

**Second Thematic Roundtable on Agricultural Recovery &  
Environmental Protection – DPRK  
April 29, 2000**

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## **Introduction**

1. The Government of the Democratic People's Republic of Korea (DPR Korea) has requested the United Nations Development Programme (UNDP) to assist in the preparation and organisation of a Second Roundtable meeting for the country on Agricultural Recovery and Environmental Protection (AREP). The formal request was submitted to the UNDP Resident representative in Pyongyang on 12<sup>th</sup> January 2000, - see attached Annexe A.

2. Upon receipt of the request, UNDP produced a draft outline. It was then agreed with the Government of DPR Korea that the Second Roundtable Meeting would focus on further developing the successful joint activities of AREP from the past two years with the following key objectives:

- Assess the achievements of the AREP programme against the original targets and establish lessons learnt since the initial RTM objectives set in May 1998 and expanded in November 1998.
- Present a revised AREP programme for the next three years (2000-02), consistent with the Government's "Directions and Tasks", issued on January 1<sup>st</sup> 2000.

It was also agreed with DPR Korea that full support for the revised AREP programme would allow for further dialogue on other sectors of the economy, notably Energy and Exports.

3. This document has therefore two parts. Firstly, it will summarise the major developments in agricultural and forestry rehabilitation during 1998 and 1999 that have contributed to positive results for the AREP programme. Secondly, it will set out an agreed outline programme, action plan and conditions for success.

4. **Part 1** of this document covers an "assessment of achievement" over 1998 and 1999. All available reports provided by FAO, IFAD, UNDP, UNFPA, UNOCHA, UNOPS, UNICEF, WHO and WFP have been considered in the preparation of this document. The findings have been jointly discussed, highlighting the lessons learnt from AREP implementation. UNDP has, in earlier discussions, agreed to continue the dialogue with Government on agricultural recovery.

5. **Part 2** of this document provides a programme proposal and action plan for the next period of the AREP programme, covering 2000-02. The programme will identify those areas, which call for additional measures to meet the Government's production targets. The revised programme will particularly include measures to support capacity building as well as the sustainability of the current programme thus helping to meet the food requirements and deepen dialogue and understanding between DPRK and the international community. The external funding requirements over the next three years are estimated at US\$250 Million, thereby helping DPRK to complete its recovery programme.

## **Part 1: Key Developments in Agriculture during 1998 and 1999**

6. Part 1 of this document summarises the extensive and productive work that has been carried out as a result of the **Action Plan** that was first presented in the May 1998 Roundtable Meeting (RTM) document and expanded in November 1998. Some of the findings indicate that while the crisis in DPR Korea is not over, with certain sectors still experiencing mal-nutrition, international aid has certainly helped overcome the current food shortage and provide a safety net for the most vulnerable people. This part of the document illustrates the achievements in each of the four AREP sub-programmes, drawing lessons from the joint activities since 1998.

7. In addition to the major contributions from DPR Korea's own resources, the international community has committed assistance totalling approximately US\$100 Million, of which some US\$85 Million has been disbursed. In addition to Food For Work (FFW) activities, contributions by the international community have been mainly earmarked to support the inputs sub-programme (70%).<sup>1</sup>

### **1.1 Inputs Sub-Programme**

8. Total agricultural production and average yields, particularly those from the 1998-99 crop year, indicate that DPR Korea could produce up to 5.5 Million tonnes of cereals per year, including the recently established potato crop computed in cereal equivalents at a conversion rate of 4:1. Furthermore, because of the recent unpredictable adverse weather patterns over previous years, it must be recognised that these potential national and local yields can only be achieved under favourable climatic conditions with the associated inputs and good quality management. For example, the spring of 1999 was drier than normal, which adversely affected early development of the maize crops in some areas and also, in late July and early August, typhoons Neil and Olga hit DPR Korea causing severe localised damage along the South East and South West coast line areas.

#### **1.1.1 Fertiliser – Supply and Application**

9. Fertiliser, quality seed and agrochemicals are equally essential for good yield performance at the optimum rates and timing. In support of these inputs, key donors have maintained their support to DPR Korea for the continued supply of both coal and petroleum products, assisting the domestic fertiliser production to recover (See Table 1 on next page). The total amounts and timing of these inputs, by encouraging strong crop establishment, play an important role in reducing the adverse effects of extreme climatic conditions, which have contributed to the serious problems of recent years in DPR Korea.

