



IFAD
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REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON A PROPOSED LOAN TO THE

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

FOR THE

UPLANDS FOOD SECURITY PROJECT



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CURRENCY EQUIVALENTS

Currency Unit	=	D.P.R. Korea Won (KPW)
USD 1.00	=	KPW 2.16
KPW 1.00	=	USD 0.47

WEIGHTS AND MEASURES

1 kilogram (kg)	=	2.204 pounds (lb)
1 000 kg	=	1 metric tonne (t)
1 kilometre (km)	=	0.62 miles (mi)
1 metre (m)	=	1.09 yards (yd)
1 square metre (m ²)	=	10.76 square feet (ft ²)
1 acre (ac)	=	0.405 ha
1 hectare (ha)	=	2.47 acres

ABBREVIATIONS AND ACRONYMS

CCFMC	County Cooperative Farm Management Committee
CESVI	<i>Cooperazione e Sviluppo</i> (Italian NGO) (Cooperation and Development)
CFMC	Cooperative Farm Management Committee
FAO	Food and Agriculture Organization of the United Nations
M&E	Monitoring and Evaluation
MLEP	Ministry of Lands and Environmental Protection
MOA	Ministry of Agriculture
NAAS	National Academy of Agricultural Sciences
PMU	Project Management Unit
PRECs	Provincial Rural Economy Committees
PSC	Project Steering Committee
SDC	Swiss Agency for Development Cooperation
TA	Technical Assistance
UNDP	United Nations Development Programme
UNOPS	United Nations Office for Project Services
WFP	World Food Programme

GOVERNMENT OF THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

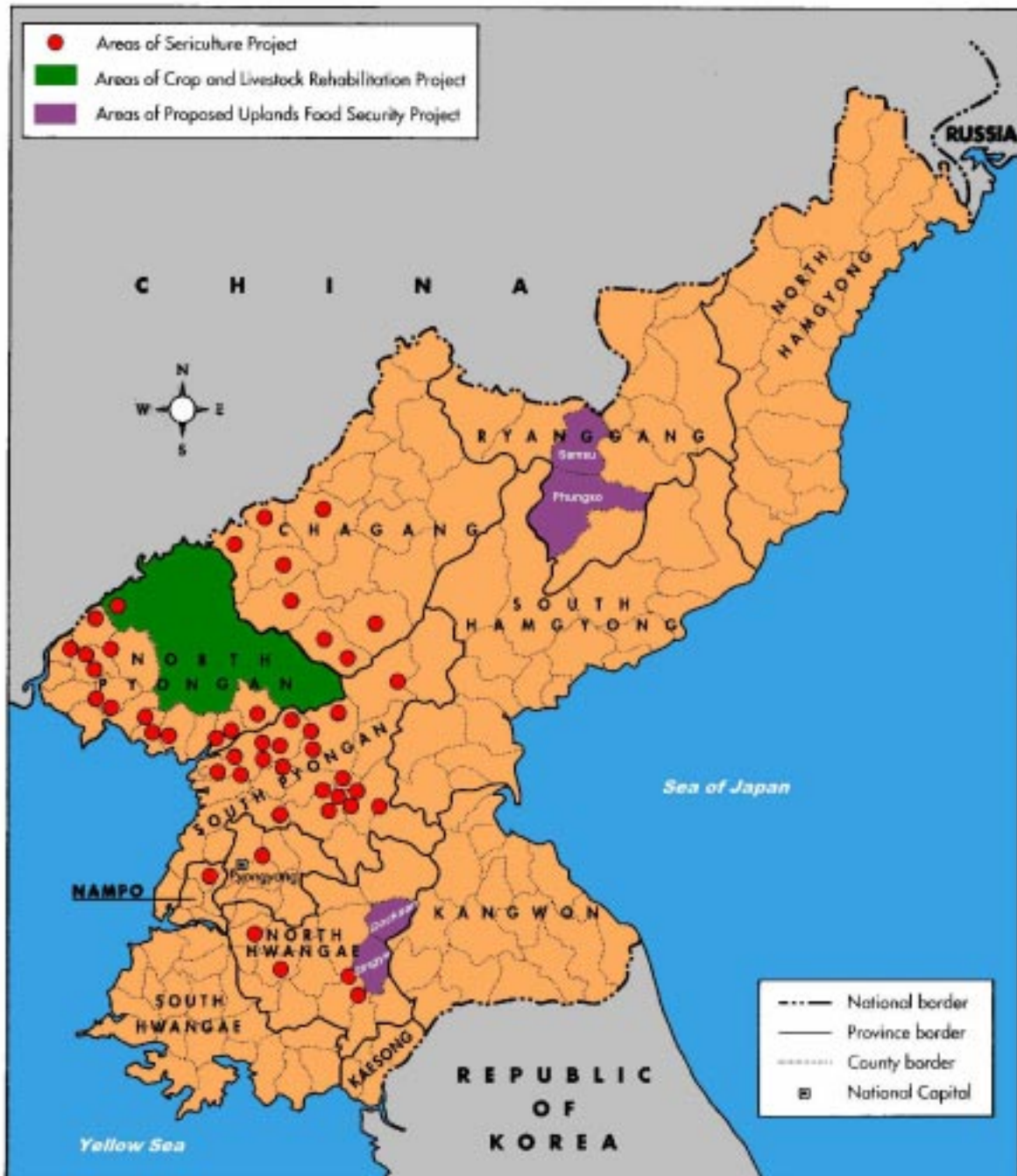
Fiscal Year

1 January - 31 December



MAP OF THE PROJECT AREA

PROPOSED UPLANDS FOOD SECURITY PROJECT
IFAD supported Projects in DPR Korea



Source: IFAD Appraisal Report

The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.



DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

UPLANDS FOOD SECURITY PROJECT

LOAN SUMMARY

INITIATING INSTITUTION:	IFAD
BORROWER:	The Democratic People's Republic of Korea
EXECUTING AGENCY:	Ministry of Agriculture (MOA)
TOTAL PROJECT COST:	USD 41.77 million
AMOUNT OF IFAD LOAN:	SDR 19.15 million (equivalent to approximately USD 24.44 million)
TERMS OF IFAD LOAN:	40 years, including a grace period of ten years, with a service charge of three fourths of one per cent (0.75%) per annum
COFINANCIERS:	<ul style="list-style-type: none">– World Food Programme (WFP)– Italy– United Nations Development Programme (UNDP)– Food and Agriculture Organization of the United Nations (FAO)– Cooperazione e Sviluppo (CESVI)
AMOUNT OF COFINANCING:	<ul style="list-style-type: none">– WFP: USD 6.07 million– Italy: USD 0.45 million– UNDP: USD 0.55 million– FAO: USD 0.06 million– CESVI: USD 0.05 million
TERMS OF COFINANCING:	Grants
CONTRIBUTION OF BORROWER:	USD 4.44 million
CONTRIBUTION OF BENEFICIARIES:	USD 5.71 million
APPRAISING INSTITUTION:	IFAD
COOPERATING INSTITUTION:	United Nations Office for Project Services (UNOPS)



PROJECT BRIEF

Who are the project's beneficiaries? The beneficiaries of the project will be the approximately 18 000 households, comprising about 76 000 individuals, in 46 low-income, food-insecure cooperative farms in the counties of Gocksan and Singye in the North Hwangae province, and Samsu and Phungso in the Ryanggang province of D.P.R. Korea. Beneficiaries reside in the more hilly and remote parts of these provinces, where the conditions for agriculture are more harsh than in the plain areas, and access to various government-provided facilities and services is more difficult. About 36 000 among them are workers/shareholders in the cooperative farms, 56% of whom are working women. The remainder are non-working dependants. The worse-off among them are the households with a large number of dependent family members, but all households are severely affected by the current overall shortage of food.

Why are they poor? They are poor because: (a) they live in hilly areas where good farmland is scarce, soil and climatic conditions are ill-suited to agriculture, and the pressure of population on arable land has been growing; (b) they have been hit in the past few years by severe and successive natural calamities – floods, droughts and hailstorms; (c) the adverse macroeconomic situation faced by the country over the last decade or more has led to a severe shortage of essential production inputs (such as fuel, fertilizers, agrochemicals, plastic sheets, tractors and spare parts), resulting in a decline in food and agricultural yields and production, and a reduction in incomes and living standards; (d) the Government's public distribution system for food, and general supplies distribution, which in any case are highly constrained at present due to the overall national food shortage, do not reach these areas because of their remoteness and the current transport shortage.

The country's egalitarian system and structures have prevented the emergence of ultra-poor, marginalized groups and classes. However, poverty and acute hunger have now to some extent become widespread. Within the now 'generalized' poor, the worst-off are the 'resource poor' counties, cooperatives and households. Families with fewer able-bodied workers, and larger numbers of dependent children or elderly or sick family members, tend to become relatively poor.

What will the project do for them? The project will benefit them by enhancing their household food security. It will provide them with more food, of better quality and greater variety (including the staple food grains, potatoes, soybeans, milk, meat, eggs and honey) through: increased food grain production at the cooperative level; small livestock production at the household level (thanks to household credit and enhanced fodder production at cooperative farm level); processing of potatoes (for starch and noodles, which can more easily be transported and stored); improved cash incomes (through larger cooperative dividend distributions, and through the sale of household backyard produce at farmers-markets); food-for-work from catchment conservation and tree planting.

The project will contribute to longer-term food security through catchment conservation and improved crop rotations. It will enhance income and returns to labour at the household level, while also lightening the burden and drudgery of farm work through appropriate mechanization. Women in particular are expected to benefit from lighter workloads and from the household credit, training and community facilities and services components of the project.

How will they participate in the project? They will participate in the project through: their membership and leadership in the work teams of the cooperative farms; their day-to-day interaction with, and representation in, the Cooperative Farm Management Committees; their labour contributions to various project activities; their participation in group monitoring and evaluation meetings held every ten days at the farm, work team and sub-work team levels to discuss work progress, work points earned and plans for the next ten days; their participation in periodic 'beneficiary evaluation workshops' to be conducted at farm level; their standing representation in the Project Management Unit through their representatives, the cooperative managers; their disposal of and decision-making on the individual loans they will receive under the project; and their cooperative control over the resources to be provided by the project under the project's community facilities and services component.



**REPORT AND RECOMMENDATION OF THE PRESIDENT OF IFAD
TO THE EXECUTIVE BOARD ON A PROPOSED LOAN TO THE
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA
FOR THE
UPLANDS FOOD SECURITY PROJECT**

I submit the following Report and Recommendation on a proposed loan to the Democratic People's Republic of Korea for SDR 19.15 million (equivalent to approximately USD 24.44 million) on highly concessional terms to help finance the Uplands Food Security Project. The loan will have a term of 40 years, including a grace period of ten years, with a service charge of three fourths of one per cent (0.75%) per annum. It will be administered by the United Nations Office for Project Services (UNOPS) as IFAD's cooperating institution.

PART I - THE ECONOMY, SECTORAL CONTEXT AND IFAD STRATEGY¹

A. The Economy and Agricultural Sector

1. D.P.R. Korea, with an area of 122 762 km² (12.28 million ha), occupies 55% of the Korean peninsula. Over 80% of the country is mountainous. The total population of about 23 million has more than doubled since the Korean War. Cooperative farm workers account for about 40% of the total rural population. The division of the Korean peninsula into two states in 1945 had left D.P.R. Korea with a major part of the mineral wealth, but with limited areas of agricultural land. After a near-total devastation during the Korean War, the country recovered rapidly into a then-modern, essentially industrial economy, with detailed planning and investment in heavy industry. Light industry, including consumer goods, did not expand as fully or as quickly as desired. Consumer goods and services have always been in short supply. Nevertheless, sustained investments combined with massive gains in labour participation succeeded in raising living standards for the general population. Per capita income exceeded USD 1 000 until the late 1980s.

