

## CHAPTER 5: EXPANDING RURAL INFRASTRUCTURE

5.1 Chapters 3 and 4 looked at ways of directly affecting the incentive structure faced by rural people in Afghanistan. The present chapter will review the contribution that infrastructure (other than irrigation, discussed in Chapter 3) can make to supporting the development of licit livelihoods, a less direct but nonetheless essential part of the restructuring of the economy away from opium. The contribution that infrastructure can make to governance and the “social compact” between state and citizen will also be examined, a theme that will be further developed in the next chapter on governance (Chapter 6).

5.2 The chapter is structured in the same way as the preceding two: a look at the role of rural access, safe water and electricity in the rural economy and in supporting licit livelihoods (Section 5.1), a review of current programmes (Section 5.2) and opportunities for scaling up (Section 5.3), analysis of constraints and needed actions (Section 5.4), and a summary of expected growth, poverty reduction and opium economy impacts (Section 5.5).

### 5.1 CONTEXT AND OPPORTUNITIES FOR ENGAGEMENT

#### Rural Access 5.1.1

5.3 *Afghanistan’s difficult terrain and fragmented polity make rural access both expensive and essential.* The arduous geography and locally autonomous socio-political structures of Afghanistan have for millennia reinforced the poverty and centrifugal politics of the country. Heavy investment in trunk and access roads in the 1960s and 1970s wove a transport network that did begin to bind the country together and to bring some prosperity, although it was primarily focused on major national highways rather than on rural and market access roads. However, the system greatly deteriorated during the several decades of war, and much of it was largely destroyed. Despite major investments in recent years to rehabilitate the national highway network and sizable investments in provincial and rural roads, large parts of the country remain inaccessible by road: as many as 108 districts out of the total 396 districts currently have no road access to their provincial capital.

5.4 *Construction and rehabilitation of rural access roads therefore remains a priority for government.* Rural roads have been demonstrated by international experience as well as experience in Afghanistan to strongly stimulate economic growth through access to markets and services. They also can strengthen governance through easier communication and trade. GoA has therefore made rural road construction a top priority in the Afghanistan National Development Strategy (ANDS), building on considerable investments in this area since 2001 (Islamic Republic of Afghanistan 2007: ES10).

#### Rural Water Supply 5.1.2

5.5 *Rural water supply is vital for economic and social development.* Access to safe water improves health and productivity for both humans and livestock, and frees up time for productive activities by reducing time spent fetching water. Safe drinking water brings major benefits to health, particularly for women and children, reducing the incidence of water-borne diseases and peri-natal and infant mortality. Rural water supply can boost livestock production. Beyond the direct benefits, rural water also facilitates increases in school enrollment (particularly of girls) by freeing children from fetching and carrying water. Expanding access to safe drinking water is thus one of the government’s priorities for rural development.

### **Rural Electrification 5.1.3**

5.6 *Access to, and consumption of, electricity in rural areas is extremely low.* Considerable empirical work worldwide demonstrates the correlation between rural electrification and rural growth. Electricity in rural areas enhances communications and enables development of small manufacturing, irrigation, etc. Electricity is also an important basic good which transforms the life of rural households and villages, not least through its major advantages over other energy sources for lighting etc. However, Afghanistan's rural areas are currently poorly served with electricity, although the I-ANDS identifies "affordable and uninterrupted power" as a critical requirement for both economic and social development. Very few Afghans in rural areas have any access to electricity provided by public utilities, and Afghanistan's per-capita electricity consumption is extremely low. Lighting especially in rural areas is typically from candles, kerosene lamps or dry cell batteries, and cooking is done by burning biomass. Low-income households may spend more than 10% of their incomes on energy purchases. The capital investment needs of the rural energy sector have been roughly estimated at \$2.5-3.5 billion (World Bank 2005c).

### **Linkages to the Opium Economy 5.1.4**

5.7 *The lesson is that rural infrastructure underpins the development of both the rural economy and reciprocal relations of trust and engagement between rural people and the state, and hence contributes to the shift away from opium.* Direct poppy reduction impacts of rural infrastructure development have not been measured and would be difficult to correlate. However, development of rural roads does directly contribute to the development of the market economy, and rural electrification supports agricultural production and rural enterprise. Hence infrastructure development supports replacement of the poppy economy with licit livelihoods. Rural road programmes also generate local employment for both construction and maintenance. In addition, greater rural access should improve governance by strengthening the ties between town and countryside and giving rural people access to political and administrative fora. More generally, development of rural infrastructure, including water supply, represents visible provision of public services by the state, helping to develop a reciprocal relationship of responsibility and trust essential to development of both the licit economy and governance.