10. Availability of fertiliser, from both imports and domestic production, has increased by over 60% in the first effective year of the AREP programme (See Table 1 below). More specifically, the international community have supplied 114,000 tonnes of fertiliser

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<sup>1</sup> See details of "funding requirements" on page 16

in NPK equivalents<sup>2</sup>, an increase of 46% over the previous year. Equally important, domestic production more than doubled in the same period.

**Table 1: Production & Use of Fertiliser in 1997/98 and 1998/99 Crop Years  
(Nutrient content in '000 tonnes)**

	<b>Total 1997/98</b>	<b>Total 1998/99</b>	<b>% Variation</b>
Opening Stock	13	5	
Production	37	87	+ 135%
Imports (Net)	78	114	+ 46%
<b>Total Availability</b>	<b>128</b>	<b>206</b>	<b>+ 60%</b>
Utilisation	123	199	
- Agriculture	116	181	+ 56%
- Industrial	7	18	
Closing Stock	5	7	

Source: DPR Korea (FDRC)

11. The improvement in supply of fertiliser has allowed for higher applications to all crops, especially rice and maize (see Table 2 below). However, a major area under review is the current distribution of fertiliser between the more and less productive sites. Government is fully aware of the advantages to apply fertiliser according to the “site potential” for a given crop, as already mentioned in previous AREP documents. This method of allocation and application makes optimum use of all inputs, particularly fertiliser and subsequently ensures that optimum yields are achieved. Agreement has therefore been reached in order to provide recommendations for differing levels of fertiliser applications across the provinces. Further studies are still needed to confirm the yield potential of all crops across different sites.

**Table 2: Fertiliser Application in Paddy & Maize  
(NPK Nutrients - kg/ha)**

	<b>N</b>	<b>P</b>	<b>K</b>	<b>Total 97/98</b>	<b>N</b>	<b>P</b>	<b>K</b>	<b>Total 98/99</b>
Paddy	76	15	4	96	96	19	18	133 (+38%)
Maize	48	13	5	65	72	19	18	109 (+67%)

Notes: Theoretical requirements for 4 t/ha & 6 t/ha of Rice:

4t/ha	60	30	30	120
6t/ha	170	85	85	340

Source: UK-UNDP (AREP Technical Advisory Team)

12. More specifically, simulations based on “Standard Response Data” (SRD) suggest that the fertiliser applications of 1998-99 should have yielded 4.1 t/ha for Paddy and 2.9 t/ha for Maize, whereas yields of 3.6 t/ha and 2.3 t/ha should have been achieved respectively in the 1997-98 crop year. In the crop year 1998-99, actual Paddy yields (See Table 3 below) almost attained the “simulated” level following a favourable growing season when climatic conditions were almost ideal for Paddy. There were also no serious pest problems. However, the actual Paddy yields were much lower than “simulated” in

<sup>2</sup> Computed in terms of nutrients

the previous year: 2.7 against 3.6. As well, Maize yields were some 15% lower than “simulated” levels over the last two years. These lower than expected yields were clearly as a result of adverse weather conditions in the form of a dry spell in the early part of the 1999 growing season, whereas further flooding adversely affected some crops during the 1998 season (See Annexe C:). The lack of weed control has also suppressed yields.

**Table 3: Projected, Simulated and Actual Crop Yields (t/ha)**  
(Cropping year November – October)

	<u>96/97</u>	<u>97/98</u>	<u>98/99</u>
<b>Paddy</b>			
Projected (May 98)		3.7	5.5
Simulated		3.6	4.1
Actual	2.7	2.7	4.0
<b>Maize</b>			
Projected (May 98)		3.5	4.3
Simulated		2.3	2.9
Actual	1.7	2.0	2.5

Sources: AREP (May 98) for projections; AREP Technical Advisory Team for simulations; and DPR Korea (FDRC) for actual data

13. The shortfalls against predicted maize yields could also be accounted for by the exceptional “early consumption” when the crop was at the early ripening or green stage. The “early consumption” of maize refers to the co-operatives and state farms cutting the crop at the “green” stage, during the lean May-September period, prior to harvesting the grain in order to supplement animal feed and households. The DPRK Public Distribution System (PDS) has estimated that as much as 365,000 tonnes were consumed, accounting for nearly 30% of the total maize production. This could explain the major discrepancy between the actual results and the findings of the independent crop assessment mission in late October and early November.