2. In the early 1990s, however, the economy received a severe shock. Till then, trade with the former Soviet Union, China and other centrally planned economies had contributed to D.P.R. Korea's economic performance. It had provided access to petroleum products, capital goods and technology, and an assured market for exports. The collapse of the Soviet Union and the Eastern European socialist states abruptly terminated these historical exchange relationships. Import prices of major industrial and agricultural inputs – fuel, fertilizers, and agrochemicals – have risen since 1991. At the same time, industrial production and export earnings fell sharply because of the disrupted trading ties. A series of unprecedented natural disasters from 1995 to 1997 greatly exacerbated the situation. With little outside support and assistance (except for food assistance), the country has not yet been able to recover. The outcome has been, by most estimates, a halving of the national income to somewhere between USD 700 and 1 000 per person. Available estimates are that national income declined every year after 1991 until 1998.

3. Of D.P.R. Korea's total land area of 12.3 million ha, only about 15% is arable. Rice and maize have been the main staple foods, together occupying well over a million hectares. For most of the past decade, the agriculture sector has been concerned almost exclusively with emergency strategies to

¹ See Appendix I for additional information.



meet the overwhelming need for food. These have led to continuous depletion of soil structure and nutrients. Pursuit of short-term gains in output, to an extent forced by the external situation and the inflexibility of domestic resource allocation, runs the risk of permanent damage to the natural resource base.

4. Agricultural production and crop yields have progressively declined since the late 1980s, and more markedly since the natural calamities of 1995-97. The grain harvest fell to below 3 million tonnes (from approximately 6 million tonnes reported in the late 1980s), and average rice yields have declined to below 4 t/ha compared to 6-7 t/ha in the past. Livestock numbers were severely depleted by 1997, and livestock production has correspondingly declined. Food grain availability for consumption has been seriously affected, declining from the norm of 700 g per day per capita to about 400 g, sometimes much lower. However, it is believed that the situation has recently improved somewhat. Nevertheless, the humanitarian situation in the country continues to be grave, and food security remains precarious for many people. Longer-term food security is linked to agricultural sustainability. Some 90% of arable land is devoted to cereals, and 95% of cereals are of two types, paddy and maize, both with a limited number of varieties and a narrow genetic base. The absence of crop rotations has led to a build-up of pests and diseases, exhausted soil fertility and damaged soil structure. The challenge here lies in intensifying annual cropping and at the same time making it more sustainable.

5. Agricultural production is carried out on approximately 3 000 cooperative farms and 1 000 state farms. In addition to production in the cooperative farms, rural households cultivate small 'private' plots around their dwellings, and on marginal hill sites. Each household in a cooperative is allotted a plot of about 100 m² for its own use. Technical support to agriculture is provided by a network of state units, which are coordinated by County Cooperative Farm Management Committees (CCFMCs) and Provincial Rural Economy Committees (PRECs). The Ministry of Agriculture (MOA) is at the apex of the system.

B. Lessons Learned from Previous IFAD Experience

6. IFAD's project experience started in late 1996 with the Sericulture Development Project, which was followed by the Crop and Livestock Rehabilitation Project. The experience with implementation progress in these projects has been encouraging, including an excellent disbursement record, timely procurement and delivery of project inputs, motivated project management, increases in the intended project outputs, and benefits duly reaching the target population. Under the ongoing sericulture project, the production of silkworm cocoons (the project's main intended output) has exceeded project targets, with productivity more than doubling. Under the crops and livestock project, the incremental rice production of 213 000 t in one year means, in effect, that at least food aid worth USD 40 million was provided at a cost of only USD 14 million. This increased production was sufficient to feed (in 1998, a year of severe food shortage) about 0.8 million people at optimum ration level (and more than a million people at survival-level rations). The Crops and Livestock Rehabilitation Project has also been successful in helping to restore the depleted livestock populations (in the case of some animals, even surpassing pre-crisis levels).

7. Project management agencies in the country have demonstrated effective implementing capacity and learning abilities, with successive improvement over time. However, technology levels generally need improvement in agriculture and across all sectors. The sustainability of crop production has increasingly come into question due to prolonged monoculture (rice and maize). The need for crop diversification, and for sustainable agriculture, is increasingly being realized in government circles. New crops and crop rotations are being accepted, as are other environmentally-friendly practices.



8. IFAD experience suggests that policy adjustment and reforms in D.P.R. Korea need time and could come from the grass roots with the appropriate type of assistance. The Fund's projects can act as vehicles for the introduction of useful technology, favourable institutional change, encouragement of individual initiative, household ownership of assets (such as through production credit), and a decentralized service-oriented approach to management. One can expect gradual change in the country, based on pragmatic, evolving needs. And indeed, a number of changes have been emerging. Rural credit has proven a useful instrument to promote household enterprises. The demand for credit has exceeded the amount of credit available under the ongoing IFAD-supported projects.

9. Overall, IFAD's experience suggests that the country is able to use donor assistance well.

C. IFAD's Strategy for Collaboration with D.P.R. Korea

10. **D.P.R. Korea's policy for poverty eradication.** The Government's policy has been to minimize relative poverty through equitable access to land and other assets. This was accomplished through an initial land reform and subsequent organization of production in cooperative farms. To cope with the recent emergence of absolute poverty and food insecurity due to overall production decline (in the wake of the macro-shortage of inputs and the natural calamities), the Government's policy has been to: seek emergency food aid; bring additional land under cultivation; and boost up the production of rice, the staple food-grain (through the intensive application of inputs). More recently, it has also been to diversify crop production in line with the maxim "the right crop at the right time in the right land"; permit the cropping of hillslopes (a *force majeure* measure now being withdrawn because environmentally harmful); arrange for a flexible and equitable distribution of scarce food through the public distribution system; allow private sideline production of crops and livestock on family plots, and the sale of the produce in 'farmers markets' at uncontrolled prices; encourage the rearing of goats and other small animals; provide credit to cooperatives and individual households; make agriculture more efficient and sustainable through moves towards greater decentralization and autonomy in planning and execution at the county and cooperative levels; and attract foreign investors through joint ventures, more liberal regulations and the creation of special free-trade zones.

11. **Donor assistance to D.P.R. Korea.** Food aid and humanitarian assistance over the past few years has flowed in through the World Food Programme (WFP), the European Union, bilateral government sources, an increasing number of international non-governmental organizations (NGOs), and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Donors and NGOs are now increasingly attempting to shift away from emergency aid to development assistance. This includes WFP's move to greater food-for-work assistance. A few bilateral donors and NGOs have been active in the field of agricultural development. These include the Swiss Agency for Development Cooperation (SDC), German Agro-Action (*Deutsche Welthungerhilfe*), Irish Concern and the Italian NGO *Cooperazione e Sviluppo* (CESVI). Some specific assistance for potato cultivation was arranged through the United States Agency for International Development (USAID) and a consortium of United States NGOs. The Italian Government has recently commenced development assistance to the country, with a focus on agriculture. The multilateral donor agencies active in the rural and agricultural sector in D.P.R. Korea are the United Nations Development Programme (UNDP) (with a long-standing presence in the country), WFP (with extensive field offices), the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Children's Fund (UNICEF). UNDP organized donor 'round-table meetings' in Geneva in 1998 and 1999 to mobilize donor support for D.P.R. Korea. The round tables focused on agricultural rehabilitation and environmental protection, adopting an umbrella programme called AREP (Agricultural Recovery and Environmental Protection) for which UNDP is spearheading international donor support.

12. **IFAD's strategy for D.P.R. Korea** is to address the rural poverty that has emerged as a result of a downward spiral in the economy by stimulating agricultural production, in the belief that the



country's distributive system assures a trickle-down of benefits. Poverty is targeted by focusing not on the higher-potential rice bowl areas in the plains but on the remoter, less-advantaged, food-deficit upland areas. These areas offer potential for expansion of crops such as potatoes, and fodder crops for small animal rearing. With food production as the immediate priority, IFAD's strategy is to invest in longer-term *sustainable* agriculture and crop diversification. IFAD's entry point in its interventions is the cooperative farm, which is the basic building block of the country's rural economy and which has recently been accorded enhanced autonomy within the planning process. Household credit, a niche that IFAD has already secured for itself in D.P.R. Korea, will be continued. Besides opening a useful mechanism for household targeting, such credit support will stimulate private household-level income-generating activity and the development of private entrepreneurial initiative. Additional and surplus production achieved through this at the household level, disposed through the incipient 'farmer markets', will promote the growth of market activity. In all its efforts, IFAD will seek to build partnerships with other donors and actors (bilateral and multilateral agencies and NGOs), choosing from among those that work in the rural and agriculture fields.

13. **Project rationale.** The basic rationale for the project from an IFAD point of view arises from, first, the acute food shortage, food insecurity and food aid dependence affecting virtually the entire population of D.P.R. Korea in the last few years, particularly those living in the poorer, remote, hilly areas away from the more productive lowlands; and, second, the need to revive food production in these areas in an environmentally sound and sustainable manner. Increasingly recognized is the need to moderate and reverse the over-intensive use of farmlands, monocropping of upland soils, less-than-optimum crop rotations, the breakdown of land zoning and catchment conservation, and the over-exploitation of forests and other upland vegetative cover, which has come about in the wake of severe food and fuel shortages. Certain crops and crop rotations, and certain agronomic and technological possibilities, do offer the opportunity (with some external assistance) to increase food production in the upland areas in a sustainable manner within the existing constraints. For example, potato production is suited to these areas. Further, possibilities exist in upland areas to expand fodder grass production as part of sensible crop rotations in the more inferior among the uplands soil classes, and link this fodder expansion with support to small livestock production. Support to rural households in the cooperative farms through credit for livestock to *individual* households has already been successfully piloted in an ongoing IFAD-supported project. Some donor agencies – notably, UNDP, WFP, SDC and German Agro-Action (an NGO) – have initiated activities for sustainable agriculture, which can be built upon.

PART II - THE PROJECT

A. Project Area and Target Group

14. The project area comprises 46 cooperative farms in two clusters – in Samsu and Phungso counties in the northern province of Ryanggang; and Gocksan and Singye counties in the southern province of North Hwangae. All four counties, and the cooperative farms in them, are predominantly upland. The two separate clusters have been chosen to represent two different agro-climatic areas. In the north, where the crop-growing season is short (130 days), only single cropping can be undertaken. In the south, with a growing season of 180 days, double cropping is possible. The counties were selected on the criteria of low-income status, but potential for profitable and sustainable farming, and suitability for demonstration and replication of pilot initiatives and activities, were kept in mind.

15. The total population of the four counties is about 76 000 (38 000 in Singye, 19 000 in Gocksan, 11 000 in Samsu and 8 000 in Phungso). The total area under main crops in the four counties is 31 000 ha, with the average farm having 680 ha. Rice makes up about 20% of the area in the southern counties, but 2% or less in the north. The dominant crops in the upland area are maize, wheat, barley, potatoes, and soybean. The total area allocated to the 46 cooperative farms – including the main crops,



forest and pasture lands, but excluding minor crops and areas used for houses and roads – is 42 100 ha. With the finances presently available, all the farms in the project area cannot be supported with the full package of assistance. A total of 37 selected low-income farms will benefit from the full development assistance envisaged. But all 46 farms will be included in the project's credit and environment preservation support.

16. **Targeting.** The project will be targeted to all the households in the project's cooperative farms. Income differentials are limited in D.P.R. Korea; and marginalized groups and classes do not exist. Nevertheless, some disparity does exist across geographical areas and cooperative farms, mainly due to natural endowment differentials. Within the cooperatives, a degree of income differential exists among the households, based on the number and skills of active workers in relation to the number of non-working dependants. Although a good degree of equal gender opportunity has been achieved in the country, women generally earn less than men since they usually perform 'lighter' work (carrying fewer work points) and are subject to more frequent absenteeism from work because of household and maternal responsibilities.

17. Poverty targeting under the project is to be achieved, first, by locating the project in low-income counties; second, by giving priority to 'least advanced' cooperative farms within these counties; and third, by giving priority within the cooperative farms to households with lower incomes, a higher ratio of non-working members, or women as the heads of household.

B. Objectives and Scope

18. The overall objective of the project is to develop and demonstrate balanced, sustainable and replicable cropping systems, coupled with environment management, with a view to achieving higher and more secure production and incomes in the cooperative farms. To achieve this, the project will seek to improve: land use and crop rotations; the supply of high-quality seed, especially potato seed; micro-catchment planning; fuelwood plantations and erosion control measures; the provision of rural credit; processing of farm outputs to add value to crop production; opportunities for cooperative communities to improve local infrastructure and services; and the capacity of the government and cooperative farms to implement projects effectively.