## **5.2 CURRENT DEVELOPMENT INTERVENTIONS IN THE SECTOR**

5.8 *Both rural access and rural water are the focus of National Priority Programmes.* The **rural access programme's** achievements since 2001 have been considerable. Total spending on rural access under the national programme (LIPW, NEEPRA, NRAP) is estimated at \$193 million, and various rural development programmes of bilateral donors have also provided financing for rural access. The major rural roads program NRAP (formerly NEEP) has developed or improved 9,000 km of rural roads and connected 3,000 villages to market centres during 2002-2006. In addition, the program has generated 13 million labor days. However, programme outputs vary greatly across provinces, with less than 20 km rehabilitated in some provinces (Panjshir, Farah and Daikundi) and as much as 484 km in Kunduz. Cost effectiveness is also a question, given high and rising construction costs. In 2002 (under LIPW) average cost per km was \$9,300. By 2007 (under NEEPRA) it had reached \$30,000 per km (World Bank 2007b).

5.9 *Development of rural water supply is being undertaken under the auspices of MRRD's National Priority Programme WatSan, largely implemented through NGOs.* As in the case of rural roads, geographical coverage of rural water supply is patchy. However, the leading NGO involved, DACAAR, has implemented 36,000 water points nationwide serving seven million people (about one-third of the population). Water supply is NSP's most popular business line,

accounting for over one quarter of all sub-projects. Other NGOs and project providers also are active.

5.10 There have been some investments in *rural electrification*. Over 500 micro-hydro projects have been built since 2003 (MEW 2007). The International Assistance Mission, AKDN and Afghanaid are active in rural energy, and rural energy projects accounted by 2005 for 22% (1,587 sub-projects) of all NSP sub-projects. Four fifths of the NSP projects are diesel generators, the remainder micro hydel (< 25 kw).<sup>18</sup> A number of other government/donor programmes are planned or are starting up. The Afghan-French-German Energy Initiative works on micro-hydel and household energy, and supports the National Renewable Energy Research and Development Centre under MEW. Japan, USAID and ADB are also conducting studies and planning investments. There is currently very little private sector involvement in rural energy. Up to now, government policy has focused on restoring availability and access in the towns. MEW plans that by 2015 the urban access ratio should reach 90%, up from the current estimated level of 27%. The targeted rural access ratio is only 25% by 2015, up from the current estimate of 6-10%.

### 5.3 SUGGESTED INTERVENTIONS FOR ADDITIONAL ENGAGEMENT

5.11 Given the major needs, likely impacts on poverty reduction and improved livelihoods, and linkages to the governance and state building agenda, there is good justification for accelerating and expanding current programmes in rural infrastructure. This section discusses the feasibility of scaling up for rural roads (5.3.1) and for rural water supply (5.3.2), and looks at options for expanding electricity provision in rural areas (5.3.3).

#### Scaling Up Investment in Rural Access 5.3.1

5.12 *NRAP can be further scaled up if extra funding is available.* The need for more investment in roads is very great and urgent. The majority of Afghanistan's districts have not been touched, and the 9,000 km developed so far is only a fraction of the estimated 30-50,000 km needed to provide an economic minimum of rural access. In the Afghanistan Compact, the government has committed to providing road connectivity to 40% of all villages (giving access to 19 million people). The rural roads programme NRAP is being successfully implemented. It is a national programme with a well functioning Afghan-led implementation mechanism, so scaling up is possible (subject to some capacity constraints in the local construction industry). In fact, the programme faces a funding shortfall. Bridge financing is currently being provided by the Ministry of Finance, and although a new IDA credit of \$112 million will be available by January 2008, financing requirements are considerably in excess of funds committed. NRAP is thus an important and high-priority programme, and a good candidate for additional funding.

5.13 *However, NRAP's effectiveness needs to be improved.* The current high capital cost of road construction under NRAP threatens the sustainability of the program, and the lack of a sound maintenance strategy presents considerable risks to the sustainability of investments made. Scaling up should be accompanied by policy and institutional changes and by improvements in program design and implementation. Scaling up is also subject to security constraints, but there is still some scope for increasing coverage in opium poppy growing areas. The changes needed and the impact of security constraints are discussed below (Section 5.4.1).

5.14 *NRAP's coverage in opium poppy growing areas is high but could be further enhanced.* NRAP's coverage of opium poppy cultivating districts is relatively high, with 46% of those districts in which sub-projects are currently planned cultivating opium poppy in 2006 (the latest date for which district level figures were available). However, roll-out across the entire country

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<sup>18</sup> Many of the diesel projects have run into problems with financing fuel and maintenance however.

