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# International Assistance and Fertilizer Market in Nepal

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## 1 Introduction

The Nepalese economy revolves around agriculture and this leading sector is moving too slowly and the population is growing rapidly. This has naturally increased the existing widespread poverty within the country. This warranted the Government to mobilize local resources for stepping up the investment on the program.

International assistance plays a significant role in the development programs of Nepal<sup>1)</sup>. It is also an essential component of capital investment. The international assistance began in Nepal in 1951 and has continued to play a decisive role in the economy. The first large scale assistance to Nepal came from India in 1952 and United States in 1955. The purpose of the funds was to finance the construction of the Tribhuan Raj Path road linking the Kathmandu Valley with the rest of the country, and Rapti Valley Development Project. The United States and India were the only donors to these projects.

The current scope of US aid covers wide range of activities including agriculture, health, technology transfer and education. The U S has contributed significantly to the promotion of education in Nepal through its involvement in primary education, teacher training and curriculum development.

India expanded its bilateral assistance program to Nepal under an agreement signed in 1954. Indian aid has contributed to the development of agriculture, particularly horticulture and livestock, irrigation, water power, water supply, posts and communications and health education. In addition, India has provided academic fellowships to Indian institu-

tions under the Colombo Plan. Other important bilateral aid donors include Australia, Canada, and the United Kingdom. Assistance from the U.K. focuses on agriculture and rural development in the highlands, along with forestry worker training and infrastructure development projects.

The Nepal Aid Group was established in 1976 under the auspices of the World Bank to mobilize external development resources in a more effective and coordinated manner. The sources of assistance have expanded with the formation of the Nepal Aid Group, and now includes unilateral, bilateral and multilateral donors<sup>2)</sup>. Aid flows have also increased. However, the high growth of expenditure and the inherent limitations faced by the Government in raising revenue has further widened the resource gap.

Nepal seeks international assistance for development projects financed by domestic resources on the one hand, and for the local requirements of foreign aid projects on the other<sup>3)</sup>. It is acceptable to note that several donors have agreed to provide assistance to meet a large part of such costs. Cost overruns on several large scale projects have imposed a heavy burden on Nepal's limited resources and delayed the completion of various important projects. Project completion has been delayed by a shortage of funds required to cover these cost overruns. Apart from the financial needs of ongoing projects, several new projects are slated to receive external assistance. The Nepalese government attaches great importance to programs aimed at alleviating poverty among the rural masses. Nepal's need for external assistance is increasing, particularly for the government getting revenue adequate

to launch meaningful development projects.

The stabilization program introduced in 1985 led to the devaluation of Nepalese currency. After the program, the Structural Adjustment Program (SAP) started since 1986 / 87. This program led to rise in prices of daily necessary goods and services such as fertilizer, electricity, irrigation charge, water tariff and etc. This caused common man to suffer.

External assistance is seen by many as ineffective in improving the welfare of the common people. Explanations for this lack of effectiveness include :

- 1) Foreign aid may not fall under Government priority,
- 2) Under the grant assistance, the project design and execution is done by donors,
- 3) There is a lack of sound project proposals with economic and technical justification,
- 4) There is a tendency to accept grant assistance without overlooking implications,
- 5) Donors also insist the recipient country to seek the services of foreign consultants,
- 6) Lack of rule to restrict bilateral and multilateral cooperation,
- 7) Government statistics on foreign aid grand assistance is incomplete.

The results of international assistance projects in the agricultural sector have also been unsatisfactory. Therefore, a reexamination on the effectiveness of external assistance in the process of economic development and transfer of agricultural technology is needed. This paper intends to clarify the issue of international economic assistance with respect to the supply of fertilizer in Nepal, and to assess the impact of Japan's and other donor countries grant aid programs upon food production.

