2. Project Objectives and Components:

a. Objectives:

The Development Credit Agreement (DCA) for the Decentralized Rural Development Project (DRDP) in Bhutan stated that the project's development objective (PDO) was "to improve market access and increase agricultural output for rural communities in selected areas of Bhutan" (Schedule 2).

The PDO for the project in the Project Appraisal Document (PAD) was the same as in the DCA.

The project received additional financing (AF) from the Global Food Price Crisis Response Trust Fund; the objective for this grant (Schedule 1) was identical to the project development objective for the original credit.

The DRDP and the AF will be reviewed as one entity project and their combined achievements will assessed against the PDO in the DCA.

b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

If yes, did the Board approve the revised objectives/key associated outcome targets?

No

c. Components:

There were three components in the IDA credit. The AF grant from the Global Food Price Crisis Response Trust Fund, which augmented the project's financial resources by $US5.0 million, contained the same components as the original credit. The allocations to each of the three components from the IDA credit and the AF grant are shown separately below along with the total actual costs from both financing sources together.

Component I: Rural Infrastructure (estimated cost of IDA credit US$5.10 million (excluding contingencies) and AF grant US$2.42 million; actual total cost US$7.81 million)
This component would finance new construction and rehabilitation of local public goods, namely farm roads, power tiller mule tracks, and irrigation channels. The majority of these were identified at the local level as priorities by rural communities during the preparation of the Ninth Five Year Plan. There were two sub-components.

(a) Rural Access. This sub-component would focus mainly on farm roads and upgrading of mule tracks to permit passage of power tillers in 201 out of 205 Geogs. (administrative "blocks"- sub-divisions of districts) in Bhutan. Construction and rehabilitation of farm roads, as well as upgrading and realigning of power tiller tracks (PTTs), were to be screened and implemented in accordance with the Ministry of Agriculture's Farm Road Guidelines, and according to rules for "environmentally friendly road construction" (EFRC) practices which already applied to the larger feeder roads. The PAD mentioned (page 3, footnote 4) that farm roads are the responsibility of the Ministry of Agriculture (MOA). The project team advised that this was also the case for power tiller tracks. Six small suspension bridges, capable of carrying power tillers and motorcycles, would also be constructed, as well as two motorable bridges (Bailey bridges) to connect farm roads.

Dzongkhags (districts) would contract out construction of farm roads to private service providers to expedite completion and ensure consistent quality. Power tiller tracks and the suspension bridges would be constructed by voluntary labor with equipment and materials supplied by the MOA. In accordance with the guidelines Geog development committees (GYTs) would own the completed assets and be in charge of their maintenance with tax revenues, other levies, and labor contributions.

(b) Irrigation. Construction of approximately 45 km and rehabilitation of 393 km of irrigation channels was proposed for financing under this project. Works would be implemented in accordance with the National Irrigation Policy and the existing procedural manuals. Water users’ associations (WUA) at the Geog level would be expected to be the key implementing agency for these farmer-managed schemes.

Component 2: Renewable Natural Resource (RNR) Centers (estimated cost of IDA credit US$0.75 million (excluding contingencies) and AF grant US$1.92 million; actual total cost US$2.97 million)

This component would finance facilities and capacity building at RNR centers. It was organized into two sub-components.

(a) RNR Center Construction. This sub-component would finance at least six RNR centers in as many Geogs. Prototype designs already existed at appraisal. Many Geogs also demanded Geog offices as working space for the "Gup" (Geog head) and clerk, and, where needed, RNR centers were to provide office space at a low marginal cost. Although this arrangement strictly fell outside of the MOA's mandate, it was seen as a way to contribute to the development of focal points in the communities, and to strengthen ties between local government and the MOA at the grass roots level.

(b) RNR Center Capacity Building. This sub-component would finance applied training, joint experimentation, and farmer-to-farmer field visits, corresponding to demand expressed by Geogs and consistent with the Field Programs and National Programs of the MOA. There would be special emphasis on high-value crops and livestock products. The AF provided funds for training research and extension staff as well as farmers, for arranging demonstrations, and for supporting the adoption of new technologies including improved seeds and post harvest technologies in five additional Geogs. The Extension Division of the MOA would implement this sub-component.

Component 3: Institutional Strengthening (estimated cost of IDA credit US$0.35 million and AF grant US$0.66 million; actual total cost US$1.09 million)

(a) Training of Finance Personnel and Procurement Officers. Institutional strengthening would involve training of finance and procurement officers from the selected Geogs, Dzongkhags and the Administration and Finance Division (AFD) of the MOA on the budget and accounting system (BAS) and the provision of training to Geog administrators on planning, administration, community mobilization, and reporting.

(b) Improving capacity of the MOA and District Officials. Improved capacity in the MOA and at the Dzongkhag level for social/environmental screening and assessment of sub-projects, particularly for farm roads, irrigation works, and RNR centers would be achieved through training. Additional training of engineers, as well as planning, administration, community mobilization, and reporting in the selected Geogs, and Dzongkhags was financed by the AF grant.