– but particularly in districts where opium poppy cultivation is at its most prolific – is constrained by the deteriorating security situation. This is reflected in the fact that, in the current planning proposed for 2008-2010, only sub-projects with a total value of \$1.5 million, out of the aggregate total of \$85 million available for sub projects, are to be implemented in the southern region (Helmand, Kandahar, Uruzgan, Dai Kundi and Zabul). Yet this region is responsible for almost 70% of the total national opium crop in 2007, and it is in these provinces that there is the greatest coincidence between opium poppy cultivation and insecurity. There are also a number of sub-projects proposed in districts in other regions of the country where opium cultivation could be considered extensive, or where the risk of widespread cultivation is relatively high. So far one-quarter of the allocated funds for subprojects has been allocated to these areas.

- ***Substantial additional financing should be provided for NRAP, depending on prioritization vis-à-vis other urgent programmes, and subject to policy and institutional changes and to improvements in programme design and implementation.***

### **Expanding the Programme for Safe Water in Rural Areas 5.3.2**

5.15 The rural water supply programme is moving ahead at a slow pace, and scaling up would require improvements in programme management and in implementation. The rural water program has been implemented under very successful NGO models. Demand from communities is strong. However, implementation rates are declining: DACAAR, for example, long the leader in the field, is currently working at a very low rate of implementation (about 800 schemes a year) in just six provinces. The problems are partly *technical*. Much demand is now in more remote and technically difficult and expensive communities. There are also issues of *sustainability*. The high-cost O&M model creates risks to sustainability. In addition, there are increasing water resource constraints – drought has affected 15% of DACAAR schemes, creating a risk of unsustainability of water sources. These issues have been identified by implementing partners as problematic. However, the principal issues constraining this important programme are *institutional* (see 5.4.2 below). These implementation, sustainability and institutional issues need to be resolved before scaling up would be feasible.

- ***A sustainable low-cost strategy for O&M needs to be developed. Survey work should be carried out to determine the effect of drought on existing schemes and on potential for future schemes. Institutional problems need to be resolved (see 5.4.2 below). Once these various issues are resolved, substantial new financing should be allocated to support accelerated implementation by implementing partners, typically NGOs, within the WatSan national priority programme.***

### **Rural Electrification 5.3.3**

5.16 *Models of community-based, public and private rural energy supply should be developed and financed.* Afghanistan has a wide range of modern energy resources, ranging from hydrocarbons to renewables. In most cases, decentralized systems based on renewables, diesel generators or batteries are likely to be more economic than grid connections (World Bank 2005c). The leading options include:

- i. Small hydel (< 1 Mw) under NSP, particularly where CDCs can implement joint projects.
- ii. Larger scale hydel (1-10 Mw), which in the absence of a private sector interested in this type of investment would probably need to be implemented by the public sector.
- iii. Private solutions in smaller urban centres that could be built around a sizable industrial demand e.g. for agro-processing.
- iv. Grid connections for rural communities close to urban centres.

- v. Diesel or solar energy systems for isolated communities, either CDC-implemented (but with clear and adequate provisions for supply of fuel and for maintenance) or possibly privately managed.
- ***In conjunction with effective actions to address policy and economic constraints (see 5.4.3 below), financing of rural energy should be substantially increased.***

#### **5.4 CONSTRAINTS AND THE NEEDED PROGRAMME, POLICY AND INSTITUTIONAL RESPONSES**

5.17 Section 5.3 looked at the feasibility of scaling up rural infrastructure programmes. This section examines the main constraints to scaling up and recommends programme, policy and institutional responses (5.4.1-3). The section also examines the impact of political economy and security constraints and possible responses (5.4.4).

##### **Rural Access 5.4.1**

5.18 Based on the findings of the most recent policy review *Connecting Afghanistan* (World Bank, June 2007) and on further analysis, seven constraints to scaling up NRAP have been identified, which require responses at the programme, policy and institutional levels. These are discussed in the following paragraphs, together with the corresponding recommendations.