14. In any case, the early consumption of maize, by definition, is no longer available for distribution in the following year. The timing of independent crop assessment missions thus needs to balance the requirements of yield assessment with the effects of early consumption. In future, as the overall food supply returns to the situation prior to the floods and drought, and with the food aid increasing during the lean months of May-September, early consumption of green crop maize would decrease significantly, down to only nominal levels. This will increase overall yields as well as the volume available for distribution in the following year. The projected food accounts for the 2000-02 period will assume these expected changes in the consumption pattern.

### **1.1.2 Balancing Economic Efficiency**

15. Facing acute food shortages in the North of the country, the Government has allocated fertiliser supplies in favour of the Northern provinces despite the lower response to valuable inputs in those regions. This approach has also been dictated by transport limitations imposed by the shortage of transport means and fuel. As a result, the

allocation of fertiliser was distributed on an equal basis across all provinces (See Annexes D and E:).

16. Government is however aware that an allocation of currently available volumes of fertiliser favouring the best sites will increase total crop production. It thus seeks to increase economic efficiency in production while improving social equity and solidarity through a better distribution of food. An emphasis on the best productive sites could increase overall production by at least 10%<sup>3</sup>. The challenge to transport the surplus to the deficient areas however requires international support in order to improve the transport facilities. This new approach represents a better balance between **Social Equity and Economic Efficiency**, but requires additional resources. The 2000-02 Action Plan will consider this change in favour of more productive sites.

## **1.2 Rural Rehabilitation**

17. This section summarises the results of the rehabilitation work carried out in the areas of sea dyke repairs, irrigation, as well as improvements in land use. It details the significant support by the international community to the “Double Cropping” programme, whereas rehabilitation of the infrastructure damaged by the floods and tidal wave has been mostly carried out by DPR Korea, partially with Food For Work (FFW) activities.

### **1.2.1 Rehabilitation of Sea Dykes, Rivers and Irrigation**

18. Significant work and effort by Government, with some help from the international community, has succeeded in further rehabilitation of the 290 km of damaged sea dykes. Over the past two years, not only the temporary structures for 149 km were consolidated but additional 31 km were also completed, leaving a balance of 110 km to rehabilitate (See Annexe F:). For river embankments, some 53% of the damage has been restored to date, leaving a balance of 45 km to be rehabilitated.

19. Regarding the irrigation system and networks, the Government has recently concluded a loan agreement with the OPEC Fund, by which some 100,000 hectares of the South Pyongan province will benefit from a gravity fed irrigation system. The impact of this investment will however not be felt before 2002. In the meantime, the Government has repaired and replaced the damaged structures in all the provinces with little help from the international community, except for the support from FFW programmes. However, the replacement of steel pipes, has to date been limited with some 93% still requiring replacement.

### **1.2.2 Land Use**

20. The area under rice cultivation has reached 580,000 hectares as projected (See Annexe G:). On the other hand, the co-operative and state farms have reduced the area

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<sup>3</sup> Assuming that the six “granary” provinces receive 85% of total fertiliser application, instead of 65% as in 1998/99

under maize cultivation away from the steep slopes, as indicated in the original Roundtable document. The reduction has even been faster than planned, allowing for a possible reduction in soil erosion as well as the expansion of crop diversification.

21. In an effort to increase food production, the Government has taken a new initiative in “re-zoning” the available land, by increasing the size of plots on co-operative farms to at least 0.33 hectares, each. Re-zoning has been completed in the Kangwon province and will proceed at the pace of one province per year. The current re-zoning activity is taking place in the North Pyongan province, to be followed by South Hwanghae. This initiative, once completed, could result in significant increase in total crop production.

22. Evidence of yield data, collected over the past two years, particularly through the IFAD Crop and Livestock Rehabilitation project, suggests that the average yields per hectare can exceed 4 tonnes for both the major crops, rice and maize. Indeed, with appropriate application of inputs on the best sites, yields of 5 tonnes per hectare have been achieved (See Annexe H:). Our projections for the future will therefore be based on those findings regarding yield potential.