Additional Financing (estimated appraisal cost US5.0 million; actual cost US$4.87 million): The AF introduced a few changes to the original scope and structure of the DRDP credit. While these changes are incorporated in the
description of the project's components above, a change common to all components after the AF grant was approved was that the geographic scope of the assistance financed by the project increased from six Dzongkhags to eleven (ICR, page 6).

d. Comments on Project Cost, Financing, Borrower Contribution, and Dates:

Project Cost. The total project cost increased from US$7.00 million (including contingencies) at appraisal by 70 percent to an actual cost of US$11.87 million because of additional financing of US$5 million from the Global Food Price Crisis Response Trust Fund.

Financing. The project was financed by a US$7.0 million IDA credit which was fully disbursed, and a grant of US$5 million from the World Bank's Global Food Price Crisis Response Trust Fund of which US$4.87 million was disbursed.

Borrower Contribution. There was no contribution to the project's cost from the borrower.

Dates. There were five extensions of the closing date;
(a) The closing date was extended from its original date of March 31, 2009 to September 30, 2009.
(b) Extension of the project's closing date from September 30, 2009 to December 31, 2010 to complete road contracts which required between 12-15 months for completion.
(c) Extension of the closing date by 3 months to March 31, 2011 to provide adequate time for review and internal processing of the AF grant from the Global Food Price Crisis Response Trust Fund.
(d) March 21, 2011 - Restructuring to provide additional financing of US$5 million TF grant, further extension of project closing date to December 30, 2013, changes to the project's scope and components as indicated above, and revised performance indicators to measure intermediate outcomes;
(e) December 2013 extension of the closing date of TF grant by 12 months to utilize the savings resulting from depreciation of the Bhutanese Ngultrum versus the US dollar.

Restructuring

Revisions in some key PDO and intermediate outcome indicators at the time of the Additional Financing funded by the Global Food Price Crisis Trust Fund (see ICR Section 1.3) did not reflect material changes in the project's objectives and hence a split rating for the outcome of this project was not warranted.

3. Relevance of Objectives & Design:

a. Relevance of Objectives:

Substantial

Bhutan is a small mountainous, land locked, country with a population of about 770,000 growing at an estimated rate of 2 percent per annum. The Government's report titled "Bhutan 2020: A Vision for Peace, Prosperity and Happiness" dated May 1999, prepared following a broad consultative process, translated the notion of Bhutan's objective of achieving Gross National Happiness (GNH) into a series of national objectives. In April 2002, the Government developed its Ninth Five Year Plan (2002-07) which translated its long-term vision of GNH into specific goals and strategies. For the first time, and as part of the Government's decentralization program, the Ninth 5 Year Plan included separate strategies at the Dzongkhag (district) and Geog (block) levels for education, health, and infrastructure.

The World Bank's Country Partnership Strategy (CPS) for FY06-09 supported Bhutan 2020 (World Bank Paper, October 12, 2006) confirming the relevance of the project at appraisal to the World Bank assistance strategy. The CPS for 2015-19 is aligned with the Government's eleventh Five Year Plan (2013 to 2018) and organized under three results areas, namely (a) improving fiscal and spending efficiency; (b) increasing private sector growth and competitiveness; and (c) supporting green development (page 12). The PAD quoted the Transport Sector Note for Bhutan (2004) which identified "accessibility (as) the defining development issue in Bhutan, be it access to opportunity, enterprise, markets or services" (page 46)

With its focus on rural roads and irrigation infrastructure, this project's objective of improving market access and increasing agricultural output was, and continues to be, highly relevant to the Government's development policy, to the Bank's past and current partnership strategy for Bhutan, as well as to the Bank's overarching objective of achieving poverty reduction and increased prosperity in Bhutan. The ICR noted on page 25 that the former Quality Assistance Group (QAG) in the Bank had assessed the project's relevance as "self-evident". It was not, however, self evident whether the increase in agricultural output (an important element of the PDO) was to be achieved through increases in area harvested or increases in yield or both. In addition, the extent of the increase in agricultural output as an objective was not specified. This lack of precision detracted from an otherwise highly relevant and clear PDO. Nevertheless, the relevance of the project's objective overall was rated as substantial.

b. Relevance of Design:

Substantial
The project's design was considered and debated in great detail at appraisal (PAD, pages 5 and 6). The design's core feature was its contribution to the Government's decentralization policy in the Ninth 5 Year Plan through empowering Dzongkhags and Geogs, strengthening their fiscal management, and improving the capacity of the Ministry of Agriculture (MOA), at the local government level. The design was a "combination of programmatic and sector investment loan (SIL) operations" which used national and decentralized systems effectively for implementation focusing on investments in 78 Geogs (blocks) in 11 Dzongkhags (districts) after the AF (Final Report of the Impact Assessment, page 19). Other blocks and districts in Bhutan were already receiving support from the government and other donors - predominantly IFAD - (ICR, page 4).

Geog-based extension staff, backstopped at the Dzongkhag level, would play the central role in improving services to enable farmers to increase agricultural output. To achieve this the Ministry of Agriculture (MOA) proposed that Renewable Natural Resource (RNR) centers would become the front-line institution in its efforts to improve productivity and sustainability of crop, livestock, and forest production. In addition to providing training and demonstrations of new technologies, these centers would provide meeting places for communities and, where needed, limited office space for block development committees (GYTs). These centers would also improve living and working conditions for the agricultural extension staff who were already located in Geogs (PAD, page 4).

