion and increased local ownership, Swiss cooperation had addressed one of the major root causes of the conflict. Bringing the conflict parties together through trail bridge building can also foster peace-building, contribute to building a future towards a more democratic society and thus create hope for enhanced livelihood opportunities and poverty reduction.

"EVERY BRIDGE BUILT IS AN EXERCISE IN DEMOCRACY"

(Comments Prof. Wolf Linder, University Berne, Switzerland)

In an earlier evaluation in 1999, I had been pleasantly surprised to see a very wise combination of a process and a product. Evidently the product is very useful. Now it is clear that the process too is a sound innovation: it has stimulated the creation of User Committees who are willing to contribute their own resources, are capable of resolving conflicts and problems, and pursue the complex work of construction all the way to a successful conclusion. Every bridge built is thus an exercise in democracy.
In terms of good governance, it is essential that the programme never provides gifts. For instance, the simple provision of infrastructure as goods which 'fall from heaven' can be a source of Bad Governance.
Deciding on a bridge means taking a risk on a costly investment.
Constructing a bridge means contributing as a social group towards an important shared goal, and having the bridge means connecting people and making their lives, communication and work much easier.

The positive impacts of this programme go far beyond the value of the money invested in terms of the direct cost per bridge. This is because we have a development agency that brings in a sound experience, good ideas and concepts, professionalism, partnership and the enthusiasm of its people in the field. In this respect, SDC has many programmes which are truly remarkable, standing up to any international comparison. The trail bridge programme shows that investing in capacity building, policy dialogue and decentralisation pays off and that project work can have an outstanding impact.

Professor Wolf Linder with project staff in Nepal

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