### **1.2.3 Cropping Intensity**

23. In line with Government plans, the cropping intensity programme expanded significantly during the crop year 1998-99 with the addition of potatoes. Regarding the more traditional “double crops” of wheat and barley, co-operative farms have opted for growing **winter** crops instead of **spring** due to the much higher yields achieved, i.e. 3 compared with only 2 tonnes per hectare. More importantly, the area under potatoes has expanded from 40,000 ha to 170,000 ha in 1999 (See Annexe I:), leading to an additional supply of 420,000 tonnes of cereal equivalents. Co-operative farms made a concerted effort to acquire sufficient seeds. In total, the cropping intensity programme has supplied 710,000 tonnes, representing 15% of the total cereal production.

24. Due to the current state of mechanisation in DPR Korea, the co-operative farms find it increasingly difficult to cope with the tight time schedule imposed by “Double Cropping”. The Government and co-operative farms have therefore introduced shorter maturing varieties, which have slightly lower yield potential than the longer maturing varieties used in the past. It is estimated that the shortfall in yield could be as high as one tonne per hectare. Despite this lower yield, the net benefit with the cropping intensity programme still amounts to approximately 1.5 tonnes per hectare.

25. It should also be recognised that there are other notable benefits from “Double Cropping”. Firstly, the crop is not subjected to flooding, which generally occurs during July and August, thus increasing the security of food supply. Secondly, the crop provides a vital food complement, allowing DPR Koreans to bridge the lean months of May to September.

## **1.3 Forestry & Environmental Protection**

26. As indicated in the original AREP document of November 1998, the estimated rate of deforestation has been much greater than anticipated in the past, accentuated by energy shortage. The Ministry of Forestry has succeeded in rehabilitating 16 of the damaged nurseries for seedling production. Without completing the remaining 14 nurseries, previously presented for donor funding, DPR Korea will not be able to arrest further serious deforestation.

27. The international community have confirmed its intention to support the original Forestry and Environmental Sub-Programme. Discussions, however, have been delayed by an inability to agree on the appropriate implementation modalities, resulting in none of the 14 nurseries presented in the original AREP document receiving external support. The DPR Korea Government is therefore re-submitting its request for urgent nursery rehabilitation.

28. As mentioned earlier, the change in land use policy, away from steep slopes, will greatly assist in the prevention of current soil erosion. In addition, the EU has started some small projects in “terracing” with “user rights” benefiting directly individual farmers, rather than the co-operatives.

#### **1.4 AREP Support & Capacity Building**

29. The Support and Capacity Building sub-programme in the original AREP document emphasises support to seed production, machinery services and the completion of feasibility studies as well as agricultural research and development. Over the last two years, numerous initiatives have started, but have hardly resulted in tangible outputs. To date, the NGO community have been unable to support farm management development as they wished to. Regarding seed production, only a small FAO-UNDP project has started producing virus-free potato seed through tissue culture.

30. In the area of mechanised services, apart from the provision of certain spare parts, little has been achieved to improve the efficiency of agricultural services and create conditions for the systems to be sustained in the medium term.

31. Regarding the proposal to set up an “International Support Team”, progress has been the most advanced with the implementation of a joint UK-UNDP project, aiming at establishing a technical advisory team. This team has made some progress in advancing the AREP projects and programmes towards international appraisal standards as well as assisting DPRK authorities with tendering, procurement and implementation procedures.

32. In Agricultural Research and Development, the international community, especially the international NGO’s, have provided some inputs into the “Academy of Agricultural Sciences”. In addition, exploratory missions have been carried out by the CGIAR system, more specifically by SIP, CIMMYP and IRRI, to examine the needs for further research into tuber crops, maize and rice respectively.



33. In the area of Bio-pesticide production, DPR Korea has maintained the operation of one small plant, which had been set up by UNDP at the Academy of Agricultural Science. The plants envisaged in the original AREP document have however not received any concrete support from the international community.