In order for these activities to succeed at the Geog level the project was designed to strengthen their capacity to prepare timely and accurate financial and physical reporting on project implementation performance to ensure the smooth approval and transfer of funds to the local implementation level. The PAD had expressed concern that the capacity of the Geog and Dzongkhag administrators, and of the Administration and Finance Division of the MOA, may not meet the demands of the project (page 4-5). In the event this concern was adequately addressed.

The project's proposed activities were substantially relevant to the achievement of its objectives. For example the PAD stated that farmers in the Geogs had expressed, through a participatory process, a high demand for access to markets, inputs, and public services (page 3). The construction and rehabilitation of roads and tracks in the mountainous terrain in rural areas were relevant to improving market access for farmers, irrigation infrastructure development, and improved agricultural support services to facilitate "joint experimentation" and "knowledge sharing" to achieve increased yields in the agricultural sector.

However the PAD's results framework (Annex 3) was inadequate because it was only a listing of the project's PDO and intermediate outcomes along with the indicators to monitor progress towards these objectives and outcomes. It did not present a results chain connecting infrastructure investments through intermediate outcomes to the objective of "improved market access and increased agricultural output for rural communities" (ICR, Section 1.2). The PAD's results matrix also did not identify the institutions responsible for successive achievements along the results chain.

While there were some shortcomings in the design of the results framework and M&E arrangements, the implied results chain in the project's design of activities was clear and this review therefore concluded that the relevance of the project's overall design was rated as substantial.

**4. Achievement of Objectives (Efficacy):**

This project's PDO was "to improve market access and increase agricultural output for rural communities in selected areas of Bhutan". For the purpose of the assessment of the project's achievements the objective has been partitioned into two sub-objectives, namely (a) increase agricultural output for rural communities in selected areas of Bhutan; and (b) improved market access for rural communities in the selected project areas. The extent to which the project has achieved these two sub-objectives will be assessed separately based on an assessment of outputs and outcomes.

(a) Increased agricultural output for rural communities in selected areas of Bhutan - Substantial

**Outputs**

- **Irrigation infrastructure.** The project financed the construction of 42.5 km of new channels (compared with a project target of 45 km) and the rehabilitation of another 522 km (compared with a project target of 448 km). This meant that DRDP contributed about 14 percent and 65 percent percent respectively to new construction and rehabilitation targets set for the overall irrigation development in 9th Five Year Plan (ICR, page 35).

- **Quality of irrigation construction.** The ICR stated, however, that with respect to irrigation channels in some cases "the inlet structures were found missing/washed away due to design flaws or poor Implementation quality. At certain locations, irrigation pipes were sagging, reflecting use of lower quality pipes." The ICR listed some of the factors contributing to these problems (pages 35 and 36).
• **Construction of Renewable Natural Resource Centers**: DRDP constructed six RNR Centers in six Dzongkhags - which met the target (ICR, page 38).

• Outputs from RNR Centers. The Centers were aimed at increasing production of food (rice, maize) and one cash crop (potato) through improving extension services, adoption of improved technologies and improved seed varieties. Among the achievements reported by the ICR the following stood out:
  - **Rice**: 65 percent adoption of improved seed varieties by farm households and 56 percent by area in one Dzongkhag where new rice varieties were promoted compared with a target of 25 percent (ICR, page 38).
  - **Maize**: 2,899 ha of grey leaf spot (GLS)-affected area (including three non-project areas) received quality seed replacement compared with a target of 2,893 ha (ICR, page 38).
  - **Potatoes**: 875 tons of basic seed potatoes were produced compared with a target of 700 tons which exceeded the target by 125 percent (ICR, page 38).

**Outcomes**

• **Changes agricultural production**. Using national data on agricultural production in Dzongkhags where the project was implemented, the project was estimated to have achieved the following increases in agricultural production for two food crops (rice and maize) and one cash crop (potato) in the project area between 2009 and 2013.
  - **Paddy rice production**. In 11 project supported Dzongkhags increased paddy rice production by 18.2 percent, which surpassed the target of 15 percent from the 2009 baseline and a decline in production of 19.2 percent. By comparison, in control Dzongkhags outside, the project area achieved an increase in production of 1.5 percent and yields of 25.6 percent. This result was achieved despite the reduction in harvested area of 18.3 percent which was compensated by a remarkable increase in yield of 44.6 percent (ICR, page 16).
  - **Maize production**. The 11 project supported Dzongkhags maize production increased target of 12.9 percent which surpassed the target of 15 percent from the 2009 baseline. By comparison, in control Dzongkhags outside the project area, achieved an increase in production of 25.2 percent and yields of 25.6 percent (ICR, page 16). This increase occurred despite a reduction in the 11 project districts and despite heavy losses in area harvested of 23.7 percent.
  - **Potato production**. The project resulted in a an increase in potato production of 10.7 percent compared with a target of 15 percent, but it was substantially more than the 1.2 percent production increase in four control districts. The reason for a relatively low increase in production in the project area compared with the target was a 6.7 percent decline in yield (due to a decline in the quality of seed potatoes) despite an 18.7 percent increase in area harvested (ICR, page 17).