## 2 International Assistance to Agricultural Sector and Grant Aid for Increasing Food Production

Table 1 shows the amount of international assistance given by sector for the Fifth and Seventh

Economic Plans. The agriculture, irrigation and forestry sector received the largest amount of aid in the 1980's. Half of all aid received during the period was devoted to agriculture, with power and transportation ranked second and third respectively. Some disbursements were made for education, health and potable water due to greater focus on the social sector during the Sixth and Seventh Plans. Table 2 shows international assistance to Nepalese agriculture. Although the proportion of international assistance to the agriculture sector has fluctuated from year to year, the level of assistance has increased substantially over time. It also shows that the share of Grant is very low, only 12% in 1990.

The international assistance to the agricultural sector has channeled its fund into the development of irrigation, input supply, machinery and equipment, support services and infrastructure development that aimed to strengthen the agricultural extension research, workers training and planning.

Japanese aid to Nepal started in 1960 which was centered on technical cooperation for several years. Later it has converted to financial aid in the forms of various material and kinds and dispatches of Japanese volunteers under the Japanese Overseas Cooperation Volunteers and agreement signed in Feb. 1970.

In the same year, Japan provided a long-term, low interest loan of 360 million yen through the Export-Import Bank of Japan to the Nepal Industrial Development Corporation. Following the Food Aid Convention of the International Grains Agreement of 1967, the Government of Japan has made grant assistance available to Nepal since 1970<sup>4)</sup>. Japan has provided many important agricultural inputs to Nepal such as pumps, fertilizer and other agricultural equipment. It has also contributed to the development of water power and underground water resources, construction of medical school and The National Tuberculosis Center, and promoted radio communications under the Rural Communication Project. The Japanese aid program covers agricul-

International Assistance and Fertilizer Market in Nepal

**Table 1** International Assistance Expenditure by Sector in Nepal, 1975-1988 Rs in million

	Fifth Plan 1975-'80	Sixth Plan 1980-'85	Seventh Plan 1985-'86	1986-'87	1987-'88
Ariculture, Irrigation and Forestry	19.9 (19.3)	3,186.8 (30.2)	1,298.0 (37.2)	1,037.6 (31.3)	1,236.3 (24.3)
Transport	1,562.0 (36.8)	1,949.0 (18.4)	343.0 (9.8)	404.6 (12.0)	607.3 (11.9)
Power	870.0 (20.0)	1,981.7 (18.7)	891.5 (25.0)	931.3 (28.2)	1,671.5 (32.8)
Power	870.0 (20.0)	1,981.7 (18.7)	891.5 (25.0)	931.3 (28.2)	1,671.5 (32.8)
Communication	56.3 (7.8)	322.5 (3.0)	86.6 (2.4)	137.8 (4.2)	515.8 (10.1)
Industly and Commerece	330.0 (7.8)	1,111.5 (10.5)	275.7 (7.9)	183.4 (5.5)	445.7 (8.8)
Education	104.0 (2.5)	516.9 (4.9)	194.6 (5.6)	169.9 (5.2)	180.4 (3.6)
Health	184.0 (4.3)	480.4 (4.5)	137.5 (3.9)	148.4 (4.5)	139.7 (2.8)
Drinking Water	120.9 (2.9)	331.4 (3.4)	142.7 (4.1)	169.6 (5.0)	76.5 (1.5)
Others	792.1 (4.6)	705.0 (6.7)	121.1 (3.5)	131.8 (4.0)	215.3 (4.2)
<b>Total</b>	<b>4,240.8</b> (100.0)	<b>10,582.2</b> (100.0)	<b>3,491.5</b> (100.0)	<b>3,314.4</b> (100.0)	<b>5,088.5</b> (100.0)

Source : Economic Survey, various issues, HMG

Note : Figures in parenthesis are percentage

**Table 2** International Assistance to Nepalise Agriculture Rs in Million

Year	Grant	Loan	Total
1975	74.8	16.6	91.4
1976	43.8	6.9	50.7
1977	47.7	28.5	76.2
1978	65.2	18.1	83.3
1979	36.8	17.8	54.6
1980	84.9	55.0	139.9
1981	86.9	94.8	181.7
1982	72.1	163.2	235.3
1983	107.2	208.1	315.3
1984	89.4	376.0	465.4
1985	83.9	542.3	626.2
1986	61.1	287.2	348.3
1987	70.6	482.7	553.3
1988	82.6	446.9	529.5
1989	92.5	443.7	536.2
1990	62.4	547.2	609.6
<b>Total</b>	<b>1161.0</b>	<b>3735.0</b>	<b>4896.9</b>