C. Components

19. The project's activities are grouped into seven components described below.

20. **Sustainable crop production systems.** This component will assist the project's cooperative farms in introducing sound crop combinations and sustainable farming systems that will raise crop yields, ensure sustainability of production and prevent soil fertility decline, providing models for demonstration to other cooperatives. Diversification towards crops such as potatoes, legumes, grasses and fodder crops will be promoted. Crops and livestock will be better integrated, and practices in support of soil fertility restoration will be introduced. The capacity of the cooperatives and the county committees to plan and manage cropping operations more efficiently will be enhanced. The component will provide a package of support to the participating cooperative farms, including (a) crop inputs; (b) a mechanization package; (c) potatoes and storage capacity; (d) training, study tours and technical assistance (TA); as well as support to the National Academy of Agricultural Sciences (NAAS) to analyse soils and interpret results by upgrading and re-equipping existing laboratories in the two project provinces.

21. **Potato seed supply development.** This component will assist the Potato Research Institute at Daehongdan, and the participating counties' tissue culture centres, to improve the supply of clean, high-productivity potato seed to the cooperative farms. The Institute, which is responsible for the production of potato seed for multiplication by provinces, counties and farms, is presently constrained by a host of factors in producing high-quality planting material to satisfy the growing demand. The



project will: strengthen the Institute's potato meristem culture and test-tube plantlet production capability; expand the required infrastructure; make transport of plantlets to provincial laboratories more secure; enhance the capacity of provincial and county laboratories to cope with the increased number of plantlets from the Institute; provide office and laboratory equipment, and cover operating and maintenance costs; provide additional technical equipment; import some new potato seed from overseas; and arrange training for staff within the Institute and overseas.

22. The component will also provide a support (including screen houses, laboratory equipment and chemicals) for the provinces, counties and cooperative farms to help them perform their important function of multiplying the expanded seed volumes received from the Potato Research Institute.

23. **Environment preservation.** This component will address the major issue of fuelwood supply and stabilization of slopes threatened by erosion. The project will undertake a tree planting programme using species and varieties for fuelwood and erosion control. The existing fuelwood situation on all the farms in the project area will be assessed, and an area will be selected on each farm as a woodlot, on suitable wasteland within the farm and/or on nearby slopes. With respect to erosion control, the project will support tree planting, bunding, rudimentary terracing and the construction of storm drains, and will expect to rehabilitate and protect 2 400 ha of vulnerable land. Labour will be organized by and funded through WFP's Food-for-Work Programme. The project will assist the Ministry of Lands and Environmental Protection (MLEP) in meeting the extra demands put on it by the activities of this component, providing seed, planting medium and containers for nurseries.

24. **Household and cooperative credit.** This component aims at overcoming the current credit shortage, raising incomes and improving the living standards and nutritional conditions of the target population by providing additional institutional credit to finance investment in income-generating production activities, mainly livestock. Two lines of credit will be established and managed by the Central Bank. A credit line for households will be open to all households in the targeted farms to enable them to raise small animals (e.g., chickens, goats, sheep, geese, pigs, rabbits and bees). Loans will finance the purchase, fattening, rearing or breeding of stock; supplementary feed; and veterinary and incidental costs. A separate credit line will be open to all cooperatives in the targeted counties, mainly for providing livestock and marketing services to individual households. Loan purposes will include purchase of breeding stock, repair of livestock buildings, purchase of feed and veterinary supplies, establishment of hatching compartments, broiler rearing and operational expenses. The county branches of the Central Bank and the financial services departments of the cooperative farms that act as grass-roots financial intermediaries for the Central Bank will be strengthened to maintain long-term capability and sustainability. Training support (local and overseas) for staff of the Central Bank's county branches and the financial services departments of the cooperatives will ensure adequate capacity to implement credit activities and to build up long-term capability. TA through an expatriate credit specialist, working with the Central Bank, will also be provided.

25. **Community facilities and services.** This component will establish a fund to stimulate the process of participatory planning and investment at the farm level. The Cooperative Farm Management Committees (CFMCs) of participating farms will obtain funding for locally selected projects. The component will also provide training in principles of participatory planning and investment selection.

26. **Farm output processing.** This component will help the cooperatives to investigate and develop opportunities for processing farm products. A feasibility study on the prospects for processing farm products will first be undertaken, and based on the findings of this study, appropriate investments in processing facilities, particularly for potato starch and noodles, will be undertaken.

27. **Project implementation support.** The project will provide support for establishing and operating the Project Management Unit (PMU) in Pyongyang, support for the PRECs in North



Hwangae and Ryanggang, and support to the four participating CCFMCs in carrying out their roles. Assistance to the PMU will include office equipment, vehicles and their operating costs. Operational inputs will be provided for training of county and cooperative farm accountants in project practices. The PRECs and CCFMCs will be supplied with computers and other essential equipment to improve their management and information flows. TA (short-term consultancy services, totalling about 25 person months) will be provided in the fields of soil fertility, potato agronomy and tissue culture, environment protection, credit, monitoring and evaluation (M&E), accountancy, resource mobilization and procurement.

D. Costs and Financing

28. Total project costs over the five-year implementation period are estimated at USD 41.77 million, including price and physical contingencies (Table 1). The financing plan for the project is set out in Table 2. An IFAD loan equivalent to USD 24.44 million will provide financing for all project components, and in terms of expenditure categories will finance crop inputs, credit, equipment, farm machinery, vehicles, civil works, training, operation/maintenance costs and a cooperative community development fund. WFP will provide food-for-work assistance equivalent to USD 6.07 million for tree plantation and earth works, for the environmental preservation component and for crop storage construction. UNDP will provide USD 0.55 million for technical assistance, training and studies. FAO will provide TA (USD 0.06 million) for potato seed development. Italy will provide USD 0.45 million for TA and for support to operational activities at the grass roots. CESVI will provide USD 0.05 million initially, for pilot crop research and demonstration activities on a few farms. The Government will contribute the equivalent of USD 4.44 million, mainly as crop inputs, salaries and operating/maintenance costs. The beneficiaries will provide a labour contribution (equivalent to USD 5.71 million) for the environmental preservation component and crop storage sub-components of the project.

29. IFAD intends to provide, separately, a Special Operations Facility (SOF) grant of USD 60 000, not included in the project costs, to support start-up activities for the project.

TABLE 1: SUMMARY OF PROJECT COSTS^a
(USD '000)

Components	Local	Foreign	Total	% of Foreign Exchange	% of Base Costs
Sustainable crop production systems	312.5	21 112.6	21 425.2	99	55
Potato seed supply development	23.7	934.3	958.0	98	2
Environment preservation	5 681.4	6 400.5	12 081.8	53	31
Household and cooperative credit	2.2	1 434.2	1 436.4	100	4
Community facilities and services	0.2	994.5	994.8	100	3
Farm output processing	-	562.5	562.5	100	1
Project implementation support	97.4	1 376.6	1 474.0	93	4
Total base costs	6 117.	32 815.3	38 932.7	84	100
Physical contingencies	40.6	925.6	966.2	96	2
Price contingencies	-	1 874.2	1 874.2	100	5
Total project costs	6 158.0	35 615.1	41 773.1	85	107

^a Discrepancies in totals are due to rounding.

TABLE 2: FINANCING PLAN^{a b}
(USD '000)

Components	IFAD		WFP		Italy ^c		UNDP ^d		FAO		CESVI ^e		Government		Beneficiaries		Total		For. Exchange	Local (Excl. Taxes)
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%		
Sustainable crop production systems	18 921.1	81.3	32.1	0.1	-	-	-	-	-	-	-	-	4 299.9	18.5	31.2	0.1	23 284.3	55.7	22 943.6	340.7
Potato seed supply development	1 005.7	93.8	-	-	-	-	38.8	3.6	-	-	-	-	27.3	2.6	-	-	1 071.8	2.6	1 045.7	26.1
Environment preservation	841.5	6.7	6 041.6	48.1	-	-	-	-	-	-	-	-	1.6	-	5 680.0	45.2	12 564.7	30.1	6 883.2	5 681.5
Household and cooperative credit	1 486.0	99.8	-	-	-	-	-	-	-	-	-	-	2.5	0.2	-	-	1 488.6	3.6	1 486.2	2.4
Community facilities and services	1 052.4	100.0	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	1 052.7	2.5	1 052.5	0.2
Farm output processing	547.3	83.0	-	-	-	-	112.1	17.0	-	-	-	-	-	-	-	-	659.4	1.6	659.4	-
Project implementation support	588.3	35.6	-	-	449.4	27.2	394.1	23.9	61.2	3.7	50.0	3.0	108.6	6.6	-	-	1 651.6	4.0	1 544.4	107.1
Total disbursement	24 442.3	58.5	6 073.7	14.5	449.4	1.1	545.0	1.3	61.2	0.1	50.0	0.1	4 440.2	10.6	5 711.2	13.7	41 773.1	100.0	35 615.1	6 158.0

^a Discrepancies in totals are due to rounding.

^b No duties and taxes.

^c Subject to the evolving relations on development cooperation between the Governments of Italy and D.P.R. Korea, the funding support could be further enhanced during the project period.

^d USD 200 000 are fully committed for the first year of project implementation, the balance subject to UNDP's resource availability position. Any shortfall in this will be covered through the IFAD loan.

^e *Cooperazione e Sviluppo* (CESVI), an NGO based in Italy.





E. Procurement, Disbursement, Accounts and Audit

30. **Procurement.** The PMU in collaboration with the relevant ‘trading corporations’ will be responsible for the procurement of IFAD-financed goods and services in accordance with procedures acceptable to IFAD. A short-term procurement specialist financed under the project’s TA provisions will assist in the procurement. All procurement following international competitive bidding (ICB) or international shopping procedures will require prior review by IFAD/UNOPS. Goods collated in packages costing more than USD 300 000 will be procured under ICB. Procurement from outside the country of all IFAD-financed goods collated in packages costing less than USD 300 000 will follow international shopping procedures. According to the design of the project, it is expected that goods procured under ICB will include crop inputs such as fertilizers and crop chemicals, vehicles and farm machinery. International shopping arrangements will apply for the procurement of office equipment, equipment and supplies for the potato seed supply development component, non-labour inputs for the environment preservation component, and operating costs including the cost of spare parts, fuel and lubricants. Since competing private suppliers do not exist in D.P.R. Korea, precluding local competitive bidding and local shopping, direct contracting and/or force account arrangements will be followed in the case of construction of potato stores and tissue culture centres, transportation of potato seed, and for all training.

31. **Disbursement.** The proceeds of the IFAD loan will be disbursed for eligible expenditures over a period of five years after the date of loan effectiveness, and the loan closing date will be six months after the project completion date. IFAD will make an initial deposit of USD 1.9 million into the Special Account. The authorized allocation will be USD 2.45 million. The applications for replenishment will be fully documented, except that statements of expenditure (SOEs) will suffice for: in-country training; local costs for the construction of greenhouses, screen houses and seed stores; transportation of seed and seedlings; local cost share of the community facilities and services component -financed projects; planning; M&E; procurement; and the local share of recurrent costs. Funds will be transferred from the Special Account to the different project accounts for disbursement to meet the various expenditures locally. All non-credit funds will flow to Project Account 1 of the Ministry of Agriculture (MOA), and will be managed by the PMU. The share of the IFAD loan for credit will be channelled to Project Account 2 in the Central Bank. The Central Bank’s head office will release the credit funds directly into revolving fund accounts, opened specially for the project’s credit component at each of the county branches of the Central Bank. From these revolving fund accounts, the county branches will extend credit to the project beneficiaries. Funds to implement the environment preservation component other than food-for-work will be channelled by MOA/PMU to MLEP (Project Account 3). Any funds to the Ministry of Public Health will flow through Project Account 4 to undertake anthropometric monitoring.²

32. **Accounts and audit.** The project’s implementing agencies will maintain separate accounts of expenditures for the activities financed by the project. The PMU’s accountant will ensure that the accounts are kept in accordance with government practices acceptable to IFAD. An accountancy specialist, provided under the project’s TA arrangements, will assist in bringing the accounts in line with international standards. Project accounts will be audited by the Government’s Audit Bureau in the Ministry of Finance or by an external independent auditor acceptable to IFAD. The audit reports will be submitted within six months of the end of the fiscal year.