• **Impact of external influences on agricultural production**. The ICR noted that losses of agricultural land to non-agricultural uses and an increase in agricultural land left fallow due to labor shortages and exposure to wildlife damage led to reductions in areas harvested. On the other hand, despite annual fluctuations due to extremes in weather conditions as well as pest and disease attacks, average yields of rice and maize increased during project implementation.

**Outputs**

• **New road construction exceeded the target**. The project constructed 138.3 km of new roads in eleven Dzongkhags surpassing by 45 percent the revised target 95.5 km for the project. In addition maintenance was performed on 69.35 km of roads during the project's implementation which exceeded the target of 25.2 percent and yields of 25.6 percent (ICR, page 31).
  - The Government's Impact Assessment and Project Completion report noted, however, that the assessment of the extent of farm road improvements (based on sampling) was not rigorous and hence not representative for the entire length of roads constructed (ICR, page 31).

• **Power tiller track rehabilitation exceeded target**: Power tiller track improvement to existing pedestrian/mule tracks by leveling, grading and widening (up to 3 meter) of earthen path permitted passage of power tillers. The project achievement of 129 km exceeded the combined original and AF grant targets - an achievement of 13 percent above the target (ICR, page 31).

• **The target for bridge construction was achieved but only four survived the 2012 cyclone**. The project
constructed six bridges. This met the appraisal target. However, two bridges were washed away during the severe 2012 cyclone that caused huge losses in Bhutan. The project rebuilt one of the destroyed bridges with the support of the Japan International Agency (JICA).

- **Quality of infrastructure construction**. IEG questioned the Bank's project team about the quality of bridge design and construction, in particular their capacity to withstand stresses such as increased water flows during cyclones. It was explained by the project team that in Bhutan extreme weather events are common. It is therefore not unusual for suspension and Bailey bridges to be damaged because they were inevitable located in precarious locations. However the ICR did mention that "in case of farm roads, the MoAF provided guidelines/specifications for base course thickness, appropriateness of gravel-earth mix, required compactions were not always followed. Consequently, ruts and potholes were witnessed by the ICR mission at places" (page 35).

### Outcomes

- **Average time taken to walk to a motorable road**. According to the impact assessment the average walking time to the nearest motorable road in 2013 was 1.3 hours at the project's close compared with a target of 1.5 hours and also compared with a time of 3 hours in 2000 (see ICR, Data Sheet, page iii).
  - In 2007 there were 47.8 percent of rural households which were within walking distance of one hour to a motorable road. In 2011 the proportion had increased to 50.6 percent (ICR, page 59).
  - When the project closed 78.2 percent of households were within a walking distance of ½ an hour, 14.5 percent of households were between ½ to 1 hour of walking distance, 4.4% household were between 1-3 hours, and only 2.9% households were between 4-6 hours walking distance (ICR, page 13).

- **Improved rural roads led to increase agricultural output because of improved market access**. Improved farm roads enabled farmers to transport cash crops to markets at lower costs. The ICR asserts (but without evidence) that consequently farmers' net margins and household incomes increased. As a result more farmers are now planting additional cash crops including cardamom and oranges (pages 13 and 14). However the beneficiary survey found that over 35 percent of respondents interviewed in the beneficiary survey noted that they had increased vegetable production as a result of road access. For agricultural products in general 71.9 percent stated that market access had improved. 27.8 percent stated that the marketing situation had remained the same and 0.3 percent said that marketing challenges had become more difficult (ICR, pages 54 and 59).

- **Social benefits from enhanced public transport services**. The introduction of public transport service, purchase of private vehicles by local residents and improvement of existing houses and construction of new housing units have provided significant economic stimulus at the local level and have created new economic opportunities at the local level (ICR, page 13)
  
  - All *Geogs* and *Dzongkhags* in the project area connected with farm roads and power tiller tracks (PTTs), experienced increased economic activities in the form of new shops, enterprises and increased access to essential edibles and other items (ICR, page 13).
  - Following road improvements local vendors regularly collected vegetables and dairy products from farmers and sold them in Bhutan's capital (Thimphu) and other towns. Farmers’ transportation costs for taking oranges, ginger and vegetables to agriculture markets were reduced significantly (ICR, page 13).

- **Benefits from increased economic activity for women**. The ICR noted that there has been a multiplier effect from the formation of agricultural groups (mainly for vegetables) and establishment of livestock farms (page 13).
  
  - This, the ICR asserted, created significant impacts on income and cash at hand for women as most of the vegetable group members were women (page 13).

- **Improved access to credit**. Road construction and rehabilitation have stimulated mobile banking facilities. In addition, commercial banks have opened up branches in several *Geogs*. These developments had a positive impact on economic growth in the rural non-farm economy (ICR, page 13).
  
  - The ICR states that about 21 percent of the households in the project Dzongkhags negotiated loans for (i) purchasing of seedlings such as cardamom and oranges, (ii) acquisition of improved cattle, (iii) minimizing post-harvest losses, (v) establishment of agricultural farms (mainly livestock related), and (vi) establishment of commercial enterprises (page 13).

5. **Efficiency:**

The PAD considered that a benefit-cost analysis of each relatively small sub-projects was not practicable (page 49). The appraisal therefore chose instead to calculate the average cost of the sub-projects per person potentially affected
and compare these costs with a benchmark average to assess relative efficiency.