5.19 *There is need for a rural roads policy and for prioritized investment planning.* The programme has evolved with no policy framework or overall plan. Donor funding has been used in an ad hoc manner, with no multi-year rural access plan or investment programme. Priority needs to be given to rational development in line with: links to secondary roads; economic potential; and vulnerability. ***Government should: (i) define a rural roads policy; (ii) establish a transparent mechanism for road prioritization and planning, incorporating equity and poverty reduction considerations; and (iii) develop a five year rolling program for investments in tertiary and secondary rural roads.***

5.20 *Coordination amongst providers and with beneficiaries needs strengthening.* The ministries directly concerned have not coordinated their efforts, nor have linkages to other national programmes such as NSP or to the PRTs been developed. The links with local and provincial planning processes have been weak. ***A coordination mechanism amongst ministries, sub-national levels of government administration, donors and PRTs should be established.***

5.21 *The delivery mechanism remains very dependent on implementation partners, and needs to be increasingly taken over by the ministries or outsourced.* Public sector capacity needs to be strengthened. ***Institutional responsibilities need to be defined at all levels, with a much stronger lead from government ministries (and including a community role in maintenance). A capacity building programme needs to be developed.***

5.22 *Costs and standards are very high, limiting expansion.* At current rates it would take a **hundred years** to upgrade the entire network. A shift to providing basic year-round access at minimum levels would reduce costs and allow an accelerated roll out. ***New, low-cost standards should be developed.***

5.23 *There is no strategy for maintenance.* Only 25 km of the improved network is currently under a maintenance program. ***A strategy for road maintenance urgently needs to be developed.***

5.24 *There is potential for using much more labor-intensive techniques.* Labour-intensive approaches would provide large numbers of jobs in road construction and maintenance. Such techniques, which were successful in Afghanistan in the 1970s, need to be revived and adapted based on global good practice. Labour-based operations could employ four times more labour, inject \$3-5,000 per km into the local economy, generate income multipliers in the range 1.5-2.8, and cost 25-30% less than comparable capital-intensive methods. Successful labour-based programmes have been run in countries like Botswana with a population density of just one person per square km – a fraction of Afghanistan’s population density. ***Low-cost and labour-intensive technologies should be adopted for rural roads (World Bank 2007b).***

5.25 *Economic data need to be collected to guide and justify the programme.* Monitoring and evaluation (M&E) needs to capture benefits and measure the cost-benefit relations of the program. This M&E could capture growth and poverty reduction impacts, and also aspects related to the opium economy (see 5.5 below). ***A simple M&E system should be set up early during the new NRAP programme.***

### **Rural Water 5.4.2**

5.26 The rural water programme needs to continue to be implemented through NGOs and others – but with stronger leadership on the part of the government. The rural water supply programme WatSan is in some ways the “poor relation” amongst the MRRD family of National Priority Programmes. Less attention has been devoted to it than to other programmes, and NGO implementation has been declining due to lack of financing and poor programme management. There is a pressing need for MRRD, as the mandated Afghan agency, to consolidate and expand the programme. A strengthening programme for MRRD central and decentralized services is needed, new policy and programme guidelines are required, and terms of engagement with NGOs and donors should be clarified.

- ***A study should be carried out to revise and strengthen the WatSan programme’s planning and management and to resolve the current implementation problems.***

### **Rural Electrification 5.4.3**

5.27 *A policy, a facilitating agency and financing are needed to overcome the barriers to rural energy access.* The fundamental constraints to rural energy access are low rural incomes and low density of the consumer base. Practical shortcomings also abound, including: (1) limited capacity to implement and maintain projects; (2) lack of equipment suppliers and spare parts; (3) high initial capital costs; (4) lack of credit; and (5) lack of knowledge about least-cost options and institutional models for sustainable expansion of access. What is needed is a ***national policy framework***. This framework should set out, first, ways to facilitate private investment, including rules under which the private sector should operate. In Nepal, for example, privately owned power units supply electricity to communities and SMEs in rural areas. Second the framework should spell out subsidy policy to help reduce high initial capital costs, whether for communities or for private investors. Third, it should specify ways to promote renewable energy technologies (as has been done successfully in Thailand, Brazil and Kenya). Finally, the framework should propose institutional options for larger rural energy projects (1-10 Mw). These options could include public/private partnerships, rural electricity cooperatives (as in Bangladesh), or rural energy corporations (as in Honduras). Also required is the establishment of a ***central agency for facilitating rural electricity access***. Such an agency could also coordinate research and access to best-practice information. NSP could help with some functions like providing technical expertise, establishing access to equipment suppliers and spares, etc. (World Bank 2005c).

- *A national policy framework should be developed, and an agency appointed to facilitate rural energy access and conduct research and information gathering on best practice options. Financing of rural energy should be increased.*

#### **Political Economy and Insecurity Issues 5.4.4**

5.28 *Roads, water supply and rural electrification are eagerly sought after and rarely attract political opposition.* Demand-driven community-based approaches, high labour intensity and local contracting increase ownership. Although political and community ownership is potentially strong, rural infrastructure programs are vulnerable to insecurity, which is growing and having a significant impact on implementation. DACAAR reports that it is now hard to get staff prepared to work in the more remote and less secure areas, although recruiting staff from the locality provides greater security and access.