² A flow-of-funds chart is presented in Appendix IV.



F. Organization and Management

33. **Project management.** Overall implementation responsibility for the project will be with the MOA. A PMU, to be located within the MOA, will be responsible for day-to-day project coordination and management. To head the PMU, a serving officer of the MOA will be designated as project director, and will be assisted by a planning officer, finance officer, procurement officer and two M&E officers. The actual physical implementation of specific project components/sub-components in the field will be carried out by the various relevant existing government agencies at the central and local levels,³ namely MLEP, NAAS and its research institutes, the Central Bank and its country branches, and the tiers of local administration, namely the PRECs and CCFMCs at county and local levels. The PMU will have the role of providing supervision support and to these various implementing agencies. It will also coordinate the preparation of the project's consolidated annual workplan and present this to IFAD/UNOPS before October of each year. The implementation arrangements for the project are based on the principle that the project should be managed within the regular existing structures and procedures of the Government, so that its acceptability and continuity within the system, beyond the IFAD-support period of five years, is better assured.

34. A project steering committee (PSC), chaired by the Vice-Minister for Agriculture in charge of the External Cooperation Department of MOA, and with membership from the various implementing ministries as well as from the Ministries of Planning and of Finance, will provide policy and strategy support guidance, and serve as a forum for discussion and problem resolution across line agencies and across the national/provincial/county tiers. This committee will include local and farmer representatives, with one CCFMC and one CFMC representative from each of the two project provinces sitting as members and attending its periodic meetings.

35. The project will have the benefit of advice and guidance from expatriate consultants in specific fields, under the TA provisions of the project. The Government will facilitate interaction between its own representatives and foreign cofinanciers and collaborators in the project by establishing a consultative committee, which will meet as needed to review project matters. Membership in this committee will include, but will not be restricted to, IFAD, WFP, UNDP, FAO, the Government of Italy and NGOs involved in supporting the project.

36. **Beneficiary participation.** The beneficiaries will participate in the project through their membership and leadership in the work teams of the cooperative farms; their day-to-day interaction with, and representation in, CFMCs; their labour contributions to various project activities; their participation in group M&E meetings held every ten days at the farm, work-team and sub-work-team levels to discuss work progress, work points earned and plans for the next ten days; their participation in periodic 'beneficiary evaluation workshops' to be conducted at farm level; their standing representation in the PMU through their representatives, the cooperative managers; their disposal of and decision-making on the individual loans they will receive under the project; and their cooperative control over the resources to be provided by the project under the project's community facilities and services component.

37. **Monitoring and evaluation.** Staff of the Agricultural Production Department carried out a cooperative farm baseline study in close collaboration with the management of the cooperative farms. The baseline study will be repeated in the second project year (PY) and PY5. The list of indicators may need to be adjusted, taking into consideration final project design and initial project experiences. The project will also undertake annual household studies to assess the project's impact on the households. The mid-term review will be carried out in the beginning of PY3. M&E will be supported by the two M&E officers in the PMU and by a short-term expatriate M&E consultant provided for under the project's TA provisions.

³ For details of implementation by component, see Appendix IV.



G. Economic Justification

38. **Benefits and beneficiaries.** The project is expected to lead at full development (PY6) to increased incomes, consumption and food security. It can also be expected to result in improved human and animal nutrition and health. Based on farm models, an increase of 30 to 37% in farm gross incomes can be expected. The beneficiaries from the crop production increase will be the approximately 18 000 families (76 000 people) in the 46 cooperative farms in the project area. About 80% of these will benefit from all the project's components, while the remaining 20% will benefit from the household and cooperative credit and environment preservation components only. The latter will be in a position of advantage to benefit fully if further donor funding becomes available to the project, as may be likely. The direct beneficiaries of increased livestock production will be the farm families who take up credit and procure livestock. Women will benefit from all the project components: mechanical planting and harvesting of potatoes and other crops will substantially reduce drudgery and raise the marginal productivity of farm workers, the majority of whom are women; opportunities for skilled and semi-skilled employment (e.g., as tractor drivers) will be created for them; they will benefit from jobs created at the Potato Research Institute and at province, county and farm seed multiplication centres; and they will receive priority access to credit, giving them the opportunity to take up livestock enterprises.

39. Besides improving the food security and living standards of the target population, the project will help arrest environmental deterioration, build up local infrastructure, improve institutional capacities and participatory decision-making at the county and cooperative levels, stimulate initiative and entrepreneurship, and provide a model of sustainable agriculture for replication.

40. **Economic analysis.** The economic rate of return (ERR) calculated for the project over a 15-year period is 19.9%. Sensitivity analysis shows that the ERR is robust enough to withstand delay in benefits as well as relatively high increases in the costs of reduction in benefits, or combinations of cost increase and benefit reduction.

H. Risks

41. The project will generally be subject to various external risks of a technical, institutional and environment nature. Risks that are more specific to project implementation have been identified as follows: (a) a relative lack (at governmental or individual farmer level) of experience with, understanding of or commitment towards sustainable crop rotations and to a whole-farm approach, resulting in poor uptake of the improved systems and technologies; (b) the chronic macro-shortage of inputs such as fuel, fertilizer and spare parts; (c) potato disease; (d) bad debts, dilution of the targeting focus, and management shortcomings due to work overload; (e) problems arising from several donors and implementing agencies working together; and (f) delays or errors in the procurement of many project-provided goods and services. Specific features to mitigate these risks have been built into the project design. In addition, the possible risk of errors in the project's overall approach will be lessened through a staggered uptake of cooperative farms into the project over the first three years of project implementation.

I. Environmental Impact

42. The upland areas of the country have come under increasing pressure of denudation and soil erosion on the hill slopes, and soil loss and soil fertility decline in the lower reaches. The project, with its focus on sustainable food and agricultural production, will help arrest the environmental and agronomic deterioration. Increased biomass production and diversified food crop production will be brought about through such measures as improved and environmentally benign crop husbandry practices, sustainable crop rotations appropriate to the main soil classes, diversification away from cereal monocultures, the introduction of fodder grasses and legumes, appropriate land use and land zoning, support to soil testing, optimum inputs use, and balanced soil fertility and plant protection



methods. Food production in the cooperative farms will be based on integrated whole-farm plans, with TA support, incorporating micro-catchment conservation plans and replanting of watersheds. The hillsides will be put to rational communal use, with soil conservation and slope stabilization activities, construction of storm drains, planting of fuelwood trees and establishment of tree nurseries. The increased food and fuelwood production will reduce the pressure on sloping lands and result in increased vegetative cover. Working in synergy, the conservation effort in the higher slopes will protect the lands under foodcrops lower down, and in turn the enhanced food production will reduce the pressure to cultivate the fragile slopes. The existing structure and ethos of cooperative farming in the country offers a conducive social and institutional milieu for environmental preservation, on which the project will capitalize.

J. Innovative Features

43. The following are some of the innovative features of the project within the D.P.R. Korea context: (a) The project constitutes a concerted move on a fairly wide geographical scale to a more *sustainable* agriculture, with a whole-farm planning approach in the cooperative farms. This approach encompasses sustainable crop rotations appropriate to the main soil classes, diversification away from cereal monoculture to a more variegated food production, and environmental protection. It will result in other synergies such as more integrated crop and livestock production on cooperative farms, and increased production and sale of fodder and grasses to the households to underpin the credit to be made available to them for backyard animal rearing. The project will provide a pilot demonstration of all these, which could then be replicated country-wide. (b) Advanced (and in the country's context, innovative) technologies will be introduced and demonstrated, in key technological areas such as potato tissue culture, to support more stable and increased food production. (c) Resources will be placed at the disposal of the local communities, through a project-supported community development fund, to undertake, at their own discretion, small-scale investments at the local level (for infrastructure and any other *productive* activity) yielding returns that can be ploughed back for further productive investments. The repayments from the allocations made to the cooperative farms under the community facilities and services component of the project will be placed in a separate revolving account for continuing the activities by the cooperative farms. (d) Rural credit, provided by the project, will be directed more to *individual* households rather the whole cooperative farm (the latter constituting only 20% of the total credit volume). (e) The project provides a ready framework for donor collaboration. It already involves a number of government agencies, external donors and NGOs. It will provide, moreover, a flexible framework within which other interested donors can join in the future, by 'adopting' additional cooperative farms, with the same or a similar package to the one already appraised under the project.

PART III - LEGAL INSTRUMENTS AND AUTHORITY

44. A loan agreement between the Democratic People's Republic of Korea and IFAD constitutes the legal instrument for extending the proposed loan to the borrower. A summary of the important supplementary assurances included in the negotiated loan agreement is attached as an annex.

45. The Democratic People's Republic of Korea is empowered under its laws to borrow from IFAD.

46. I am satisfied that the proposed loan will comply with the Agreement Establishing IFAD.



PART IV - RECOMMENDATION

47. I recommend that the Executive Board approve the proposed loan in terms of the following resolution:

RESOLVED: that the Fund shall make a loan to the Democratic People's Republic of Korea in various currencies in an amount equivalent to nineteen million one hundred and fifty thousand Special Drawing Rights (SDR 19 150 000) to mature on and prior to 1 December 2040 and to bear a service charge of three fourths of one per cent (0.75%) per annum, and to be upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

Fawzi H. Al-Sultan
President



SUMMARY OF IMPORTANT SUPPLEMENTARY ASSURANCES INCLUDED IN THE NEGOTIATED LOAN AGREEMENT

(Loan negotiations concluded on 30 November 2000)

1. (a) The Government of the Democratic People's Republic of Korea (the Government) will cause MOA to open and maintain a current account in the Pyongyang branch of the Korea Daesong Bank, or another bank proposed by the Government and accepted by IFAD, denominated in KPW ("project account A"), into which the Government will transfer the amounts needed from the special account and deposit them in project account A by the beginning of each fiscal year in the amounts agreed in the annual work plan and budget (AWP/B), to carry out the sustainable crop production systems and potato seed supply development components of the project. The project director and finance officer will be fully authorized to operate project account "A".

(b) As soon as practicable after the date hereof but in no event later than 60 days after the date of effectiveness, the Government will cause the Central Bank (CB) to open and maintain a current account in the Pyongyang branch of CB, or another bank proposed by the Government and accepted by IFAD, denominated in KPW ("project account B"), into which the Government will transfer the amounts needed from the special account and deposit them in project account B, by the beginning of each fiscal year in the amounts agreed in the AWP/B, to carry out the household and cooperative credit component of the project. The person designated by CB as its officer in charge/liason officer and his/her deputy will be fully authorized to operate project account B.

(c) As soon as practicable after the date hereof but in no event later than 60 days after the date of effectiveness, the Government will cause MLEP to open and maintain a current account in the Pyongyang branch of the Korea Daesong Bank, or another bank proposed by the Government and accepted by IFAD, denominated in KPW ("project account C"). The Government will transfer the amounts needed from the special account and deposit them first in project account A and from there in project account C, by the beginning of each fiscal year in the amounts agreed in the AWP/B, to carry out the environment preservation component of the project. The person designated by MLEP as its officer in charge/liason officer and his deputy will be fully authorized to operate project account C.

(d) As soon as practicable after the date hereof but in no event later than 60 days after the date of effectiveness, the Government will cause the Ministry of Public Health (MPH) to open and maintain a current account in the Pyongyang branch of the Korea Daesong Bank, or another bank proposed by the Government and accepted by IFAD, denominated in KPW ("project account D"). The Government will transfer the amounts needed from the special account and deposit them first in project account A and from there in project account D, by the beginning of each fiscal year in the amounts agreed in the AWP/B, to carry out the support to MPH within the project-implementation support component of the project. The person designated by MPH as its officer in charge/liason officer and his deputy will be fully authorized to operate project account D.
2. The Government will make counterpart funds available to MOA from its own resources during the project implementation period in accordance with its customary national procedures for development assistance. For this purpose, the Government will make budgetary allocations for each fiscal year equal to the counterpart funds called for in the AWP/B for the relevant project year and will make such allocations available to MOA annually in advance.