**Farm roads and power tiller tracks.** According to the PAD studies undertaken in preparation for the IDA-financed Rural Access Project in Bhutan estimated that US$560/person was equivalent to a 12 percent economic rate of return on capital investment (page 50). This benchmark was based on an analysis in Annex 4 in the PAD for the Bhutan: Rural Access Project which estimated (a) social benefits - namely the benefits of improved education as a result of better roads, (b) transport cost savings - namely the savings of a change from the high cost of mule transport to the more frequent and lower cost of truck and bus transport, and (c) agricultural benefits - namely increased value added from agriculture resulting from lower costs for inputs and higher net returns for outputs from a particular stretch of road in Bhutan (Dakpai-Buli road of 37 km).

A cost of construction of US$560/person became the benchmark against which to assess the efficiency of this project. However, it was derived for a high quality feeder road and not for farm roads or PTTs. The PAD for the DRDP stated that the MOA issued guidelines for the construction of farm roads and PTTs which established a minimum requirement of 10 households per km and 7 households per km respectively. These household criteria translated to cost-effectiveness criteria of approximately $425 per person for farm roads and $245 per person for power tiller tracks.

The project's appraisal estimated the following average costs per person for the sub-projects in this project (DRDP): (a) Farm Roads - $385/person; and (b) Power Tiller Tracks - US$103/person. Since these costs were much lower than the benchmark comparison in the PAD it was concluded that the anticipated DRDP sub-projects were economically justified. While these comparisons are intuitively interesting the important assumptions made in this analysis were not only the expected costs of road construction, but it was also assumed that the type and scale of projects used for the MOA benchmarks were comparable to the sub-projects in the DRDP project. Neither the PAD nor the ICR made a comment on these implicit assumptions but the PAD did acknowledge the different levels of access provided by farm roads and tracks in this project.

The ICR provided estimates of average costs of farm roads roads per beneficiary in six Geogs in one Dzongkhag (Wangdue) in the project and found that (after adjusting the above-mentioned MOA guideline for inflation) that "the equivalent cost in 2009 was $459 per person - very close to the average of the six roads for which there are data available ($463.3 per person), although still higher than the predicted costs in the PAD, adjusted for inflation - i.e. $416 per person (ICR, Table 3, page 46).

In a separate analysis the ICR used estimated project benefits for an estimated 6,000 households which benefitted directly from the new and improved farm roads and power tiller tracks. By using data on household incomes from comparable projects in Bhutan and elsewhere in Asia (without any references) and assuming increases in household incomes for direct beneficiaries of 10, 15 and 20 percent in conjunction with the actual costs for the improvement of farm roads and power tiller tracks, economic rates of return were calculated to be 15.5, 20.5 and 25.1 respectively (ICR, pages 18 -19 and 52 - 53).

**Irrigation.** The PAD made no assessment of the benefits from irrigation development or rehabilitation. As noted already, irrigation channels were reported to have been well built and rehabilitated and, according to the ICR, the improved water control led to increased yields of rice and maize and hence total agricultural production which generated positive returns to the project's investment. The ICR concluded that "Financial returns to crop productivity improvements under the project were not only strongly positive, but robust. Even when including all irrigation investment costs, returns from crop productivity improvements reach almost 30 percent and remain above 20 percent even when the results were tested against a 20 percent decline in crop benefits" (ICR, page 18).

**Institutional Strengthening.** The ICR made no attempt to quantify returns to institutional strengthening (page 18).

It was unfortunate that during implementation the project's M&E system produced inadequate information to make plausible estimates of the rates of return for the farm roads and power tiller tracks. However, the evidence in the ICR, and the beneficiary survey indicate that farm roads and PTTs constructed and rehabilitated and hence access for farmers to markets improved, was to a large extent attributable to the project and generated positive social and economic returns to the project's investment.

On balance the project made efficient use of the available funds, was operationally and administratively efficient produced value for money, and generated positive returns on capital invested. On this basis the project's efficiency was rated **substantial**.

**a. If available, enter the Economic Rate of Return (ERR)/Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:**

<table>
<thead>
<tr>
<th>Rate Available?</th>
<th>Point Value</th>
<th>Coverage/Scope*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. Outcome:
The relevance of the project's objectives and design were both substantial. New and rehabilitated transport infrastructure improved farmers’ access to markets, reduced their marketing costs for agricultural products, and led to a number of substantial social benefits. Based on the measurements adopted by the ICR there were substantial increases in agricultural output and market access in the project area during its implementation. The beneficiary survey indicated that these achievements were attributable to the project's investments in farm roads, power tiller tracks, irrigation and agricultural support services. Overall, the efficiency with which project funds were used was rated substantial. On the basis of the evidence this Review concluded that the project had only minor shortcomings in its relevance, efficacy and efficiency and its outcome was therefore rated as **satisfactory**.

   a. Outcome Rating: Satisfactory

7. Rationale for Risk to Development Outcome Rating:
The ICR states (page 23) that the Royal Government of Bhutan (RGOB) has incorporated the DRDP approach into the 11th Five Year Plan for the period of 2013-2018. Presumably, therefore, the main elements of the DRDP experience and practice have been adopted by the Ministry of Agriculture, the Dzongkhags and Geogs as part of their institutional responsibilities and their future development programs. It is understood that the Government has allocated funds to DRDP type interventions in its annual budgets for the operation, maintenance, renovation and rehabilitation of rural infrastructure.