34. Finally, in the sector of management capacity, it should be mentioned that the experience with Micro Credit, within the IFAD project, has been most promising. Following improvements in loan application and review procedures by the Central Bank and the local County Committees, the loan recovery rate has been at least 92%.<sup>4</sup>

## 1.5 Non-Cereal Sector

35. As indicated in the original AREP document, the total livestock numbers “bottomed-out” in 1997. Official statistics indicate however that these numbers have recovered significantly since then, especially for Geese (+132%), Ducks (+98%), Rabbits (+90%) and Goats (+76%). It should be noted that the recovery in the livestock sector was assisted by the provision of cattle as well as by an IFAD project aimed at supplementing income for households in the poorest provinces of the country. The Government’s policy for the livestock sector is to encourage ruminant animals. The added advantage for Goats and Sheep is that they can graze on the marginal land and hillsides whilst Rabbits feed on fodder leaves and kitchen waste.

**Table 4: Livestock Population (‘000 head)**

Category	1997	1998	1999	% Change 1997-99	
Cattle	545	565	577	6	
Pigs	1,859	2,475	2,970	60	Sheep
160	165	185	16		
Goats	1,077	1,508	1,900	76	
Rabbits	2,740	2,795	5,202	90	
Poultry	7,547	8,965	10,371	37	
Duck	822	1,372	1,624	98	
Geese	357	462	829	132	

Source: DPRK Ministry of Agriculture

36. With the limitation of arable land, the provision of protein from fish has always played an important role in the diet for the majority of Koreans. With the persisting energy crisis, fishing activities have however declined, forcing the Government to promote fresh water aquaculture, through the establishment of fishponds at the co-operative level.

## 1.5 Food Deficits and Aid

37. The basic assumptions underlying food consumption requirements have been revised in order to take into account the new Government estimate that now calculates total population at 22.55 million in August 1999. This estimate is almost half a million

<sup>4</sup> Loans to households were guaranteed and the repayments to the Central Bank were effected in total.

lower than FDRC-UNDP's earlier projections, which were based on trends prevailing just before the food crisis of 1997, i.e. annual increase of +1.5% until 1998 and +1.3% thereafter. The new Government estimate implies that the population of DPR Korea increased, on average over the 1993-99 period, by only 1.1% per annum due mostly to the increased mortality rates prevailing amongst vulnerable groups. (See footnote)<sup>5</sup>

38. Although the methodology to collect the 1999 population data remains to be clarified, a more detailed analysis of the two sets of estimates suggest that:

- Few, if any of the provinces or regions have seen its population decline over the last 6 years, thus contradicting partial data that implies mass starvation or emigration.
- The provinces that have the lowest population growth lie in the East Coast, north of the 40<sup>th</sup> parallel (Chagang, South Hamgyong, North Pyongan and North Hamgyong) but also South Pyongan, a major province of the “granary”. (See **Table 5** below and Annexe J:)

The slow growth rate in the South Pyongan province might reflect the difficulties to provide the required health services, due to deteriorating sanitation conditions resulting from food shortages.

**Table 5: Population 1993-99**  
(Millions & % variation)

	<b>December 1993</b>	<b>August 1999</b>	<b>Variation %</b>
East Coast	6.10	6.63	+8.7%
West Coast	9.56	10.56	+10.5%
Inland Region	4.87	5.37	+10.2%
	-----	-----	-----
Sub-total	20.53	22.55	+9.9%
Unallocated	0.69	0.0	
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Total DPRK	21.22	22.55	+6.3%

39. Direct consumption norms, used in our earlier analysis, remain valid. The daily energy intake, of some 2,100 calories, is indeed consistent with norms prevailing in Asian countries other than China, our earlier reference pattern (See Annexe J:). As well, the assumed food basket, requiring some 75% of energy intake to come from cereals or cereal products, still looks plausible considering DPR Korea's lower levels of income since the recent food crisis.

40. Applying these consumption norms to DPR Korea's population distribution would therefore yield a “direct human consumption” of only 3.8 million tonnes per year. However, some additional consumption requirements, primarily for seeds, animal feeds and industrial use would bring the total demand for cereals to 4.3 millions tonnes in the

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<sup>5</sup> This average is reportedly the result of 1.5% annual growth rate before the crisis, combined with 0.9% prevailing now.

year 1999-2000 (See Annexe K:), still lower than our earlier projections of 5.4 million tonnes.