3. MOA will transfer available funds and other resources called for in the AWP/Bs:
 - (a) to CB in accordance with the memorandum of understanding to be entered into between the Government and CB, further to the project loan agreement, to carry out the household and cooperative credit component; and
 - (b) to MLEP and MPH in accordance with the inter-institutional arrangements to be set out in the project implementation manual.

4. CB will establish and maintain two separate revolving fund accounts in each of the four county branches in the project area, for credit to households and to cooperative farms, respectively. The county branches will extend credit to the project beneficiaries from these accounts. The accounts will be maintained separately from the other accounts, and all net revenues from credits extended to project beneficiaries financed by the loan will be deposited in them. CB will use these revolving funds to fund further credits to project beneficiaries in accordance with the loan agreement at least until all loan service payments have been made in full. For purposes of this paragraph, the term 'net revenues' will mean all repayments of principal and all payments of interest, *less* reasonable operating and other costs.

5. The Government will also ensure that:
 - (i) farms will be selected from within the four counties for priority participation on the basis of (a) net income per total number of family members of farm workers; and (b) vulnerability of farms to natural disasters and other causes of food and income insecurity;
 - (ii) it will carry out all necessary steps to introduce the crop rotations agreed;
 - (iii) it will provide all crop inputs specified in the agreement that were not financed by IFAD;
 - (iv) it will provide incremental spare parts for tractors;
 - (v) tractors supplied will be under the exclusive control of the cooperative throughout their working lives;
 - (vi) it will provide dedicated operating funds to NAAS for its work on the project;
 - (vii) it will facilitate catchment-area zoning for the purposes of the environment preservation component;
 - (viii) proceeds from the loan and their reflows will be used exclusively to provide loans to farm households and cooperative farms in accordance with the criteria for meeting the needs of target groups;
 - (ix) woman-headed households and households with one or no active working members in the cooperative farms will have priority access to credit during implementation of the credit component;
 - (x) a separate auditing unit will be established within the provincial and county branches, directly under the leadership of the chief executive officer of CB or the managers of the branches;



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- (xi) CB accounts for the use of loan proceeds will from time to time be made available for review by supervision missions of IFAD and the cooperating institution;
 - (xii) CB accounts will be audited annually by the audit unit of the Ministry of Finance of D.P.R. Korea in accordance with internationally accepted auditing practices acceptable to IFAD;
 - (xiii) funds will be made available to cooperatives for community projects, and a dedicated fund will be established into which it will pay all costs recovered. This fund will be used to finance further community development projects, initially for the fully participating cooperative farms and later for the remaining farms in the project area;
 - (xiv) budgets for each implementing agency will be clearly designated and dedicated in the AWP/Bs;
 - (xv) MOA will ensure that the requirements of the other implementing agencies for funds, inputs, equipment and other items are adequately reflected in the AWP/Bs and promptly met through timely procurement and delivery;
 - (xvi) in consultation with IFAD, the Government will cause each implementing agency to designate a senior officer within its ranks as responsible for day-to-day activities under the project and another senior officer as the deputy. These officers will also be designated as liaison officer and deputy liaison officer, respectively, of PMU, and will work with PMU to effectively assist in building up a strong linkage among implementing agencies and between the implementing agencies and the project;
 - (xvii) it will facilitate participation of non-governmental organizations (NGOs) in the project;
 - (xviii) it will facilitate the work of technical-assistance personnel in the project by arranging entry and work visas for D.P.R. Korea;
 - (xix) in the event that the agreement between itself and UNDP for the financing of training, technical assistant and/or studies is not executed, the Government will request that an amount of up to USD 545 000 be reallocated to training and studies from unallocated funds;
 - (xx) it will make available continued and adequate financing of the recurrent expenditures of CB, the Potato Research Institute and county and provincial centres for potato-seed development after the completion of the project; and
 - (xxi) interaction between itself and cofinanciers and collaborators in the project takes place through regular consultation and meetings on project matters.
6. The following are additional events for the suspension of loan disbursements:
- (a) The credit operations manual, or any provision thereof, has been waived, suspended, terminated, amended or otherwise modified without the prior consent of IFAD, and IFAD has determined that such waiver, suspension, termination, amendment or modification has had, or is likely to have, a material adverse effect on the credit component.



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- (b) The project implementation manual, or any provision thereof, has been waived, suspended, terminated, amended or modified without the prior consent of IFAD, and IFAD has determined that such waiver, suspension, termination, amendment or modification has had, or is likely to have, a material adverse effect on project implementation.

7. The following are additional conditions precedent to the effectiveness of the project loan agreement:

- (a) a project director has been duly appointed and approved by IFAD;
- (b) PMU has been duly established in accordance with the project loan agreement, including the officers responsible for the project in each project party; and
- (c) PSC has been duly established in accordance with the project loan agreement.

8. No disbursements shall be made from the loan until the project implementation manual has been approved by IFAD, and no disbursements shall be made for the credit component until the credit operations manual has been similarly approved.

APPENDIX I

COUNTRY DATA

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

Land area (km² thousand) 1997 1/	120	GNP per capita (USD) 1998 2/	estimated <= 760
Total population (million) 1998 1/	23.2	Average annual real rate of growth of GNP per capita, 1990-98 2/	n.a.
Population density (people per km²) 1998 1/	192	Average annual rate of inflation, 1990-98 2/	n.a.
Local currency	D.P.R. Korea Won (KPW)	Exchange rate: USD 1 =	KPW 2.16
Social Indicators		Economic Indicators	
Population (average annual population growth rate) 1980-98 1/	1.5	GDP (USD million) 1998 1/	n.a.
Crude birth rate (per thousand people) 1998 1/	20	Average annual rate of growth of GDP 1/ 1980-90	n.a.
Crude death rate (per thousand people) 1998 1/	9	1990-98	n.a.
Infant mortality rate (per thousand live births) 1998 1/	54	Sectoral distribution of GDP, 1998 1/	
Life expectancy at birth (years) 1998 1/	63	% agriculture	n.a.
Number of rural poor (million) (approximate) 1/	n.a.	% industry	n.a.
Poor as % of total rural population 1/	n.a.	% manufacturing	n.a.
Total labour force (million) 1998 1/	12.3	% services	n.a.
Female labour force as % of total, 1998 1/	43.4	Consumption, 1998 1/	
Education		General government consumption (as % of GDP)	n.a.
Primary school gross enrolment (% of relevant age group) 1997 1/	n.a.	Private consumption (as % of GDP)	n.a.
Adult literacy rate (% of total population) 1997 3/	n.a.	Gross domestic savings (as % of GDP)	n.a.
Nutrition		Balance of Payments (USD million)	
Daily calorie supply per capita, 1996 3/	2 271	Merchandise exports, 1998 1/	n.a.
Prevalence of child malnutrition (height for age % of children under 5) 1992-98 1/	14.5	Merchandise imports, 1998 1/	n.a.
Prevalence of child malnutrition (weight for age % of children under 5) 1992-98 1/	32.2	Balance of merchandise trade	n.a.
Health		Current account balances (USD million)	
Health expenditure, total (as % of GDP) 1990-98 1/	n.a.	before official transfers, 1998 1/	n.a.
Physicians (per thousand people) 1990-98 1/	n.a.	after official transfers, 1998 1/	n.a.
Percentage population without access to safe water 1990-97 3/	19	Foreign direct investment, 1998 1/	n.a.
Percentage population without access to health services 1981-92 3/	n.a.	Government Finance	
Percentage population without access to sanitation 1990-97 3/	n.a.	Overall budget surplus/deficit (including grants) (as % of GDP) 1997 1/	n.a.
Agriculture and Food		Total expenditure (% of GDP) 1997 1/	n.a.
Food imports as percentage of total merchandise imports 1998 1/	n.a.	Total external debt (USD million) 1998 1/	n.a.
Fertilizer consumption (hundreds of grams per ha of arable land) 1995-97 1/	699	Present value of debt (as % of GNP) 1998 1/	n.a.
Food production index (1989-91=100) 1996-98 1/	n.a.	Total debt service (% of exports of goods and services) 1998 1/	n.a.
Land Use		Nominal lending rate of banks, 1998 1/	n.a.
Arable land as % of land area, 1997 1/	14.1	Nominal deposit rate of banks, 1998 1/	n.a.
Forest area (km ² thousand) 1995 1/	61.7		
Forest area as % of total land area, 1995 1/	51.2		
Irrigated land as % of cropland, 1995-97 1/	73		

Figures in italics indicate data that are for years or periods other than those specified.

1/ World Bank, *World Development Report*, 2000

2/ World Bank, *Atlas*, 2000

3/ UNDP, *Human Development Report*, 1999

PREVIOUS IFAD LOANS TO D.P.R. KOREA

Project Name	Initiating Institution	Cooperating Institution	Lending Terms	Board Approval	Loan Effectiveness	Current Closing Date	Loan Acronym	Currency	Approved Loan Amount	Disbursement (as % of approved amount)
Sericulture Development Project	IFAD	UNOPS	I	06 Dec 95	21 Jun 96	30 Jun 02	L - I - 398 - KP	SDR	10 450 000	86.5%
Crop and Livestock Rehabilitation Project	IFAD	UNOPS	HC	04 Dec 97	20 Dec 97	31 Dec 03	L - I - 469 - KP	SDR	20 900 000	89.2%



LOGICAL FRAMEWORK

	Performance Indicators	Data Sources	Assumptions
GOAL			
Balanced, sustainable and replicable cropping systems and environment management, which improve soil fertility and enable higher and more secure production to lead to improved living standards for 18 000 low-income households on 46 cooperative farms in upland areas	Farmer income by gender, directly benefiting 61 000 people at project completion Nutritional status children under five	Household and farm baseline and repeat surveys Nutritional survey	
OBJECTIVES			
1. Improved crop rotations, farming practices and soil fertility, generating increased yield, income and labour productivity	Cooperative farms with new rotations: 24 farms in PY3 and 37 farms at project completion Area under recommended rotations: 12 000 ha in PY3 and 18 1000 ha at project completion Yields of main crops for Class I land with tractor ploughing at project completion in tons/ha: potato single cropping 15; potato double cropping 12; rice double cropping 4.5; maize single cropping 2.4; maize double cropping 2.2; wheat single 2.5; wheat double 2.3; barley single 2.4; barley double 2.2; sweet potato single 15; sweet potato double 12; soybean single 1.0; and soybean double 0.9 Incremental crop production at the end of respectively project years 3 and 5 in mt/year: potato 3 800 and 7 300; maize 700 and 1,200; rice 5 100 and 9 100; wheat 2 700 and 4 800; barley 1 500 and 2 600; soybean 1 400 and 2 500 Farm income: farm cash income distributed to farm workers averages USD 600 per farm worker per year in PY3 and USD 900 at project completion (baseline is about USD 300)	Farm baseline and repeat surveys	Government takes all necessary steps to introduce recommended rotations Timely supply of appropriate crop inputs and farm machinery
2. Greater availability to cooperative farms of high quality and disease free potato seed	Volume of high quality seed delivered to cooperatives	Cooperative farm annual reports	Government provides dedicated operating funds to NAAS Availability of appropriate storage and transportation facilities
3. Improved micro-catchment planning, fuelwood plantations and erosion control measures preserving and enhancing the environment	Number of catchment protected: catchments improved will cover 46 farms in 4 counties at end of project Area of woodlots: 5 400 ha at project completion Area of conservation forest: 2 400 ha at project completion	Farm baseline and repeat surveys	Government introduces catchment area zoning Timely availability of (seasonal) labour WFP food assistance uninterrupted
4. Credit services encouraging and enabling livestock and other enterprises by cooperatives and their farmer members	Volume of credit extended Number of loans extended: 18 000 per year as of PY3 Value of credit fund Household livestock income	Cooperative farm annual Reports Household annual repeat surveys	
5. Capacity of cooperative communities to select and undertake productive projects	Categories of projects selected Number of projects implemented	Cooperative farm annual reports	Government makes funds available to Cooperatives
6. Improved processing capacity adding value to crop production at cooperative farms	To be determined at feasibility study	To be determined at feasibility study	To be determined at feasibility study
7. Technical and managerial capacity of national, provincial and county agencies and cooperatives to plan and implement projects	Delivery of project inputs	Farm and household repeat baseline surveys Annual progress reports	Availability of TA assistance Adequate project supervision