According to the ICR a number of Road User Groups (RUGs) have been formed for regular maintenance works including minor repairs. As per the government regulations MoUs are not required to be signed with any benefiting communities, instead a handing over document is signed for O&M after the completion of works. As stipulated in the farm road guidelines and national irrigation policy, beneficiary communities are responsible for minor O&M activities such as drain cleaning, spot filling, small debris removal from farm roads and PTTs, vegetation clearing, blockage removal, intake and outlet structures maintenance for irrigation channels, as well as checking pins and joints for bridges etc.(page 24))

Sustaining the effort to increase agricultural yields will require adequate and reliable financing of research, on-farm trials, and the continued operation of the RNR Centers. The ICR anticipated that apart from coordinating with the farmers’ user groups for O&M, the Government's financial and human resources will be available in the event of natural calamity/emergency such as landslides, floods, torrential rains and any major damages to infrastructure (page 24). It should also be mentioned that the ongoing Bank-funded RSCDP continues many of the same themes of the DRDP.

   a. Risk to Development Outcome Rating: Moderate

8. Assessment of Bank Performance:

   a. Quality at entry:

   **Strategic relevance.** According to the ICR key sectoral issues were analyzed in depth including an assessment of Government strategies to deal with the issues facing the agricultural sector. Indeed a major participatory exercise in all 2005 Geogs concluded that investment in rural roads, irrigation and other infrastructure were high priorities among the rural population. As already noted in Section 3b of this Review, the project's design supported the ongoing decentralization process in Bhutan through the devolution of most project funds and decision-making powers to the Dzongkhag and Geog levels. The Government therefore had strong ownership of the project although the ICR mentions that a lesson from previous operations has been that decentralization is a long-term process that requires commitment, predictable flow of funds, institutional strengthening and capacity building on regular basis.

   **Implementation issues.** Despite the project's strategic relevance, the definition of part of the project's objective as an "increase in agricultural output" was weak because output is a variable derived from area harvested and yield. As a result the ICR wrestled with explaining the interactions between area harvested and yield to explain increases in output. In effect, given that farmers decide on area harvested, the project only had a potential
influence on increasing yield which should have been the project's objective. Nevertheless the activities related to improved market access and improved yields were satisfactorily implemented by using the country's decentralized administrative systems.

Risk Assessment. The PAD provided a balanced assessment of project risks. The ICR acknowledged that project risks were correctly identified, but considered that some mitigation measures were not well defined. This Review agreed to the following points:

- The risk that farmers would be unable to find markets was assumed to be mitigated by reduced transport costs and improved access to motorable road. This was unlikely to be the case for many remote locations where improved access alone would not have mitigated this risk.
- But there was a risk that Geogs would fail to maintain roads and other infrastructure. There was no evidence in the ICR that Geogs had signed MOUs with user groups for maintenance. Nevertheless the Bank's task team leader advised that ultimately the Geogs were responsible for the farm roads and the PTTs - with or without the user groups.
- Finally, a risk identified in the PAD was that procurement of project inputs in remote Geogs may have ended up facing difficulties receiving bids on contracts or the timely completion of contracted work.

Economic aspects. There were shortcomings in the economic and financial analysis of the project in the PAD. The analysis was limited to road infrastructure; the benefits and costs of irrigation investments were not analyzed. As noted already in Section 5 of this Review, the economic analysis of the investments in transportation infrastructure in the PAD had significant shortcomings because it was based on earlier analysis of more sophisticated roads than the farm roads and tracks which were the core investments in this project.

Monitoring and Evaluation. M&E design had shortcomings such as absence of baseline data and weak M&E capacity at Geog level. This will be discussed further in Section 10 of this Review.

Quality-at-Entry Rating: Moderately Satisfactory

b. Quality of supervision:

The Data Sheet shows that supervision missions were conducted twice a year for eight years and once during two years of the project's 10 year implementation period. The ICR noted that "During the initial phase, high turnover of TTLs and lack of a designated TTL for some period, affected project implementation." Nevertheless, it also observed that "Sufficient budget and staff resources were allocated, and the project was adequately and intensively supervised" (page 25).

According to the ICR the "task team prepared Aide-Memoires regularly and alerted the government and the Project Management Team (PMT) to any issues and challenges the project was facing and facilitated remedies in a timely manner, in conformity with the Bank procedures. The Implementation Status Reports (ISRs) realistically rated the performance of the project both in terms of achievement of development objectives and project implementation". However, the ICR acknowledged a concern, also mentioned by the Government, that "following the transfer of the original Task Team Leader (TTL) there was a complete break in communication between the Bank and project team. In absence of a replacement and without an interim TTL the project team could not communicate with Bank on any issues". This was substantial at one period in time at which the Bank changed task team leader and thereafter project management improved considerably. Over the last few years, the "Bank task team has provided high quality implementation support to the government" (ICR, pages 25 and 70).