41. According to WFP, food aid in cereals and pulses increased to 737,000 tonnes and 829,000 tonnes in the marketing years 1997-8 and 1998-99 respectively, (See Table 6:). A large share of these totals aims at providing a safety net to some eight million beneficiaries, including children in nurseries, kindergartens, primary and secondary schools, hospital patients as well as pregnant and nursing women. In addition, WFP and NGO's have implemented FFW programmes since 1996. Over the last two years, FFW activities in DPR Korea have aimed at:

- Supporting the recovery and rehabilitation of flood damaged arable land during the post harvest period, December to March.
- Rehabilitating the flood protection embankments and assisting in reforestation.
- Supplying a supplementary daily ration of 2 kg per family.

42. Although the priorities of WFP consist in providing a safety net to the various vulnerable groups, the agency is also aiming at expanding its FFW activities up to 150,000 tonnes during 2000. Although decreasing over time, DPR Korea still needs sizeable "Food Aid" in the immediate future.

**Table 6: Food Aid by Origin**  
(‘000 tonnes Nov-Oct.)

	<b>Cereal</b>	<b>Other</b>	<b>Total</b>	<b>Cereal</b>	<b>Other</b>	<b>Total</b>
			<b>97/98</b>			<b>98/99</b>
USA	160	-	160	570	-	570
EU	200	4	204	25	1	26
China	100	-	100	150	-	150
Other	277	25	302	84	19	103
	-----	---	-----	-----	----	----
<b>Total</b>	<b>737</b>	<b>29</b>	<b>766</b>	<b>829</b>	<b>20</b>	<b>849</b>
Of which: Food For Work			73			49

Source: WFP (Pyongyang)

43. Large inflows of "Food Aid" into DPR Korea have clearly averted mass famine and alleviated malnutrition among DPRK children. As previously indicated in the 1998 Nutrition Survey, which was conducted by UNICEF, WFP and the EU in collaboration with the DPRK Government, the incidence of wasting (weight for height) reached 16% for all children under 7 years of age, peaking at 31% for those within 12 to 36 months. These incidences are four times higher than in normal times. More importantly, food aid to DPR Korea has allowed its administration and farmers to concentrate on medium term recovery activities.

## **Part 2: The 2000-02 AREP – Action Plan**

### **2.1 Revised Objectives and Strategy**

44. In line with the changes introduced to the DPR Korea's constitution, the Government issued a new "Direction and Task" statement on 1<sup>st</sup> January 2000. The statement reaffirmed the country's goals of self-reliance and social solidarity, as well as economic efficiency. In addition, the statement re-emphasised the country's development priorities in the energy, agricultural, industrial and transportation sectors. As well, farming activities will have to be determined by the co-operative farmers themselves with support from Government, notably in terms of seed production, land re-zoning and re-forestation. The switch to gravity fed irrigation project will also be accelerated. In this context, the revised AREP action plan now aims at full recovery by the year 2001-02, by which time the country will have met its minimum food consumption requirements.

45. (Justification for focusing on the agricultural programme)

#### **2.1.1 Objectives**

46. Based on the Government's new population estimates and reduced requirements for feedstock, total demand for cereals is now projected to reach 4.5 million tonnes in the 2001-02 year. Direct human consumption of cereals would then provide some 1,600 calories per person (See Annexe M:). In order to meet this demand, DPR Korea should produce almost 3 million tonnes of paddy, 1.9 million tonnes of maize and some 800,000 tonnes of other crops, which would include, wheat, barley and potatoes, through the "Cropping Intensity" initiative. The agricultural inputs required, notably fertiliser and agrochemicals, are estimated to cost US\$400 Million, over the three-year period 2000-02 (See Annexe L:).

47. Except for irrigation repairs, the rural rehabilitation has already been completed at more than 50%. Donor support is therefore estimated to total US\$250 Million, in addition to food aid, over the next three years. However, at the end of the planned period, FFW would still be required to build up adequate reserves in order to ensure sufficient supply and food security.