Source : Economic Survey 1991/92, Ministry of Finance,

HMG

**Table 3** Japanese Assistance for Food Production in Nepal

Year	Fertilizer		Notes
	...(Million yen)...	(Thousand dollars) (Including)	
1977	300	112	Agri Chemicals
1978	900	428	Agri Machine
1979	1,500	684	Agri Machine
1980	300	882	Agri Machine
1981	2,200	998	
1982	0	0	
1983	2,500	1,053	Agri Machine
1984	0	0	Agri Machine
1985	2,600	1,090	Agri Chemicals
1986	2,000	1,187	Agri Machine
1987	2,100	1,452	
1988	2,700	2,107	
1989	1,200	870	
1990	1,000	691	
1991	500	372	
1992	700	553	
1993	900	809	
1994	900	880	

Source : Japanese Economic Assistance ; situation and Subjects, Ministry of Trade and Commerce, Japan, Tokyo

ture, energy resources, transportation, labor training, bridge construction and improvement of water supply and sanitation. By 1982 / 83, Japan had become one of the leading bilateral donors to Nepal<sup>5)</sup>. Approximately 25 billion yen had been invested in Nepalese development projects as of 1992. Average yearly technical support to Nepal was estimated at 3.5 billion Yen as of 1992.

Japan provides three types of grant aid to Nepal. These are i ) general grant aid, ii ) fishery grant aid, iii ) grant aid for increasing food production. Table 3 shows the level of Japanese grant aid for increasing food production. Japan has continuously increased its contributions of fertilizer and farm equipment in order to increase food production in Nepal.

### 3 Fertilizer Market Situation and International Assistance

#### 3.1 The Supply of Fertilizer and Distribution System

The use of fertilizer is much less widespread than is needed to maximize agricultural output. All fertilizers are imported, because there is no chemical fertilizer industry in Nepal. Figure 1 shows the government subsidized price of chemical fertilizers since 1974. The price of fertilizer rose sharply after 1990. As shown in Table 4, fertilizer in Nepal comes from two sources. One is foreign aid, the other is direct imports. The government pools these two sources of fertilizer and channels them through the Agricultural Input Cooperative (AIC). AIC has a monopoly on the distribution of agricultural inputs such as fertilizer, seeds and chemicals. The supplies available through AIC are unreliable and inadequate. Figure 2 shows AIC's distribution system. One factor causing the shortage is the lack of funds to purchase fertilizer to supplement that which is given directly from foreign donors. The fertilizer subsidy program has not been effective in several respects: chemical fertilizer uses increased drastically since 1975 as shown in Table 5. However, fertilizer has been distributed by and large to

**Table 4** Fertilizer Supply to Nepal, 1981/82-1990/91 (%)

Countries	Assistance	Commercial	Total
Bangladesh	10.0	39.9	29.0
Indonesia	2.4		0.9
India		3.8	2.4
Pakistan		0.6	0.4
Japan	23.5	2.6	10.2
South Korea	14.0	8.1	10.3
Singapore		11.2	7.1
Philippines		8.2	5.2
Finland	12.5		4.6
France	8.4		3.1
Netherlands	5.8		2.5
Germany	5.2		2.3
Denmark	5.1		1.9
Canada	0.4		0.1
Switzerland		6.9	4.4
Romania	2.8	12.6	9.0
Yugoslavia	1.9		0.7
Hungary	1.5	3.3	2.6
USSR		2.0	1.3
Bulgaria		0.3	0.2
Kuwait	2.8		1.0
Iraq	1.7	0.6	1.0
Jordan	1.1		0.4
Total Percent	100.0	100.0	100.0
Total Amount (MT)	458,600	795,300	1,253,900

Source : Nepal-Finnida-Fertilizer Program, Bench Mark survey, APROSC, Kathmandu 1991

relatively prosperous areas such as the Kathmandu Valley and the Terai. Farmers in these areas have better access to irrigation than those in other parts of the country. Thus, the program has benefited those least in need of the subsidy.