Quality of Supervision Rating: Satisfactory

Overall Bank Performance Rating: Moderately Satisfactory

9. Assessment of Borrower Performance:

a. Government Performance:

At the time of project preparation the Government demonstrated a high level of commitment to the project objectives. During implementation the Minister, Secretary, and Project Director of MoAF consistently maintained
their support and commitment to the project. In addition Government officials worked closely with the Bank’s task team on a regular basis, and cooperated fully with the Bank staff. Appropriate levels of review and approval were usually in place. Financial accountability and follow-up was observed, and expenditures were duly authorized before they were incurred, and documentation was maintained properly for periodic review. The project did not suffer from any counterpart funding problems, although there were delays in fund releases. Nevertheless, the Government implemented timely corrective measures and made appropriate budget provisions (ICR, pages 6 and 26).

**Government Performance Rating** Satisfactory

**b. Implementing Agency Performance:**

This project was implemented by regular Government staff. According to the ICR the MoAF and in particular the Project Management Team (PMT) were fully committed to the project. The PMT was led by the same project director throughout the life of the project, which helped to ensure consistency in project leadership and institutional memory. The project director and other Government officials regularly visited project communities and were able to streamline and strengthen implementation arrangements. Field staff spent significant amounts of time with the communities to provide much needed guidance and support for identification, design, and implementation of project interventions. The local political leaders, especially Geog administration heads, were also fully engaged in project implementation (ICR, page 26). The Government acknowledged that support from the Netherlands Development Organization (SNV) during the project’s early years played a crucial role in supporting the Institutional Strengthening and Capacity Building component (ICR, page 71). There were, however, weaknesses in the management team’s performance on financial management, procurement and M&E, even though the pressures of project management on regular Government staff are well understood.

**Implementing Agency Performance Rating:** Moderately Satisfactory

**Overall Borrower Performance Rating:** Moderately Satisfactory

10. M&E Design, Implementation, & Utilization:

a. M&E Design:

The PAD stated that “Tracking overall progress of the program and the monitoring of key performance indicators for the entire program will be the responsibility of MOA/Policy and Planning Division (PPD), which will provide biannual M&E reports to the World Bank. Capacity at the Geog level for M&E work is weak and MOA will provide capacity building for relevant staff at Dzongkhag and Geog levels and has incorporated the plans into the institutional strengthening component of the project” (page 8). It was envisaged that the actual design of the M&E system would "follow the existing guidelines as described in the MoA’s Manual for Monitoring and Evaluation Procedures, a system that (was) being rolled out across the country for other Ministries" (ICR, page 8). However, the ICR stated that despite this structure for the collection of data the "project was missing baseline data". The ICR went on to state that "The project relied on the government system for data collection and no separate arrangements were made to regularly gather and compare productivity/yield data for project supported irrigation schemes" (page 7). However, M&E design had shortcomings such as the absence of baseline data and weak M&E capacity at the Geog level. In addition data "consolidation at the central level into a comprehensive data base remained weak" (ICR, page 5).

b. M&E Implementation:

According to the ICR focal persons (Agriculture Extension Officers) from Dzongkhag engineering sections collected the necessary data for each intervention (cost, beneficiaries, acreage, start and completion dates etc.), its consolidation at the central level into a comprehensive database remained weak (ICR, page 7). However, project area-specific baselines (to facilitate an assessment of changes in agricultural production or its determinants of yield and area harvested) were not established. In the event Dzongkhag level data from the national Agriculture Statistics for 2009 were used to provide a baseline and 2013 data represent the project results in the project area which accounted for 30 percent of all Geogs (by number) in Bhutan. The ICR did not comment on whether this expedient could introduce a bias in the assessment changes in agricultural production.

- Since the project did not invest in all irrigation schemes in a Geog, production gains in project-financed schemes could be offset by the production losses in non-project schemes within the same Geog. Hence in the case of paddy rice production the project-supported case-studies of very successful “project-farmers” in selected schemes of Thedtsho (Wangdue) and Sampheling (Chukha). See ICR, page 14.
c. M&E Utilization:
Data collected from Geog was regularly analyzed and used for informed decision-making. For example, data collected by the respective “Commodity Coordinators” for rice, maize and potato were used to assess the seed replacement rate and the progress made with farmers’ training and capacity building measures. Considering the shortcomings such as lack of project-specific M&E system, relying completely on the government system of data collection and reporting, weak institutional arrangement for M&E, and lack of regular reporting, performance of M&E system is rated as moderately satisfactory.