#### **2.1.2 Strategy – 2000-02**

48. Drawing on the lessons learnt, which have been summarised in Part 1, the AREP strategy has been revised to reflect the Government's priorities as well as possible support by the international community. This document will present the support required over the next two production years (1999-2000 and 2000-01) for the main crops and three production years for the cropping intensity programme (2000-02). The new AREP strategy also argues for the preparation of another Roundtable Meeting to discuss economic sectors, other than agriculture.

## **Input Sub-programme**

49. The input requirements have been revised to support the new production targets (See Annexe M:), in particular the 5.5 million tonnes of cereal equivalents for 2001-02. The cropping intensity programme will continue to sustain the production of potatoes. Government again submits for donor funding only 40% of total input requirements, some US\$160 Million.

## **Rural Rehabilitation**

50. As mentioned earlier, more than 50% of the damage caused to the sea dykes and river embankments has been rehabilitated. Additional work in these areas would require support from increased FFW activities. Lower than expected support for Land Rehabilitation has prompted the Government to increase its own resources for this activity. On the other hand, Government expects to expand the gravity fed irrigation programme, beyond the South Pyongan province. In total, international funding for the Rural Rehabilitation amounts to US\$39 Million.

## **Forestry & Environmental Protection**

51. In Forestry and Environmental Protection, the Geographical Information System (GIS) has been established with initial funding from the UK and UNDP. The rehabilitation of the 14 nurseries, however, is still required, in addition the Government has further refined its priorities in “Fuel Wood and Timber” production. Total funding required for this component is now estimated at US\$33 Million, somewhat less than the initial project presented in November 1998.

## **AREP Support & Capacity Building**

52. Although the Government still plans to upgrade the production of agricultural machinery, the proposed “Farm Mechanisation Improvement” project will now be considered as part of separate discussions. On the other hand, additional funding is now required to prepare sector studies and environmental protection action plans, the recommendations of which will facilitate a deeper dialogue with the international community on ways to revive and sustain the DPR Korean economy in general. Early studies will be completed on the expansion of the horticultural and greenhouse sector for fruit and vegetable production as well as DPR Korea’s energy sector and it’s potential for export. Funding for this capacity building sub-programme is now reduced to US\$18 Million.

## **2.2 Conditions for Success**

### **2.2.1 Macro-economic Stability**

53. As indicated earlier, success of the AREP programme can be ensured only if the international community complements the significant resources allocated by the Government over the 2000-02 period for Agricultural Recovery and Environmental Protection. It is however legitimate to ask whether DPR Korea would earn enough foreign exchange to cover its imported needs beyond 2002 and thereby ensuring financial sustainability, the more so since the productive sectors, other than Agriculture and Forestry, would require continued imported inputs. Export potentials as well as the country's ability to attract foreign investments, notably in the Energy sector, could then be considered at another Roundtable meeting, as soon as the sector studies are completed, possibly in June 2001.

### **2.2.2 Social Development and Solidarity**

54. Co-operative farms, until they can generate surpluses, would be hard pressed to finance the provision of social services, the deterioration of which has reached alarming levels. Co-operative Ri Clinics now require urgent support in acquiring basic drugs as well as maintaining water and sanitation facilities. Co-operative farms in the northern provinces are the most in need, challenging the social equity and solidarity that have characterised the Democratic People's Republic of Korea. Adjustment to the country's economic structure will also have to emphasise the maintenance, if not the development, of social sectors, notably primary education and health care throughout the country.

### **2.2.3 Environmental Sustainability**

55. Activities to prevent further deforestation and soil erosion have already been included in the AREP programme. Additional measures to protect the country's biodiversity and the ozone layer have also been tested through pilot projects. DPR Korea should be encouraged to complete a comprehensive Environmental Protection Action Plan along international standards.

## **2.3 Funding Requirements**

56. As mentioned in the introduction, the international community has committed almost US\$100 Million to the AREP programme, in addition to FFW activities. The majority of these contributions were grants and loans from IFAD and OPEC, which amounted to US\$40 Million (See details in Annexe N:).

57. In addition to IFAD and OPEC, the European Union (EU) have been the major multilateral donors, which altogether committed US\$71 Million. Amongst bilateral donors, the Republic of Korea (ROK), the People's Republic of China, Switzerland and the UK have provided the largest contributions. NGO's on their part have contributed approximately 8% of the total, especially from CARITAS, World Vision and Action by Church of Brethren.

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