APPENDIX III

OUTPUTS	Performance Indicators	Data Sources	Assumptions
<p>Objective 1: Sustainable crop production systems for 37 cooperative farms</p> <p>Output 1.1 Improved crop input supply systems</p> <p>Output 1.2 Increased farm mechanization services</p> <p>Output 1.3 Improved potato storage facilities</p> <p>Output 1.4 Improved farm management services</p>	<p>Area with annual inputs delivered: 18 000 ha at project completion area: IFAD 2,235 mt; Gov. 914 mt phosphate: IFAD 10 337 mt; Gov. 4 224 mt potassium: IFAD 4 691 mt; Gov. 1 916 mt pesticides: IFAD 245 mt; Gov. 100 mt</p> <p>Number of pieces in operation</p> <p>Area served by mechanical equipment tractors: 92; plough: 74; potato planter 74; com drill: 37; sprayer: 74; fertilizer spreader: 74; trailer: 111; potato harvester: 74</p> <p>Number of caves constructed</p> <p>Inputs delivered to farms</p>	<p>Cooperative annual reports</p> <p>Cooperative annual reports</p> <p>Supervision reports</p> <p>Cooperative annual reports</p> <p>Cooperative annual reports</p> <p>Monitoring surveys</p>	<p>Government will continue delivery of annual inputs to cooperatives</p> <p>Government will provide maintenance services</p> <p>TA support will be high calibre</p>
<p>Objective 2: Potato seed supply development component</p> <p>Output 2.1 Strengthened central tissue culture and seed dissemination services</p> <p>Output 2.2 Strengthened provincial and county tissue culture and seed dissemination services</p>	<p>Volume of high quality seed produced at Daehongdan Potato Research Institute</p> <p>tractors: 2; plough: 1; potato planter: 1; sprayer: 1; fertilizer spreader: 1; trailer 4; potato harvester: 2</p> <p>Volume of seed produced at province and county seed centres</p>	<p>Research station annual reports</p> <p>Supervision reports</p> <p>CCFMC annual reports</p>	<p>The problem of potato disease will be adequately dealt with through safe practices</p> <p>Linkages will be well established with the International Potato Centre</p> <p>Release of funds to NAAS will be timely</p> <p>Procurement of equipment for the research institutes will be timely</p> <p>TA and training will be made available</p>
<p>Objective 3: Environment preservation component</p> <p>Output 3.1 An area of 5 400 ha planted for fuelwood</p>	<p>Area under fuelwood trees</p> <p>Tree planting density</p> <p>Food-for-work (WFP): 5 760 mt</p>	<p>MLEP annual reports</p> <p>Monitoring surveys</p> <p>WFP reports</p>	<p>WFP food pipeline will be uninterrupted</p>
<p>Objective 4: Household and cooperative credit component</p> <p>Output 4.1 Credit fund providing loans to 14 900 farmers</p> <p>Output 4.2 Credit fund providing loans to cooperatives</p> <p>Output 4.3 Strengthened credit delivery systems</p>	<p>Volume of credit extended</p> <p>Number of loans extended</p> <p>Volume of credit extended</p> <p>Number of loans extended</p> <p>Loan officer productivity</p>	<p>CB annual reports</p> <p>CB annual reports</p> <p>CB annual reports</p>	<p>Institutional strengthening will take place at branches of Central Bank and in cooperative farms</p> <p>No serious outbreak of livestock disease will occur</p>
<p>Objective 5: Community facilities and services component</p> <p>Output 5.1 Community development fund providing loans to 37 cooperatives for locally-selected projects</p>	<p>Locally selected and implemented projects</p>	<p>Cooperative annual reports</p>	<p>Government commitment will remain firm, and officials' 'mind set' will not be an obstacle</p>
<p>Objective 6: Farm output processing component</p> <p>Output 6.1 Study of feasibility of farm product processing</p> <p>Output 6.2 Processing starch and noodles etc. - to be determined at feasibility study</p>	<p>Decision on procedure to invest in facilities</p> <p>To be determined at feasibility study</p>	<p>Mid term review</p> <p>To be determined at feasibility study</p>	<p>Government will agree to use loan funds if donor grant funding does not become available</p> <p>The agro processing feasibility study will yield positive findings</p>
<p>Objective 7: Project implementation component</p> <p>Output 7.1 Functional and efficient project implementation</p>	<p>Project inputs delivered</p>	<p>PMU annual progress reports</p>	<p>TA support will be of high calibre</p> <p>Competent staff will be assigned at PMU</p> <p>Project Steering Committee will be active</p> <p>Mind set of PMU and PSC members will be positive</p> <p>Decentralized decision-making will be encouraged</p>



APPENDIX III

	Performance Indicators	Data Sources	Assumptions
INPUTS			
Component 1. Sustainable crop production systems	Inputs delivered conform budget	Project progress reports Mid-term review Completion report	Government of D.P.R. Korea finances USD 1.786 m and provides its part of the inputs.
Input 1.1.1 fertilizer	USD 6.155 m		Government of D.P.R. Korea finances USD 1.561 m
Input 1.1.2 other crop inputs	USD 5.385 m		The Government officials have the commitment to change the cropping practices towards a more sustainable agriculture
Input 1.2 farm machinery	USD 7.029 m		TA and Training will be effective in teaching new methods
Input 1.3 labour and materials for potato storage	USD 0.099 m		
Input 1.4 farm management inputs	USD 0.316 m		
Input 1.5 recurrent costs sustainable crop production systems	USD 2.442 m		
Component 2. Potato Seed Supply Development	Inputs delivered conform budget	Project progress reports Mid-term review Completion report	
Input 2.1 support Potato Research Institute Daehongdan	USD 0.376 m		
Input 2.2 support county tissue development	USD 0.345 m		
Input 2.3 recurrent costs potato seed supply development	USD 0.237 m		
Component 3. Environment Preservation	Inputs delivered conform budget	Project progress reports Mid-term review Completion report	
Input 3.1 nurseries	USD 0.572 m		
Input 3.2 labour and materials to establish woodlots	USD 4.608 m		
Input 3.3 labour and materials to establish conservation forest	USD 6.837 m		
Input 3.4 management support	USD 0.051 m		
Input 3.5 recurrent costs environment preservation	USD 0.014 m		
Component 4. Household and Cooperative Credit	Inputs delivered conform budget	Project progress reports Mid-term review Completion report	
Input 4.1 household credit	USD 1.083 m		
Input 4.2 cooperative farm credit	USD 0.216 m		
Input 4.3 support to strengthen credit delivery	USD 0.116 m		
Input 4.4 recurrent costs household and cooperative credit	USD 0.022 m		
Component 5. Community Facilities and Services	Inputs delivered conform budget	Project progress reports Mid-term review Completion report	
Input 5.1 Cooperative Community Development Fund	USD 0.993 m		
Input 5.2 training and planning	USD 0.068 m		
Input 5.3 recurrent costs community facilities and services	USD 0.002 m		
Component 6. Farm Output Processing	Inputs delivered conform budget	Project progress reports Mid-term review Completion report	
Input 6.1 feasibility study	USD 0.100 m		
Input 6.2 support to farm output processing	USD 0.463 m		
Component 7. Project Implementation	Inputs delivered conform budget	Project progress reports Mid-term review Completion report	
Input 7.1 support to PMU	USD 0.917 m		
Input 7.2 support to PRECs and CCFCMs	USD 0.060 m		
Input 7.3 support to technology improvement and demonstration	USD 0.186 m		
Input 7.4 recurrent costs project implementation support	USD 0.313 m		



ORGANIZATION AND MANAGEMENT

1. The project's organization (attached chart) is structured to enable its management and administration to accord with the Government's national, provincial, county and farm hierarchy and attendant procedures and practices. The executing agency for the project will be MOA, which will bear overall responsibility and be host to the PMU. While the PMU will bear overall responsibility, various agencies will play major and minor roles in each component. Agencies involved in implementation will carry out their functions under the guidance of the PSC and PMU. Project management will comply with the existing organization structure serving the CFMCs through CCFMCs and PRECs. The Government will apply a multi-agency approach to the project, and budgets for each agency will be clearly demarcated and dedicated. A flow-of-funds chart is attached.
2. **Sustainable crop production systems component.** The PMU will supervise the sustainable crop production system component. Cooperative farm managers will prepare and submit to the CCFMCs for approval and subsequent government financial support, plans for the introduction of the revised crop rotations. Participating cooperative farms will draw up annual work programmes for submission, after approval by the farmers' assembly, to the CCFMCs which will aggregate the plans of individual cooperative farms in the county and check for compliance with IFAD and government guidelines before submitting them to the PMU for approval. Crop input requirements will be aggregated by the PMU, which will specify quality and procure the required quantities. The farm machinery will be internationally procured under detailed specifications laid down by the PMU with assistance from visiting consultants. All financing of cooperatives will be subject to the Government's usual policies of full cost recovery and agreement of IFAD.
3. The PMU will prepare, in response to requests from cooperative farms (in their annual work plan proposals) and with assistance from the visiting agronomist and WFP, an annual work plan for potato store expansion activities. WFP will be responsible for procurement of food, which will be distributed by the Flood and Disaster Relief Committee (FDRC), or its successor, under established practices. This activity will be planned annually, to accommodate the fact that WFP's allocations are not known more than a year in advance.
4. The PMU will purchase equipment and reagents for the soil analysis laboratories. NAAS will compile the final list of equipment, to be approved by UNOPS before procurement.
5. Cooperative farm managers, in consultation with the CCFMCs, will identify candidates for staff training and study tours. Final approval will be given by the PMU which will also be responsible for identifying appropriate venues and making travel and other arrangements.
6. **Potato seed supply development component.** NAAS, which has prime responsibility for research, will be directly responsible for activities at the Daehongdan Potato Research Institute. It will draw up a detailed plan for the work at the Institute and submit an annual work plan to the PMU. The PMU will procure all items specified in the detailed cost tables. NAAS will, in collaboration with the Potato Research Institute, finalize the list of tissue culture laboratory equipment and submit it for review by the visiting agronomist and the PMU and approval by UNOPS before procurement. The Director of the Potato Research Institute will, in the first semester of the project, prepare a training and study tour plan for approval by the PMU and UNOPS.
7. NAAS will, with assistance from the potato agronomy consultant, prepare final lists of equipment and materials to be provided to the province, county and cooperative farm seed multiplication facilities, for submission to the PMU. Procured equipment will become the responsibility of the PRECs and CCFMCs under standard practice.



8. **Environment preservation component.** MLEP will be responsible for planning and implementing the environment preservation component. MLEP, with assistance from the visiting environment consultant and in consultation with WFP, will prepare the component plan and guidelines for selection of areas to be reforested, for approval by the PMU and UNOPS. Cooperatives will include proposals for reforestation in their annual work plan submissions to the CCFMCs, under standard practice. The duration of activities in this component, which is nominally four years, will be determined by the rate at which the CCFMCs are able to prepare and implement nursery and planting activities. This flexibility accounts for the need to plant forests for fuelwood as quickly as possible, the aim of including as many beneficiaries as possible in project activities and limits to the planning horizon of WFP.

9. **Household and cooperative credit component.** The Central Bank will manage the household and cooperative credit component. Its head office will bear overall responsibilities for implementation of the component. County branches will be the focal point for lending activity and will, in turn, develop close relationships with cooperative farms. That relationship will be in two main areas: the cooperative farms will be agents for the Central Bank and the clients, whether as the whole entity or consisting of individuals.