M&E Quality Rating: Modest

11. Other Issues

a. Safeguards:
According to the PAD six safeguard policies were triggered by this project, namely an environmental assessment, natural habitats, pest management, cultural property, involuntary settlement and forests. The ICR reported that “the project developed an environmental management framework, and each activity (safeguard issue) was screened to avoid and/or mitigate any specific environmental concerns. The screening did not indicate any significant environmental issues” (ICR, page 8). Examples mentioned were that “No farm roads, irrigation schemes and other infrastructure supported by DRDP are located in protected areas or in a known critical natural habitat. None of the irrigation schemes’ source stream was known as important fish habitat or migration route for protected/ endangered/rare aquatic life/fishes” (ICR, page 8). The Government's ICR also noted, however, that the Netherlands Development Organisation (SNV Bhutan) provided considerable support by contributing to the knowledge of knowledge of engineers in the construction of environmental friendly roads during the initial years of this project. With SNV support to Dzongkhang in preparation of site specific environmental management plans (EMPs), the district capacity to prepare these plans improved and since then EMPs were prepared for all DRDP farm roads (ICR, Annex 7, page 62).

b. Fiduciary Compliance:
Financial Management (FM). Financial management performance was unsatisfactory in the early years of implementation because "quality and timeliness of the FMRs, funds flow related issues, cash management and disbursement of funds, limited capacity and understanding of the finance staff about the Bank's fiduciary requirements" (ICR, page 9). In addition, there were delays in expenditure reporting (ICR, page 6). However, in later years, as a result of joint efforts by the MOA and the Bank such as “training of staff, streamlining of cash flow issues, and regulated payments to the contractors” (ICR, page 9) fiduciary performance was satisfactory.

Procurement. The project's procurement performance was also weak initially because of officials at the Dzongkhag level did not have any experience in handling Bank procedures which led to considerable delays and in some cases rebidding. Nevertheless, the ICR states that the Bank’s post-reviews did not identify any noticeable procedural violations, collusion or fraud and corruption issues. This led the ICR to comment that appropriate record keeping was identified as an area requiring significant improvements (ICR, page 9).

c. Unintended Impacts (positive or negative):
Poverty Impacts. The ICR observed that With the availability of road/transport and ease in marketing, intensification of the production of vegetables, potatoes, maize and paddy rice it was reported that nutrition in households had improved. DRDP had, it was claimed, also led to enhanced livelihoods for rural people and reduced poverty, especially in remote communities. According to the Government's Impact Assessment and Project Completion report, in 2014 the annual income per households was above Nu. 30,000 ($476) for 43.5 percent of households, which was an increase of 354 percent compared to households with this level of income during the past six years (page 20 and Annex 7, page 69) - although the extent to which this increase was attributable to the project was not mentioned.

Benefits for Women. The ICR reported that women accounted for 45 percent of the direct beneficiaries of the project implicitly claiming this as an achievement, although if whole families benefitted from the project then this proportion is to be expected. On the other hand the ICR also stated that, as a result of improved transportation infrastructure, women were able to travel to nearby towns, sell their produce, and earn higher incomes. This reduced their traditional vulnerability and gave them opportunities to open bank accounts and save. In addition, because new schools and hostels for students have been constructed in the project areas, more girls are attending schools, although no data were provided to support this statement (ICR, pages 20 and 21).
12. Ratings:

<table>
<thead>
<tr>
<th></th>
<th>ICR</th>
<th>IEG Review</th>
<th>Reason for Disagreement/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome:</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td></td>
</tr>
<tr>
<td>Risk to Development Outcome:</td>
<td>Moderate</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Bank Performance:</td>
<td>Moderately</td>
<td>Moderately</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Borrower Performance:</td>
<td>Moderately</td>
<td>Moderately</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Quality of ICR:</td>
<td></td>
<td>Satisfactory</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
- When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.
- The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons:

The ICR provided a list of 18 lessons under the headings of project design, implementation, monitoring, fiduciary issues, sector issues, and on a range of technical issues. Many of them were not lessons with potential relevance beyond the project under review, but rather conclusions on factors affecting the project's achievements or shortcomings. The lessons that stood out from the ICR's list were as follows:

- **Capacity building for decentralization**. For a decentralized project like DRDP, in countries with considerable capacity constraints, institutional strengthening, streamlining of procedures and capacity building of staff on a regular basis need to be an integral part of the project design.

- **Community ownership is critical for the sustainability of project infrastructure**. Existing informal mechanisms such as Water Users Associations (WUAs) and Road Users Associations (RUAs) can successfully take responsibility for infrastructure maintenance and can ensure sustainable development.

- **Monitoring and evaluation is essential to a project's design**. It is critically important for projects to create an effective monitoring and evaluation system for investments and that they be supported by baseline information and a dedicated tracking system or else project results can never be clear.

- **Government systems can be used successfully**. Existing government systems and dedicated staff can establish successful and cost-effective units to manage the implementation of projects if they are backed by the immediate authority of governments to make decisions on implementation issues.

This Review adds the following lesson:

- **Competent and regular supervision for projects in small countries is critically important**. Small countries, by definition, have small bureaucracies which typically do not have the depth and or breadth of experience to manage project implementation according to Bank requirements. Apart from a relatively short period of discontinuity in the presence of a task team leader which caused significant implementation problems for project stakeholders, most supervision missions were adequately staffed and thereby ensured overall effective implementation.

14. Assessment Recommended?  ☐ Yes  ● No
15. Comments on Quality of ICR:

The ICR was candid and comprehensive. It made a strenuous effort to present the project's results despite the limitations of the M&E system. The main shortcomings were inconsistencies between the narrative and data in some parts of the text, as well as the absence of adequate references to sources of key data such as the analysis of estimated benefits from irrigation projects in the ICR where the only source mentioned was "comparable projects in Bhutan and elsewhere in Asia" (page 19).

a. Quality of ICR Rating: Satisfactory