- *As in the case of other programmes, there is a need to work through programming mechanisms and to optimize community engagement (especially through CDCs). Implementing partners should use locally recruited staff, and work with a community security guarantee.*

### **5.5 EXPECTED GROWTH, POVERTY REDUCTION AND OPIUM ECONOMY IMPACTS**

5.29 *In general terms, rural infrastructure programmes can be effective in improving livelihoods and in helping build governance.* The roads and, to a lesser extent, rural water programmes have a broad reach nationwide and a strong impact on poor communities and on the economic activities of the poor. Thus they can contribute to growth, poverty reduction, and in the long term to the replacement of the poppy economy with licit rural livelihoods. However, some more specific impacts can be expected from at least the rural roads programme, and these impacts are examined in this section.

#### **Growth and Poverty Reduction Impacts 5.5.1**

5.30 *Rural roads typically have a high impact on rural economic growth.* They increase economic growth through access to markets and services. Although NEEP/NRAP has not until recently collected data for economic evaluation of outcomes, there can be no doubt of the positive direct impact and multiplier effects of the programme. In addition, it has generated considerable short-term employment.

5.31 *Poverty reduction impacts of rural infrastructure are also considerable, and could be enhanced.* Lack of rural access is one of the sources of rural poverty. The poverty reduction impacts of rural roads can be enhanced in two ways: (1) by targeting the poor for construction and maintenance labour, and (2) by prioritizing access to poor communities. Results under NEEP/NRAP of targeting the poor for construction labour have been modest: only one poor household in five in project villages had someone employed through the programme. Initial planning for the programme assigned some priority to poorer areas, as measured by relative levels of year-round access to basic services, but in practice this was largely supplanted by a rather confused bottom-up demand-driven process and by some measure of access planning to try to link the rural roads requested to a coherent road network. The proposals above (5.4.1) for prioritized planning, for more systematic maintenance and for more labour-intensive approaches would enhance the poverty reduction impacts.

#### **Opium Economy Impacts 5.5.2**

5.32 *Rural access contributes to the growth of the licit market economy and to governance, and thereby influences incentives for licit production.* As discussed above (5.1.1), direct poppy reduction impacts have not been measured, but development of the market economy should create job opportunities for those currently dependent on poppy, and development of rural access should contribute to the replacement of the poppy economy with licit livelihoods. In addition, rural access should enhance governance, an important linkage (for example in the 108 districts currently without road access to their provincial capital). Over the longer term, rehabilitation of the remaining 75% of the nation's estimated 30-50,000 km of rural roads would have a potentially large impact on livelihoods and governance, and thereby on incentives associated with poppy.

5.33 *There is scope for expanding NRAP's coverage in areas in which the security situation is still manageable but where opium poppy cultivation is extensive or where its return is considered likely.* In line with the government's policy of "mainstreaming" counter narcotics in development programmes (see 7.3 below), the September 2007 appraisal of the next phase of NRAP assessed ways to enhance counter-narcotics impacts of NRAP and to mitigate possible negative impacts. The main recommendation of this exercise was to recommend increasing rural access in opium-vulnerable areas, particularly in the south and east. Given the relative shortfall in projects in the south and the east, this would be in keeping with the government's position on geographical balance as well. For the 20% of funds for sub-projects currently not committed, priority should be given to increasing delivery in the central districts of Nangarhar (Mohamand Dara, Shiwar, Bati Kot and Nazian) where the security risk is considered "medium"; and in Helmand (Nad e Ali, Nawa Barakzai, Lashkargah) and Kandahar (parts of Spin Boldak and Arghandab) where the security risk is high. This could play a role in containing both the problem of opium poppy cultivation and growing insecurity. DFID has in fact provided additional funding of \$15.4 million for NRAP in Helmand, to be implemented through MRRD as UNOPS will not operate in the province. Over the period 2002-7, 275 km of rural roads were developed in Helmand for \$4.2 million. The spending on roads per head of the population in Helmand over the period (\$5.40) was greater than the national average of \$3.80. Regarding the possibility that increasing rural access might create any risk of increasing opium production, no evidence of this was found by the September 2007 NRAP appraisal.

- *The policy implication is that for maximum impact on the opium economy, priority should be given to further expanding rural access, with focus on poor areas, areas where market linkages can be strengthened, and areas where opium poppy cultivation is extensive or its return is considered likely (subject to the security situation remaining manageable). Linking isolated districts to administrative centres should also be a priority. Implementation should prioritize community buy-in, emphasize labour-intensive construction, and provide for locally managed and executed maintenance.*