The open border with India has made it difficult to carry out the program to benefit Nepalese farmers. Experience has shown that subsidized fertilizers in the Terai are smuggled into India in response to cross border price differences.

Until recently, the role of the private sector was limited to retail sales of fertilizers and its share in total retailed fertilizer retailing was around 20 to 35 per cent. There are about three thousand private retailers who have licensed to AIC. However, only one-third of them have sold fertilizer all the year round. Most of them engage in fertilizer sales only during peak demand. These private dealers are mostly concentrated in the Terai, the Kathmandu and Pokhara valleys where most fertilizer is used.

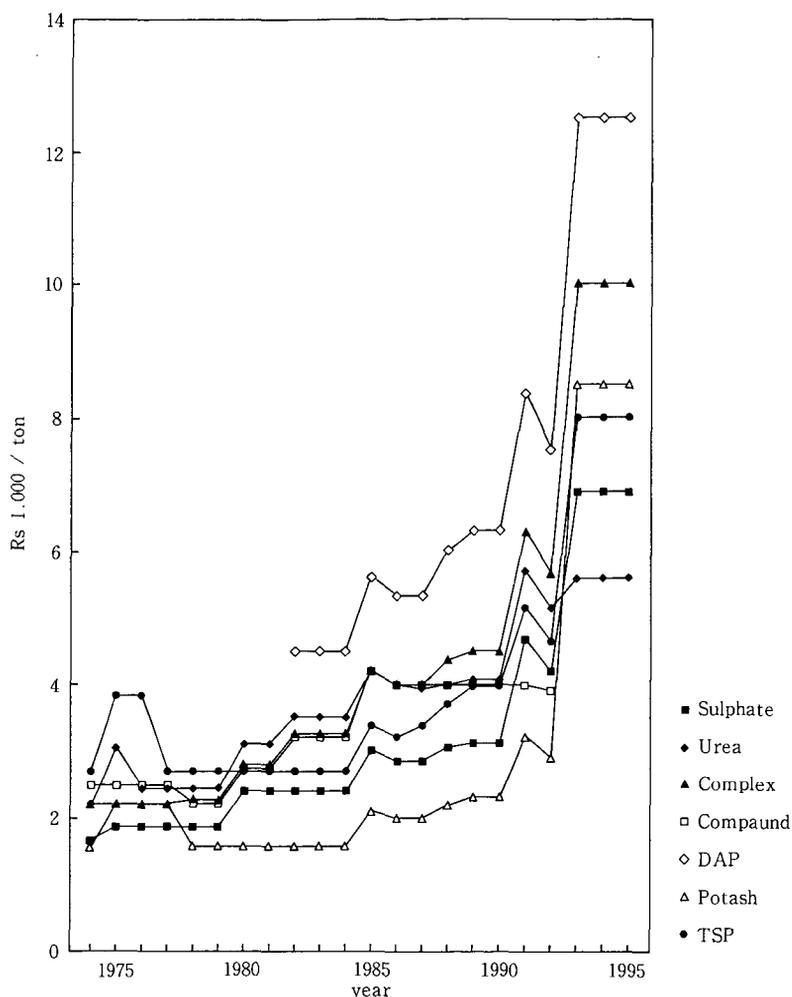


Figure 1 Price Change of Fertilizer in Nepal

Source : Ministry of Finance, HMG

The private sector is virtually blocked from importation of fertilizers due to the monopoly power of the AIC. When the government removed subsidies on phosphate and potassium in 1992 / 93, a limited number of private firms began importing and selling DAP. However, their participation is limited because the price of fertilizer is not fully decontrolled and the gradual rise in international prices of DAP has greatly reduced their profitability. In addition, because private sellers cannot import or sell urea, which is still heavily subsidized, their

businesses suffer because farmers prefer to buy all their fertilizers from a single source.