10. The Central Bank, in consultation with the MOA, will prepare the credit programme for the entire project period prior to the start-up of the project. The Central Bank's head office will prepare, each October and in accord with standard practice, annual lending programmes after CCFMCs, CFMCs and other relevant government departments in the project area. The Central Bank will, prior to the start-up of the project, prepare and distribute to participating county branches and the cooperatives copies of the credit operation manual, as amended by the June-July 1999 supervision mission, of the Crop and Livestock Rehabilitation Project. This manual will be the guiding document for practices to implement the component. The county branches, based on the annual lending programme and the loan requests collected from the households via the cooperative farms, will prepare quarterly disbursement plans, to be submitted to the Central Bank's head office two months prior to the start of each quarter. The Central Bank's head office will, after reviewing the quarterly disbursement plan, release the credit funds directly into a separate credit line revolving fund account opened specially for the credit component at the county branches.

11. All the households within the selected cooperative farms will form the target group for the credit component. Women-headed households and those with one or no active working member will have priority access to credit. Major terms and conditions for loans will be: (i) **Equity contribution.** No cash contribution will be required, but household borrowers will be required to contribute labour, small farm tools, simple equipment and animal houses whenever possible. (ii) **Interest rates.** The interest for household borrowers on both short- and medium-term loans will be 5% per annum, under the prevailing interest rate structure. Should the Central Bank change the structure during the project, the interest rate payable will be the lending interest rate prevailing at that time or the prevailing interest rate for the term deposit plus 1%, whichever is the higher, to ensure a positive and cost-covering rate of interest. A penalty interest rate of 10% per annum will be applied to all loans overdue under this credit component. (iii) **Repayment terms.** Repayment of loans to households will be scheduled on the basis of enterprise cash flow and will vary from one year for loans for pig fattening and rabbit breeding to four years for loans for rearing of larger livestock such as sheep and goats, and for beekeeping. (iv) **Security requirement.** All loans to the households will be secured either by collateral in the form of investment items or by guarantors. Guarantors will sign the loan contracts together with the borrowers and the county branch, or submit to the county branch separate letters of guarantees in conformity with the relevant loan contracts. The CFMC will provide guarantee for loans to households. (v) **Savings requirement.** Households, to become eligible for borrowing, will make a deposit to the Central Bank of KPW 50. The deposit requirement could be reduced to KPW 30 for the poorest households.



APPENDIX IV

12. A credit management and information system will be established to undertake monitoring of the credit programme. The contents to be monitored will, among other things, include loan disbursement, loan recovery, loans overdue, default and breach of obligations and main reasons for their occurrence. The monitoring system will be computer-based and designed to show easily and rapidly financial positions and performance of the county branches and the cooperative farms. The county branches will aggregate quarterly the information provided by the financial services offices in the cooperative farms on their lending and recovery performance and financial positions. The result of the monitoring will be reported to the Central Bank's head office and the PMU.

13. **Community facilities and services component.** All farms selected for the project will be eligible for assistance. Applications for funding will be submitted in the standard manner for the farms' annual work plans. The Government will apply its standard practice of full cost recovery, with the rate of repayment by the cooperative farms to be approved by UNOPS before disbursement. The Government will hold recovered costs in a dedicated fund to finance further community-selected projects. The initially participating farms will be eligible for financing of only one project until repayments accrued to permit second funding. Use of the fund will be restricted to the participating cooperative until their demands are satisfied, after which surplus funds will be used to finance community-selected projects at other cooperative farms within the project area.

14. **Farm output processing component.** The PMU will supervise the studies on opportunities for processing of farm outputs. The responsibility for implementing the processing activities will be suggested in the studies. The PMU will prepare terms of reference in the first semester of PY1, and commission the studies thereafter. The studies will include proposals for implementing the opportunities found to be feasible.

Implementation Arrangements

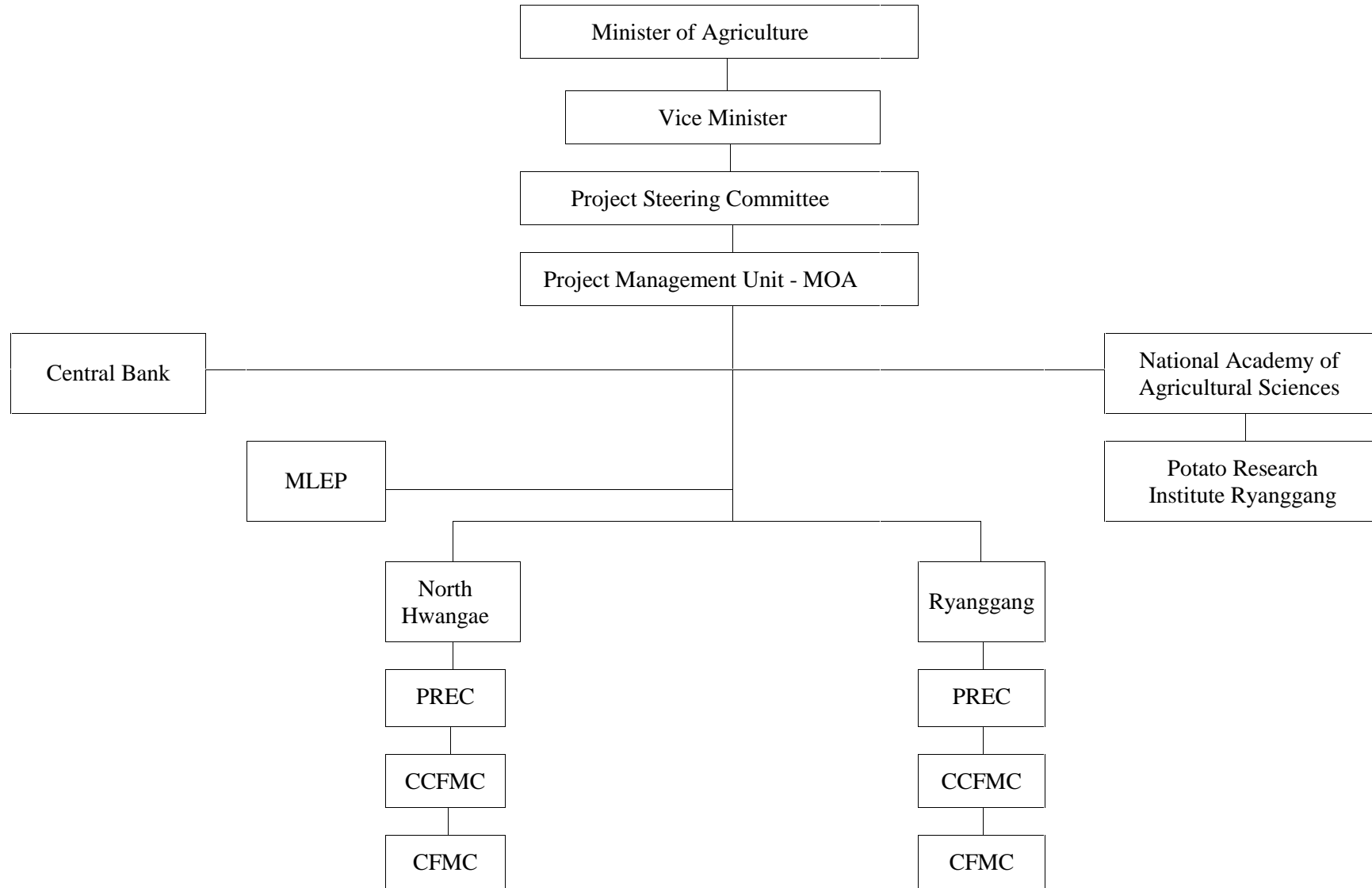
15. **Project start-up.** The PSC will convene as soon as practical after signing of the loan agreement, confirm the establishment of the PMU and provide guidelines for its operations. The PMU will, upon its creation, assume responsibility for the project. It will, with assistance from the resource mobilization consultant, arrange the start-up workshop in which all involved agencies will participate. Specific outcomes sought at the start-up workshop will be: (i) clear definition of roles and responsibilities of implementers; (ii) definition of procedures for preparation of component plans; and (iii) arrangements and timetables for preparation of the first annual work plans.

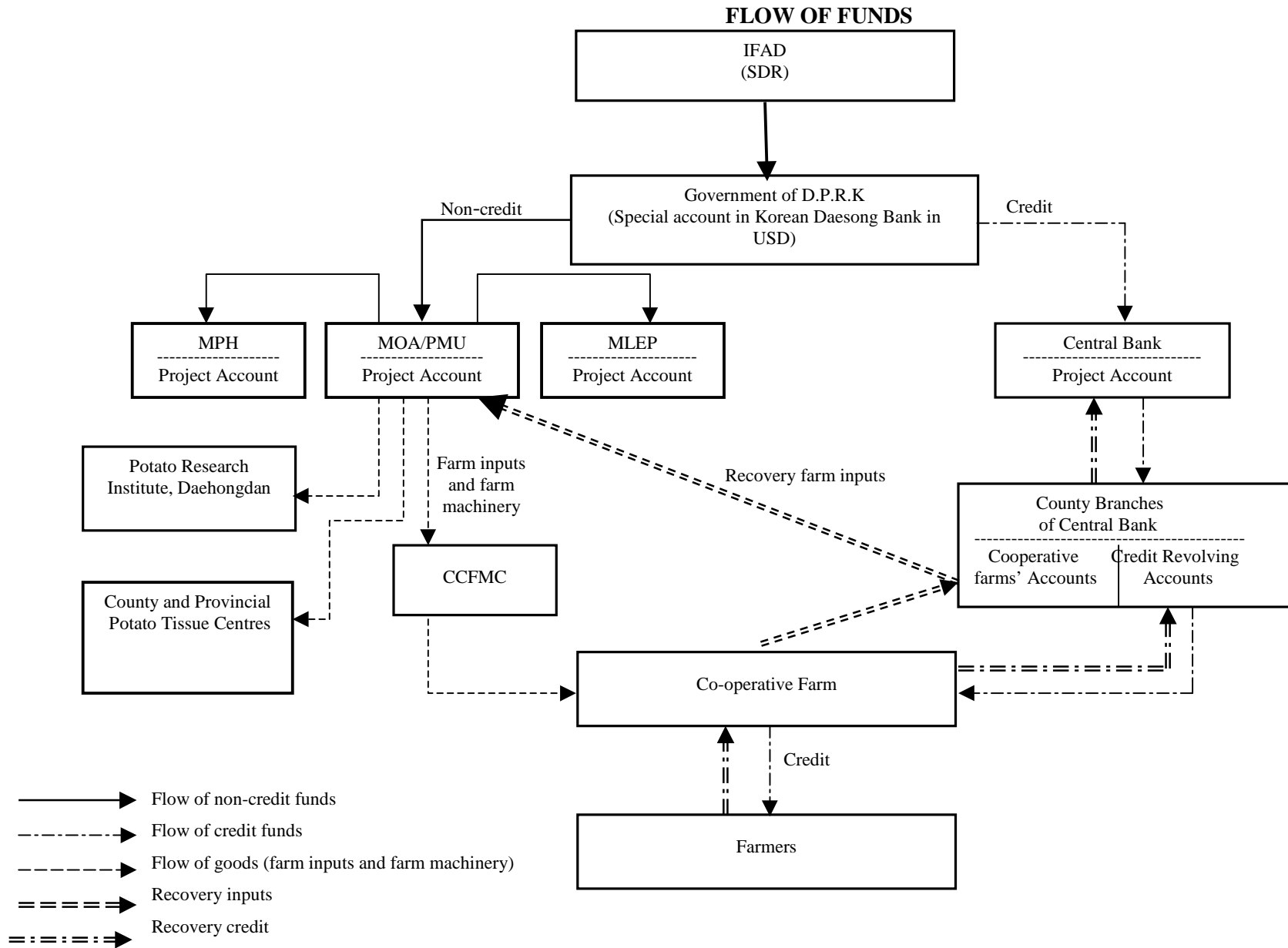
16. The year 2001 will be concerned with planning procedures, establishment of project facilities and procurement.

17. **Annual work plans.** Annual work plans will be prepared according to standard Government procedures, which are similar for cooperative farms and province, county and national agencies. The PMU will coordinate preparation of the consolidated project annual work plan and will submit the final draft, subject to government finalization, to IFAD/UNOPS before the end of October each year.