### 3.2 The Fertilizer Subsidy Policy in Nepal

The fertilizer subsidy policy is a complicated issue in Nepal. The Indian-Nepalese border price exerts a big influence over the setting of fertilizer price policies in Nepal because of the long open border. The nature of the border between Nepal and India makes it difficult for Nepal to perform an independent price policy. The overriding influence

of Indian price policy on Nepal has been substantially demonstrated by the changes in fertilizer prices in Nepal in recent years. When India removed price subsidies on potassium and phosphate fertilizers in

1993, Nepal had to follow suit in order to prevent the flow of these fertilizers to India in response to price difference between the two countries. The continuation of a price subsidy on urea in India is the determining factor for Nepal to subsidize also to urea.

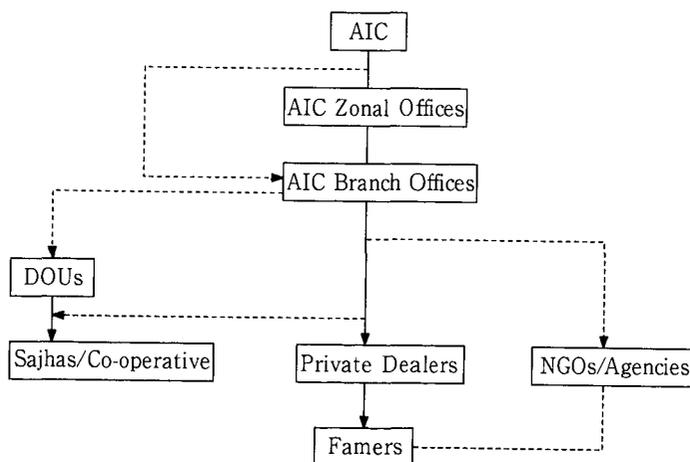
**Table 5** Consumption of Chemical Fertilizer (1974/75-1994-95) (Million ton)

Year	Nitrogen	Phosphorus	Potash	Total
1974/75	8,923	2,849	886	12,658
1975/76	8,423	2,491	1,352	13,266
1976/77	10,694	2,778	1,412	14,884
1977/78	13,012	3,383	1,072	17,467
1978/79	13,746	3,341	1,456	18,543
1979/80	15,500	4,286	1,178	20,964
1980/81	16,767	5,105	586	22,458
1981/82	17,976	5,068	773	23,817
1982/83	22,882	7,459	938	31,279
1983/84	28,058	8,462	779	37,299
1984/85	31,656	10,623	550	42,829
1985/86	31,698	11,053	657	43,408
1986/87	32,900	11,941	210	45,051
1987/88	38,112	15,211	858	54,181
1988/89	39,801	15,268	1,770	56,839
1989/90	49,206	16,742	1,338	67,286
1990/91	51,929	19,257	1,533	72,719
1991/92	59,956	22,833	1,602	84,391
1992/93	60,447	21,595	1,289	83,331
1993/94	55,385	17,146	1,278	73,812
1994/95	66,680	25,140	1,680	93,507

Source : Ministry of Finance, HMG

The fiscal burden such subsidies is very high, amounting to 50 percent of the Ministry of Agriculture's budget. The quantity of imported fertilizer is limited by the price support rate and available government funds for fertilizer. In order to meet the demand for fertilizer, subsidies will have to increase.

The fertilizer use is profitable even without subsidies and the removal of the transport subsidy is likely to improve the supply situation in remote areas (Thapa and Rosegrant [10]), but an abrupt removal of the price subsidy may not be politically acceptable. It would make fertilizer use unprofitable. The Fertilizer Sector Management Study Survey of farmers (Crown Agent [4]) suggested that an increase in fertilizer prices of up to 25 per cent would have little impact on fertilizer use. Evidence indicates that when fertilizer prices increased on several occasions in the past 15 years, there was



**Figure 2** Distribution Channel of Fertilizer through Agricultural Input Cooperative

Note : — Regular Channel  
 - - - Channel exists in some cases

**Table 6** Fertilizer Input per ropani in Sankhu

Crops	Varieties	Fertilizer							
		DAP		Urea		Compost		Manure	
		Kg	No.	Kg	No.	Bari	No.	Bari	No.
Rice	Monsuri	16.0	6	13.6	14	513.6	11	104.2	4
	Taichung	15.0	5	15.6	23	390.7	21	180.2	5
	Pokharel	5.5	2	18.5	3	393.3	3		
	Thapachin	6.0	1	12.0	4	220.0	4		
	Taichun			35.0	1	400.0	1		
Wheat		11.8	4	20.7	17	306.5	13	147.1	3
Potato	Summer	18.4	15	25.8	40	541.0	20	183.8	28
	Winter	15.0	18	26.3	41	588.0	35	186.7	30

Data : Farm Survey conducted on November and December in 1995

Notes : one ropani = 0.05ha, sample size : 48 farmers, Fertilizer input (kg/ropani) indicates average for used farmers.

No. in the table indicates the number of farmers that used each kind of fertilizer for the crops.

no decrease in fertilizer consumption (Pokharel [8]). Farmers often complain about difficulties in obtaining sufficient quantities of fertilizer. This is the problem of availability on time rather than the price. The government subsidy policy limits the supply. Both the subsidies per metric ton of fertilizer and the government's subsidy budget limit the supply of fertilizer. Both the subsidies per metric ton of fertilizer and the subsidy budget of the government are fixed cause the constraint to the supply of fertilizer.

The increased and unbalanced use of chemical fertilizers could lead to serious problems. The current subsidy favors the use of nitrogen and farmers also prefer to use them because of their initial response. However, mismanagement in the use of nitrogenous fertilizer can lead to breakdown of soil structure, increasing soil acidification, deficiencies in other macro and micro elements and drastic reductions in yields (Carson [3]). Further, if chemical fertilizers are not applied at the correct time and in the correct place and ratio, surface and ground water may be subjected to nitrate pollution. Although farmers are good economists, without formal education they will meet the difficulties to grasp the combination complexities of fertilizer use. By the virtue of ignorance and illiteracy on the right mix of the purchased inputs and unavailability at desired level, farmers will result in pest management problems.

### 3.3 The Findings in Sankhu Village

Sankhu is about 17 km east from Kathmandu

and has subtropical climate. Population is about 12.5 thousand. The road is useful in all seasons and the population increase in Kathmandu have proceeded in 1980's. Almost 70% of residents are engaged in farming. Common size of holding is one-third to half hectares. Common family size is six to seven and joint family system is a common character. Most of the elderly farmers are illiterate.

The farm survey was conducted on November and December 1995, in the Salinadi Irrigation command area<sup>6</sup>. There are three typical cropping patterns; early-ripening paddy (June/July - Sep./Oct.), summer potato (Sep./Oct. - Nov./Dec.) and winter potato (Dec./Jan. - April/May) are common cropping patterns in the area with assured irrigation. The mid region of the main canal, late-ripening paddy-fallow-winter potato is the representative crop rotation. Near the tail end of the canal where water is often a shortage after February, late-ripening paddy and wheat are common cultivation.

The amount of land devoted to potato production is increasing because the gross margin of potato is a several times higher than that of paddy or wheat. Rice is grown mainly for home consumption and a small part is used for land rent. The adoption of new technology correlates directly to farming intensity and the availability of water. Productivity of early-ripening paddy is slightly (20%) lower than late-ripening paddy and reaches maturity a month earlier. If cultivation of early-ripening paddy is not possible due to lack of water, late-ripening paddy

and winter potato or wheat is chosen depending on future water availability. Scarcity of labor is another factor in early-ripening paddy transplantation. During rice and summer potato plantation, tractors cannot be used because the field is wet. If the labor is not available and paddy plantation is late, summer potato is skipped.

Table 6 shows the input level of chemical fertilizer and compost. Chemical fertilizer is mainly used for potatoes and cash crops. In this area, urea is the main fertilizer. Chemical fertilizer is difficult to obtain. Farmers report that fertilizer appears on the black market in periods of peak demand, and that only one third to one fourth of the requirements can be met through regular channels. The black market price for urea is 50% higher than official the AIC price. Farmers have increased the use of poultry waste and decomposed paddy straw in response to the scarcity of chemical fertilizers. But farmers feel that using chemical fertilizer without compost is not good for the crops and the soil, so they use both types.