18. **Technical assistance.** The TA package will be critical in assisting the Government in adopting new techniques and in ensuring high technical, managerial and administrative standards. The PMU will, following loan agreement, prepare the final schedule of TA expert visits for agreement at the start-up workshop. The PMU will, within one month of the workshop, request financiers of TA for approval to commence procurement of experts, against agreed terms of reference. Because the resource mobilization expert will be required at the start-up workshop, MOA will, upon loan agreement, take steps to arrange for this expert's recruitment.

Project Organization Chart





COSTS AND FINANCING

Expenditure Accounts by Financiers (USD '000)

	IFAD		WFP		Government		Beneficiaries		Italy		UNDP		FAO		CESVI		Total		Foreign	Local
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Exchange	Taxes
Civil Works	62.5	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	62.5	0.1	62.5	-
Crop Inputs	8 862.4	68.3	-	-	3 999.3	30.8	-	-	115.8	0.9	-	-	-	-	-	-	12 977.5	31.1	12 952.8	24.8
Farm Machinery	7 410.8	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7 410.8	17.7	7 410.8	-
Supplies	28.0	0.2	6 073.7	51.4	-	-	5 711.2	48.3	-	-	-	-	-	-	-	-	11 812.9	28.3	6 101.7	5 711.2
Vehicles	183.1	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183.1	0.4	183.1	-
Equipment	2 044.8	99.0	-	-	-	-	-	-	20.0	1.0	-	-	-	-	-	-	2 064.8	4.9	2 064.8	-
Technical Assistance	-	-	-	-	-	-	-	-	254.1	50.1	191.5	37.8	61.2	12.1	-	-	506.8	1.2	506.8	-
Training	364.4	52.6	-	-	26.8	3.9	-	-	59.5	8.6	241.5	34.9	-	-	-	-	692.1	1.7	666.5	25.6
Studies	130.6	52.3	-	-	7.0	2.8	-	-	-	-	112.1	44.9	-	-	-	-	249.6	0.6	243.0	6.6
Credit	1 333.1	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 333.1	3.2	1 333.1	-
Cooperative Community Dev. Fund	973.7	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	973.7	2.3	973.7	-
Salaries	-	-	-	-	76.2	100.0	-	-	-	-	-	-	-	-	-	-	76.2	0.2	-	76.2
Operations and Maintenance	2 915.2	88.6	-	-	323.9	9.8	-	-	-	-	-	-	-	-	50.0	1.5	3 289.1	7.9	2 982.2	306.9
Other Operating Costs	133.8	94.9	-	-	7.1	5.1	-	-	-	-	-	-	-	-	-	-	140.9	0.3	134.1	6.8
Total	24 442.3	58.5	6 073.7	14.5	4 440.2	10.6	5 711.2	13.7	449.4	1.1	545.0	1.3	61.2	0.1	50.0	0.1	41 773.1	100.0	35 615.1	6 158.0



Expenditure Accounts by Components
(USD '000)

	Sustainable Crop Production Systems	Potato Seed Supply Development	Environment Preservation	Household and Cooperative Credit	Community Facilities and Services	Farm Output Processing	Project Implementation	Total	%	Physical Contingencies Amount
Investment Costs										
Civil works	-	55.0	-	-	-	-	-	55.0	10.0	5.5
Crop inputs	11 539.8	102.5	-	-	-	-	110.0	11 752.3	2.9	344.9
Farm machinery	7 028.5	151.0	-	-	-	-	-	7 179.5	0.2	15.1
Vehicles, equipment and supplies	341.9	338.2	12 068.3	40.0	-	462.5	161.5	13 412.4	1.3	180.2
Household and co-operative credit	-	-	-	1 299.0	-	-	-	1 299.0	-	-
Cooperative community development fund	-	-	-	-	925.0	-	-	925.0	-	-
Training and studies	73.5	74.0	-	75.6	67.5	100.0	440.0	830.6	9.3	77.4
Technical assistance	-	-	-	-	-	-	450.0	450.0	10.0	45.0
Total Investment Costs	18 983.7	720.7	12 068.3	1 414.6	992.5	562.5	1 161.5	35 903.8	1.9	668.1
Recurrent Costs										
Salaries	-	-	-	-	-	-	69.3	69.3	10.0	6.9
Operation and maintenance	2 441.5	237.3	13.5	19.6	-	-	125.8	2 837.6	9.8	279.0
Other operating costs	-	-	-	2.3	2.3	-	117.5	122.0	10.0	12.2
Total Recurrent Costs	2 441.5	237.3	13.5	21.8	2.3	-	312.6	3 028.9	9.8	298.1
Total Baseline Costs	21 425.2	958.0	12 081.8	1 436.4	994.8	562.5	1 474.0	38 932.7	2.5	966.2
Physical contingencies	614.1	78.9	72.2	13.7	7.0	56.3	124.1	966.2	-	-
Price contingencies	1 245.0	35.0	410.7	38.4	51.0	40.7	53.5	1 874.2	3.2	59.2
Total project costs	23 284.3	1 071.8	12 564.7	1 488.6	1 052.7	659.4	1 651.6	41 773.1	2.5	1 025.4
Taxes included in total	-	-	-	-	-	-	-	-	-	-
Foreign Exchange	22 943.6	1 045.7	6 883.2	1 486.2	1 052.5	659.4	1 544.4	35 615.1	2.8	984.8



FINANCIAL AND ECONOMIC ANALYSIS

Financial Analysis

1. **Crop budgets** were prepared for rice, wheat, barley, potato, maize, sweet potato, soybean, annual legume and winter fodder.¹ Two basic cropping systems were distinguished, a double cropping in the south (North Hwangae province) and single cropping in the north (Ryanggang province). Six crop models were prepared, three for single cropping and three for double cropping. A distinction was made between lowlands and uplands. No lowland was assumed for the northern model (Ryanggang). The ratio between lowland and upland in the southern model (North Hwangae) was assumed to be 25% lowland and 75% upland. Three classes of upland – called Class I, II and III - were distinguished. The ratio of Classes I, II and III land was assumed to be the same for the north and the south, and is 35-55-10%. The duration of crop rotations was assumed to be one year for lowland and three years for upland (all classes). In both the ‘without’ and ‘with’ project situation, the cropping intensity of the northern single cropping model is 100%. In the southern double cropping model the cropping intensity is 200% in the ‘with’ case and 194% in the ‘without’ case. Most prices used are official prices set by the Ministry of Agriculture, and reviewed and adjusted from time to time. Returns-to-labour were calculated for the main crops for all classes of land, by ploughing technology.
2. **Farm models.** Farm budgets were prepared for each class of land for both the northern and the southern model, and for both the ‘with’ and the ‘without’ project situation. Based on the crop rotations, the average area cropped on an annual basis has been worked out for each crop by class of land and by mode of ploughing.
3. Labour was not valued in the crop and farm budgets. The system employed by the farm cooperatives is that the farm workers share in the profits on the basis of the work points earned during the year. No profits mean no cash farm income (only income in-kind in the form of food).
4. **Financial analysis on crops.** The results of the farm models are summarized in Table 1. Incremental returns-to-labour for the southern and the northern model are respectively USD 3.22 and 2.25 per day. Incremental gross income of the southern model is USD 150 400 per farm. For the northern model, gross income per farm is USD 36 900. The increase ‘with project’ for the southern model is 30%, while the increase for the northern model is 37%.
5. Aggregate incremental crop production on the 37 farms by project year is shown in Table 2.
6. **Livestock.** Livestock benefits were derived from eight livestock models. The models were based on loans provided to individual households. All livestock benefits are assumed to be incremental. The net benefits including labour costs – at full development – are (in KPW '000 per year): poultry layers (91), goat rearing (224), goat fattening (55) sheep rearing (33), pig fattening (452), rabbit breeding (136) geese fattening (143) and beekeeping (261).

¹ The winter fodder crop budget is assumed to be a good proxy for the green manure crop budget as well.

**Table 1: Farm Models: Returns-to-Labour, Gross Incomes and Labour Days
(per farm per year)**

	Without Project	With Project	Incremental
Southern Model			
Returns-to-labour in KPW/day	5.59	9.56	6.95
Returns-to-labour in USD/day	2.59	4.42	3.22
Gross income in KPW	1 086 345	1 411 201	324 857
Gross income in USD	502 937	653 334	150 397
Labour days	194 370	147 647	-46 723
Northern Model			
Returns-to-labour in KPW/day	3.71	7.03	4.86
Returns-to-labour in USD/day	1.72	3.25	2.25
Gross income in KPW	218 234	298 028	79 794
Gross income in USD	101 034	137 976	36 942
Labour days	58 829	42 418	-16 412

Table 2: Summary of Incremental Crop Production (total for 37 farms)

Crop	Project Year					
	1	2	3	4	5	6-15
Potato	-	1 728	3 802	6 651	7 336	7 639
Maize	-	335	738	1 186	1 298	1 343
Rice	-	2 360	5 193	8 340	9 127	9 442
Wheat	-	1 240	2 728	4 436	4 860	5 033
Barley	-	690	1 517	2 461	2 696	2 791
Soybean	-	648	1 427	2 326	2 549	2 640

7. **Environment.** The environmental benefits consist of fuelwood for use by the county population. The area to be established with woodlots is approximately 5 400 hectares. At full development, woodlots are estimated to yield 10 m³ of fuelwood per hectare per year. The fuelwood price was estimated by assuming ten days of labour to collect all fuelwood required by an average household for the whole year, and valuing labour at USD 1.60 per day.²

Economic Analysis

8. **Costs stream.** The cost stream of the project for the economic analysis includes all project costs except for the community development component costs as, because of the nature of this component, no economic benefits could be estimated. For the environment preservation component, only the costs concerning fuelwood plantations were included. Out of 7 800 ha of plantations to be established, 69% (5 400 ha) are fuelwood plantations for which benefits were quantified.

² Based on WFP's policy to provide two kg of grain per day (valued at USD 0.80), and the assumption that this would provide for 50% of the actual cost of labour.

9. **Benefits stream.** Crop benefits are taken from the two models prepared for the project. These include a single cropping model for the north and a double cropping model for the south. The crop benefit streams for the northern and southern model are based on the phased introduction of new farms and a learning period until full benefits are assumed. The phasing of both is presented in the table below.

Table 3: Number of farms to start planning

	Project Year				
	1	2	3	4	Total
North (Ryanggang)	6	6	7	0	19
South (North Hwangae)	6	6	6	0	18
Total	12	12	13	0	37
Cumulative	12	24	37	37	

10. Implementation will start with the planning process on 12 farms (six in North Hwangae and six in Ryanggang) in PY1, on 12 farms in PY2 and on 13 farms in PY3. Crop benefits are the result of investments/improvements in inputs, machinery and crop rotations. Inputs are assumed to contribute 50% of all crop benefits, machinery 30% and improved rotations 20%. Benefits are assumed to commence in PY2 for the first eight farms. Benefits from inputs are assumed to accrue immediately. For machinery, a one-year learning year is assumed. The learning period taken for improved rotations is three years.

11. The livestock benefit stream is based on the livestock models. Full livestock benefits are assumed from PY5 onwards.

12. The quantifiable environmental benefits include the 5 400 ha of woodlots that will be established by the project. From PY14 onwards, fuelwood production is projected to be 54 000 m³ per year. (Fuelwood yields at full development are calculated at 10 m³/ha/year.)

13. All prices are set by the Government and are reviewed and adjusted as needed. With few exceptions, official prices have been used in the preparation of crop budgets. FAO and WFP concluded in a recent study that the prices of the major crops are similar to world market prices.

14. **ERR and sensitivity.** Based on the above assumptions, the economic rate of return (ERR) calculated for the project over a 15-year period is 19.9%.

15. The sensitivity analysis shows that ERR is robust enough to withstand relatively high increases in costs or decreases in benefits or combinations of cost increases and benefit reductions. Switching values have been calculated for obtaining an ERR of 10%. In this case, costs may increase by 48%, or benefits may decrease by 32%. A delay of benefits of one year will give an ERR of 15%. Combinations of increases in costs and decreases in benefits were also calculated. The ERR is still 7% under the scenario of a simultaneous 25% increase in project costs and a 25% decrease in project benefits.