Marketing of products is not a problem in Sankhu. If the production is large enough to sell by themselves, farmers can take their crops to the Kathmandu wholesale market, which is just 17 km away from their farms. If the harvest is small, it can be brought to market in Sankhu. In addition, buyers visit the fields and made contracts with farmers for the purchase of harvested products. Future contracts by which prices for a commodity are agreed to in advance are not found, however. Prices fluctuate greatly according to the season; up to 30% for cereal crops, 100% for semi-perishable products such as potato and onion, and 300% for fresh vegetables.

#### 4 Concluding Remarks

Foreign assistance for Nepalese agricultural development is increasing since the mid 1970's. For the productivity increase, improvement of irrigation schemes, diffusion of improved seed and increase of chemical fertilizer input are critical elements.

The government has been trying to improve those conditions through several policies. For the case of fertilizer, it has been done through AIC. It aimed to supply chemical fertilizer to the farmers by pooling assisted fertilizer and imported one. Because of licensed dealers selling attitude to limit the supply when fertilizer is needed, there prevails a kind of black market. Farmers are obliged to buy higher price of fertilizer. It is sometimes twice higher than government supported price.

In Sankhu, we could observe the difficulties of getting fertilizer at government supported price. Farmers in this village input chemical fertilizer and pesticide mostly to potato production. They do not input chemicals not so much for rice production. Rice and wheat are self supplied products and potato is the most important cash crop in this area.

For the increase of agricultural productivity, Sankhu case tells us the importance of the improvement of fertilizer distribution channel. Channel limitation and lack of competitiveness in fertilizer market permit the trade of fertilizer in black market in higher price and make it difficult to increase input in Nepal.

#### NOTES

- 1) Generally the country receives three types of International Assistance, i.e., financial assistance, technical assistance and commodity assistance. Under the technical assistance, Nepal has received services of experts, volunteers and trained personnel from the bilateral and multilateral agencies. It has played an important role in (i) developing skilled man power resources (ii) channeling the benefits to large scale research in science (iii) imparting advances in technology (iv) increasing the country's capacity to absorb capital and (v) creating scientific and technological environment, thereby increasing the pace of economic and social development.
- 2) Effective coordination between donors and recipient is needed to share information and experience and increase general impact of aid effort. In 1976, the Nepal Aid Group was formally established in Tokyo on the coordination of international assistance to Nepal. The government presents documents which gives a general review of Nepal's development strategy, achievement

problems and constraints of developments the need for additional resources and profile of priority. Based on these reports and their own assessment, the member of the donor community make their decisions about their development assistance program for Nepal. In 1987, the member of donor under Nepal Aid Group reached 22 with 16 bilateral donors.

- 3) The task of mobilizing foreign aid resources was shifted to the Ministry of Finance. The Ministry formulates development policy and prepares annual budgets. There is a Foreign Aid Cooperation Committee within this Ministry which negotiates with donors to obtain foreign aid. This committee has the following functions: to review project proposals submitted by different agencies and determine their priority, to review project proposals received from donor agencies, to ensure project effectiveness and determine appropriate project follow-up, and to closely monitor priority projects in order to increase the rate of aid utilization.
- 4) JOCV was established in 1970 and by that JICA was established in 1970 and these two offices are merged into one in 1983 under JICA.
- 5) Bilateral aid, either in the form of grant or loan, is generally tied up with the donor's policy whereas the multilateral aid with the member countries. More than 60% of total number of projects was bilateral in 1970's in Nepal. Number of bilateral projects decreased to 27% of total in 1986-89.
- 6) Irrigation is shortage between March to June except in the area near by canal head. Characteristic of shortage varies with distance of the field from the canal head. As

time is no specific water management approach, wherever is near the canal has maximum access to it as per his decision for using the water.

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